

1 Large Numbers

Look Back

The table given below gives you the area of the some of the states of India. Study the table and answer the questions.

- Ans. a. Rajasthan
 b. Two lakh forty thousand nine hundred twenty-eight sq. km.
 c. Punjab
 d. $(80,000 + 3000 + 700 + 40 + 3)$ sq.km.
 e. Punjab < Arunachal pradesh < Bihar < Gujarat < Uttar Pradesh < Rajasthan

Exercise 1.1

1. Put commas to separate the periods and write the number names.

Ans.

	Number	Numbers with commas	Number Name
a.	6623081	66,23,081	Sixty-six lakh twenty three thousand eightyone.
b.	90130104	9,01,30,104	Nine Crore one lakh thirty thousand one hundred four.
c.	198765432	19,87,65,432	Nineteen crore eighty-seven lakh sixty five thousand four hundred thirty two.
d.	900000000	90,00,00,000	Ninety crore.

2. Write numbers for the given number names.

- a. 32,52,52,581 b. 7,07,08,056 c. 70,70,70,707
 d. 42,05,00,000 e. 9,09,09,009 f. 52,40,504
 g. 40,27,02,600

3. Find the place value of coloured digits in the following.

	Number	Place Value of	Place Value
a.	8,35,125	5	5,000

b.	36,5694307	6	6,00,00,000
c.	6,82,44212	8	80,00,000
d.	6,05,35,765	0	0
e.	4,07,05,421	7	7,00,000
f.	9,06,25,179	5	5,000

4. Write the expanded form of the following numbers.

- a. $95,56,473 = 90,00,000 + 5,00,000 + 50,000 + 6,000 + 400 + 70 + 3$
- b. $6,35,17,981 = 6,00,00,000 + 30,00,000 + 5,00,000 + 10,000 + 7000 + 900 + 80 + 1$
- c. $48,82,189 = 40,00,000 + 8,00,000 + 80,000 + 2,000 + 100 + 80 + 9$
- d. $81,12,633 = 80,00,000 + 1,00,000 + 10,000 + 2,000 + 600 + 30 + 3$
- e. $16,78,45,631 = 10,00,00,000 + 6,00,00,000 + 70,00,000 + 800,000 + 40,000 + 5,000 + 600 + 30 + 1$
- f. $28,35,17,893 = 20,00,00,000 + 8,00,00,000 + 30,00,000 + 5,00,000 + 10,000 + 7,000 + 800 + 90 + 3$

5. Write the following numbers in short form.

Short Form

- a. 77,53,047 b. 59,15,468
- c. 3,76,54,329 d. 20,40,20,704
- e. 9,80,40,203 f. 10,20,30,405

Exercise 1.2

1. Write each of the following numbers in words using International Place Value system.

- a. Two million five hundred thirty-five thousand seven hundred sixty eight.
- b. Six million three hundred thousand six hundred forty-nine.
- c. Ninety-four million five hundred thousand one hundred seventy-nine.
- d. Sixty-seven million two hundred fifty-six thousand one hundred eighty-eight.

- e. Four hundred twenty three million four hundred fifty three thousand five hundred thirty-six.
- f. Two hundred fifty six million five hundred forty-five thousand one hundred ninety-eight.
- g. Three million eight hundred fifty-six thousand nine hundred eighty-nine.
- h. Five hundred thirty four million nine hundred thirty-eight thousand one hundred twenty-five.

2. Write the following in figures.

- a. 4,743,142 b. 7,547,505 c. 50,054,530
- d. 22,240,783 e. 105,004,999

3. Fill in the blanks.

- a. 100 lakhs = **10** millions.
- b. 1 million = **10** lakhs.
- c. 10 millions = **1** crore.
- d. 10 crores = **100** millions.

4. Write 'T' for true and 'F' for false :

- a. T b. F c. F d. T

Hots

10 watches

Exercise 1.3

1. Compare each pair of numbers. Put >, < or = in the .

- a. 25,434 < 52,434 b. 69,621,312 < 69,621,418
- c. 9,756,215 < 9,756,319 d. 10,00,000 > 9,99,998

2. Arrange the following numbers in ascending order.

- a. 23,413 < 32,432 < 34,341 < 3,22,431
- b. 38,96,349 < 48,96,348 < 68,96,348 < 88,96,349
- c. 9,34,398 < 96,64,398 < 4,39,86,666 < 9,66,64,398
- d. 38,54,798 < 3,85,47,986 < 38,54,79,850 < 38,54,79,860

3. Arrange the following numbers in descending order.

- a. 14,15,004 > 4,10,001 > 40,000 > 14,004
- b. 7,89,43,025 > 7,89,40,325 > 7,89,04,325 > 7,80,94,325
- c. 5783,42,100 > 47,83,42,100 > 5,78,34,210 < 57,83,421
- d. 34,56,78,912 > 34,56,78,901 > 23,45,67,891 > 12,34,56,789

Exercise 1.4

1. Write the smallest and greatest number formed by given digits.

S.No.	Number	Smallest Number	Greatest Number
a.	6, 5, 3, 8, 9	35,689	98,653
b.	1, 0, 2, 5, 7, 8	1,02,578	8,75,210
c.	4, 6, 2, 9, 8, 7	2,46,789	9,87,642
d.	5, 7, 0, 1, 9, 4	1,04,579	9,75,410
e.	5, 6, 7, 8, 0, 1, 2, 3, 4	10,23,45,678	87,65,43,210

2. Round off the given numbers to the nearest 10, 100 and 1000.

S.No.	Number	Nearest 10	Nearest 100	Nearest 1000
a.	5,143	5,140	5,100	5,000
b.	4,17,504	4,17,500	4,17,500	4,18,000
c.	5,26,933	5,26,930	5,26,900	5,27,000
d.	35,895	35,900	35,900	36,000
e.	59,10,417	59,10,420	59,10,400	59,10,000

3. Round the numbers to the nearest ten thousand.

- a. 40,000 b. 90,000 c. 50,000 d. 80,000
e. 60,000

4. Round the numbers to the nearest lakh.

- a. 4,00,000 b. 9,00,000 c. 6,00,000 d. 2,00,000
e. 2,00,000

Multiple Choice Questions

Tick (✓) the correct choice :

- Ans. 1. c. 7 ten thousands 2. b. 9,08,76,054
3. c. 999999 4. c. ten thousand

Fun with Maths

1. a. No b. Uttar Pradesh
2. One hundred sixty-six million one hundred ninety-seven thousand nine hundred twenty-one. 3. No

2

Roman Numerals

Look Back

Match the columns

Ans. 5 hundred twenty XLVIII
 55 forty eight CXX
 74 fifty-five V
 120 seventy-four XC
 48 thirty-three LXXIV
 90 Five XXXIII
 33 ninety LV

Exercise 2

1. Write the following as Roman numerals :

- | | | |
|-------------|------------|-------------|
| a. CLXIII | b. CCX | c. LIX |
| d. CCCXXXIV | e. CDLXVII | f. CXXXII |
| g. CCLXXXIX | h. DLXXIX | i. MXXXVIII |
| j. MCCLVI | | |

2. Write the following as Hindu-Arabic numerals :

- | | | | |
|---------|--------|--------|--------|
| a. 110 | b. 162 | c. 190 | d. 742 |
| e. 1525 | f. 513 | g. 44 | h. 222 |
| i. 282 | j. 135 | | |

3. Compare the following Roman numerals and use >, < or = :

- | | | | |
|------|------|------|------|
| a. < | b. > | c. > | d. = |
| e. < | f. > | | |

4. Write the answers in Roman numerals.

- | | | |
|----------|-----------|--------|
| a. LXIII | b. LXCVII | c. LXI |
|----------|-----------|--------|

5. Match the Roman numerals to their corresponding Hindu-Arabic numerals.

Column A	Column B
MCMXCIX	1350
CMXLIV	1999
MCCCL	596
MCDXLIX	944
DXCVI	1979
MCMLXXIX	1449

Mental Maths

Fill in the box with suitable Roman numerals.

- Ans.** a. XVII b. XXI c. CCXLIX
 d. LXI e. XXVII f. CLXXVI

Fun with Maths

1 2 3 4 5 6 7
 M E R C U R Y

Multiple choice Questions

Tick (✓) the correct choice :

1. b. D 2. a. 35 3. a. 421 4. b. 1,000
 5. b. DCCC

3

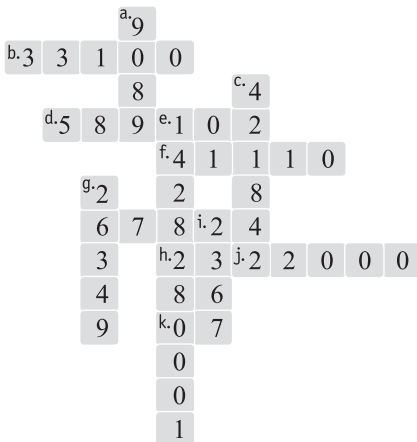
Addition and Subtraction

Look Back

1. Solve the puzzle.

Across

Ans.



2. Fill in the blanks :

- Ans.** a. total b. vertical, Place value c. addends
 d. subtrahend e. minuend f. difference
 g. subtrahend h. minuend i. number
 j. predecessor

Exercise 3.1

1. Add the following :

a.

TL	L	TTh	Th	H	T	O
		①	①	①	①	
4	0	0	4	9	3	5
+	3	3	5	5	3	6
7 3 6 0 3 0 0						

b.

TL	L	TTh	Th	H	T	O
			①		①	①
3	1	4	0	7	2	4
+	1	3	5	8	4	5
4 4 9 9 1 8 3						

c.

TL	L	TTh	Th	H	T	O
		①	①		①	
6	5	0	6	9	3	7
+	1	1	6	7	8	4
7 6 7 4 7 8 3						

d.

TL	L	TTh	Th	H	T	O
①		①	①	①		
3	4	6	7	9	3	2
+	2	6	0	4	7	8
6 0 7 2 7 1 4						

e.

C	TL	L	TTh	Th	H	T	O
		①	①		①	①	
3	4	2	2	2	0	3	7
+	1	3	0	9	8	8	3
4 7 3 2 0 8 7 1							

f.

C	TL	L	TTh	Th	H	T	O	O
		①	①	①	①			
2	4	7	3	6	4	9	2	
+	4	0	9	7	3	7	8	2
6 5 7 1 0 2 7 4								

2. Find the sum of the following numbers.

a. $16,71,461 + 22,63,502$
 $= 39,34,963$

TL	L	TTh	Th	H	T	O
	①					
1	6	7	1	4	6	1
+	2	2	6	3	5	0
3 9 3 4 9 6 3						

b. $60,78,006 + 5,736$
 $= 60,83,742$

TL	L	TTh	Th	H	T	O
		①			①	
6	0	7	8	0	0	6
+			5	7	3	6
6 0 8 3 7 4 2						

c. $27,60,548 + 10,81,531$
 $= 38,42,079$

TL	L	TTh	Th	H	T	O
	①		①			
2	7	6	0	5	4	8
+	1	0	8	1	5	3
3 8 4 2 0 7 9						

d. $4,83,275 + 13,54,036$
 $+ 65,838 = 19,03,149$

TL	L	TTh	Th	H	T	O
	②	①	①	①	①	
4	8	3	2	7	5	
1	3	5	4	0	3	6
+		6	5	8	3	8
1 9 0 3 1 4 9						

e. $16,51,068 + 2,34,002$
 $+ 6,317 = 18,91,387$

TL	L	TTh	Th	H	T	O
		①			①	
1	6	5	1	0	6	8
		2	3	4	0	2
+			6	3	1	7
1	8	9	1	3	8	7

f. $18,37,003 + 5,26,308$
 $= 23,63,311$

TL	L	TTh	Th	H	T	O
①		①			①	
1	8	3	7	0	0	3
+	5	2	6	3	0	8
2	3	6	3	3	1	1

g. $826074 + 70321462$
 $+ 916341 = 7,20,63,877$

C	TL	L	TTh	Th	H	T	O
	②		①		①		
		8	2	6	0	7	4
	7	0	3	2	1	4	6
+		9	1	6	3	4	1
7	2	0	6	3	8	7	7

h. $1834268 + 8,92,163$
 $+ 2,00,65,915 = 2,27,92,346$

C	TL	L	TTh	Th	H	T	O
	①	①	①	①	①	①	①
	1	8	3	4	2	6	8
		8	9	2	1	6	3
+2	0	0	6	5	9	1	5
2	2	7	9	2	3	4	6

3. Find the missing digits :

a.

①	①		①		①		
5	3	7	6	8	1	0	4
+	2	7	8	0	5	7	2
8	1	5	7	3	8	3	0

b.

①	①		①	①			
2	3	7	0	0	4	8	
+	4	9	8	7	6	9	3
7	3	5	7	7	4	1	

Exercise 3.2

1. Subtract the following.

a.

TL	L	TTh	Th	H	T	O
⑦	⑫	⑫		③	⑪	
8	3	2	9	4	1	3
-	5	8	3	8	1	5
2	4	9	1	2	6	0

b.

TL	L	TTh	Th	H	T	O
		③	⑬	⑪	⑧	⑫
7	6	4	4	1	9	2
-	4	4	1	7	8	3
3	2	2	6	3	5	3

c.

TL	L	TTh	Th	H	T	O
	⑫	⑤	⑪	⑨	⑭	
6	2	6	2	0	4	7
-	2	5	0	7	8	6
3	7	5	4	1	8	4

d.

C	TL	L	TTh	Th	H	T	O
⑧	⑫	⑫	④	⑫			
9	3	2	5	2	9	1	7
-	4	9	4	3	5	8	0
4	3	8	1	7	1	1	7

	C	TL	L	TTh	Th	H	T	O
		6	10	4	15	12	10	
	2	7	0	5	6	3	0	9
–		1	6	0	7	8	2	6
	2	5	4	4	8	4	8	3

	C	TL	L	TTh	Th	H	T	O
	7	9	12	15		15		14
	8	0	3	5	1	6	2	4
–	4	5	7	6	0	8	1	9
	3	4	5	9	0	8	0	5

2. Find the difference.

a. $96,08,315 - 50,76,531$
 $= 45,31,784$

	TL	L	TTh	Th	H	T	O
		5	10	7	12	11	
	9	6	0	8	3	1	5
–	5	0	7	6	5	3	1
	4	5	3	1	7	8	4

b. $32,64,105 - 11,27,186$
 $= 21,36,919$

	TL	L	TTh	Th	H	T	O
			5	13	10	9	15
	3	2	6	4	1	0	5
–	1	1	2	7	1	8	6
	2	1	3	6	9	1	9

c. $87,93,184 - 20,00,000$
 $= 67,93,184$

	TL	L	TTh	Th	H	T	O
	8	7	9	3	1	8	4
–	2	0	0	0	0	0	0
	6	7	9	3	1	8	4

d. $36,63,905 - 10,78,999$
 $= 25,84,906$

	TL	L	TTh	Th	H	T	O
		5	15	12	18	9	15
	3	6	6	3	9	0	5
–	1	0	7	8	9	9	9
	2	5	8	4	9	0	6

e. $55,75,279 - 10,08,591$
 $= 45,66,688$

	TL	L	TTh	Th	H	T	O
			6	14	11	17	
	5	5	7	5	2	7	9
–	1	0	0	8	5	9	1
	4	5	6	6	6	8	8

f. $98,05,000 - 67,86,584$
 $= 30,18,416$

	TL	L	TTh	Th	H	T	O
		7	9	14	9	9	10
	9	8	0	5	0	0	0
–	6	7	8	6	5	8	4
	3	0	1	8	4	1	6

g. $8,24,56,841 - 2,20,50,118$
 $= 6,04,06,723$

	C	TL	L	TTh	Th	H	T	O
							3	11
	8	2	4	5	6	8	4	1
–	2	2	0	5	0	1	1	8
	6	0	4	0	6	7	2	3

h. $17,50,73,475 - 3,35,07,500$
 $= 14,15,65,975$

	TC	C	TL	L	TTh	Th	H	T	O
			4	10	6	12	14		
	1	7	5	0	7	3	4	7	5
–	3	3	5	0	7	5	0	0	
	1	4	1	5	6	5	9	7	5

i. $4,67,40,518 - 1,32,28,005 = 3,35,12,513$ j. $3,78,52,903 - 2,63,84,640 = 1,14,68,263$

C	TL	L	T	Th	Th	H	T	O
				③	⑩			
4	6	7	4	0	5	1	8	
-1	3	2	2	8	0	0	5	
3	3	5	1	2	5	1	3	

C	TL	L	T	Th	Th	H	T	O
		⑦	⑭	⑫	⑧	⑩		
3	7	8	5	2	9	0	3	
-2	6	3	8	4	6	4	0	
1	1	4	6	8	2	6	3	

k. $4,17,43,183 - 34,05,632 = 3,83,37,551$ l. $5,16,38,603 - 3,12,76,384 = 2,03,62,219$

C	TL	L	T	Th	Th	H	T	O
③	⑪			③	⑫	⑪		
4	1	7	4	3	1	8	3	
-	3	4	0	5	6	3	2	
3	8	3	3	7	5	5	1	

C	TL	L	T	Th	Th	H	T	O
		⑤	⑬		⑤	⑨	⑬	
5	1	6	3	8	6	0	3	
-3	1	2	7	6	3	8	4	
2	0	3	6	2	2	1	9	

3. Find the missing digits :

a.

	5	9	8	6	3	4	2
-	3	7	5	2	1	4	0
	2	2	3	4	2	0	2

b.

	6	9	1	9	6	3	9	6
-	5	4	2	3	0	4	9	2
	1	4	9	6	5	9	0	4

Exercise 3.3

1. Subtract and check with addition :

a.

Th	H	T	O
8	9	7	5
-3	5	9	8
5	3	7	7

Th	H	T	O
①	①		
5	3	7	7
+3	5	9	8
8	9	7	5

b.

TL	L	T	Th	Th	H	T	O
6	9	4	9	2	5	6	
-	9	8	7	6	7	9	
5	9	6	1	5	7	7	

TL	L	T	Th	Th	H	T	O
①	①		①	①	①		
5	9	6	1	5	7	7	
+ 9	8	7	6	7	9		
9	4	9	2	5	6		

2. Arrange in columns and subtract the following. Check your answer :

a.

TL	L	T	Th	Th	H	T	O
			⑦	⑩	⑮	⑩	
7	8	2	8	1	9	0	
-	5	6	1	7	2	9	3
2	2	1	0	8	9	7	

Checking

TL	L	T	Th	Th	H	T	O
			①	①	①		
2	2	1	0	8	9	7	
+ 5	6	1	7	2	9	3	
7	8	2	8	1	9	0	

- b.

	C	TL	L	T	Th	Th	H	T	O
	5	12		4	16				
	6	2	4	5	6	1	8	4	
-	3	6	2	1	8	1	4	4	
	2	6	2	3	8	0	4	0	

	C	TL	L	T	Th	Th	H	T	O
		1			1				
	2	6	2	3	8	0	4	0	
+	3	6	2	1	8	1	4	4	
	6	2	4	5	6	1	8	4	
- c.

	C	TL	L	T	Th	Th	H	T	O
		7	11		6	12	10		
	5	8	1	7	3	0	5	5	
-	3	1	8	5	7	5	5	0	
	2	6	3	1	5	5	0	5	

	C	TL	L	T	Th	Th	H	T	O
		1			1				
	2	6	3	1	5	5	0	5	
+	3	1	8	5	7	5	5	0	
	5	8	1	7	3	0	5	5	
- d.

	TL	L	T	Th	Th	H	T	O
		7	9	13				
	5	9	8	0	3	5	0	
-	4	0	6	7	5	3	0	
	1	9	1	2	8	2	0	

	TL	L	T	Th	Th	H	T	O
		1		1				
	1	9	1	2	8	2	0	
+	4	0	6	7	5	3	0	
	5	9	8	0	3	5	0	
- e.

	C	TL	L	T	Th	Th	H	T	O
		7	11		6	12	10		
	2	7	0	5	6	7	3	0	
-		5	7	1	8	2	9	0	
	2	1	3	3	8	4	4	0	

	C	TL	L	T	Th	Th	H	T	O
		1			1			1	
	2	1	3	3	8	4	0		
+		5	7	1	8	2	9	0	
	2	7	0	5	6	7	3	0	
- f.

	C	TL	L	T	Th	Th	H	T	O
		6	10						
	8	6	7	0	4	8	1	5	
-	5	2	3	8	2	5	0	0	
	3	4	3	2	2	3	1	5	

	C	TL	L	T	Th	Th	H	T	O
		1							
	3	4	3	2	2	3	1	5	
+	5	2	3	8	2	5	0	0	
	8	6	7	0	4	8	1	5	
- g.

	TL	L	T	Th	Th	H	T	O
	4	3	4	7	9	7	0	
-	3	1	2	3	4	5	0	
	1	2	2	4	5	2	0	

	TL	L	T	Th	Th	H	T	O
	1	2	2	4	5	2	0	
+	3	1	2	3	4	5	0	
	4	3	4	7	9	7	0	
- h.

	TL	L	T	Th	Th	H	T	O
	9	8	3	9	1	8	4	
-	2	1	0	0	0	0	0	
	7	7	3	9	1	8	4	

	TL	L	T	Th	Th	H	T	O
	7	7	3	9	1	8	4	
+	2	1	0	0	0	0	0	
	9	8	3	9	1	8	4	

Mental Maths

1. Greatest number =	=	<table style="margin: auto; border: 1px solid black; padding: 5px;"> <tr> <th>TL</th><th>L</th><th>T</th><th>Th</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr> <tr> <td></td><td></td><td>4</td><td>13</td><td>12</td><td>10</td><td>10</td><td></td></tr> <tr> <td>9</td><td>8</td><td>5</td><td>4</td><td>3</td><td>1</td><td>0</td><td></td></tr> <tr> <td colspan="8">- 1 0 3 4 5 8 9</td></tr> <tr> <td colspan="8" style="border-top: 1px solid black;">8 8 1 9 7 2 1</td></tr> </table>	TL	L	T	Th	Th	H	T	O			4	13	12	10	10		9	8	5	4	3	1	0		- 1 0 3 4 5 8 9								8 8 1 9 7 2 1							
TL	L	T	Th	Th	H	T	O																																			
		4	13	12	10	10																																				
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- 1 0 3 4 5 8 9																																										
8 8 1 9 7 2 1																																										
Smallest number =	=																																									
Difference =	=																																									

2. Greatest number =	=	<table style="margin: auto; border: 1px solid black; padding: 5px;"> <tr> <th>C</th><th>TL</th><th>L</th><th>T</th><th>Th</th><th>Th</th><th>H</th><th>T</th><th>O</th></tr> <tr> <td></td><td></td><td></td><td>4</td><td>13</td><td>11</td><td>10</td><td>10</td><td></td></tr> <tr> <td>9</td><td>8</td><td>6</td><td>5</td><td>4</td><td>2</td><td>1</td><td>0</td><td></td></tr> <tr> <td colspan="9">- 1 0 2 4 5 6 8 9</td></tr> <tr> <td colspan="9" style="border-top: 1px solid black;">8 8 4 0 8 5 2 1</td></tr> </table>	C	TL	L	T	Th	Th	H	T	O				4	13	11	10	10		9	8	6	5	4	2	1	0		- 1 0 2 4 5 6 8 9									8 8 4 0 8 5 2 1								
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8 8 4 0 8 5 2 1																																															
Smallest number =	=																																														
Difference =	=																																														

Exercise 3.4

Solve these story sums :

1. Number of males = 27,51,650

Number of females = + 18,42,725

Total population of the town = 45,94,375

So, the total population the town is 45,94,375

2. Production of rice = 43,45,400 kg

More production of wheat = + 2,36,465 kg
than rice

∴ Production of wheat = 45,81,865 kg

So the production of wheat is 45,81,865 kg

3. Milk was supplied to one depot = 4,83,947 litres

Milk was supplied to another depot = 34,567 litres

Total supply of milk 5,18,514 litres

Production of milk = 38,75,678 litres

Milk was left in the dairy = (38,75,678 – 5,18,514) litres
= 33,57,164 litres

So, 33,57,164 litres milk was left in the dairy.

①	①							
2	7	5	1	6	5	0		
+ 1 8 4 2 7 2 5								
4 5 9 4 3 7 5								

				①				
4	3	4	5	4	0	0		
+ 2 3 6 4 6 5								
4 5 8 1 8 6 5								

				①	①	①	①	①
4	8	3	9	4	7			
+ 3 4 5 6 7								
5 1 8 5 1 4								

4. Length of first piece of wire = 2,12,345 m
 Length of second piece of wire = 45,678 m
 Total length of both pieces = 2,58,023 m
 Total length of long wire was = 93,24,567 m
 Length of cut off wire = - 2,58,023 m

$$\begin{array}{r} \textcircled{1} \textcircled{1} \textcircled{1} \textcircled{1} \\ 2 \ 1 \ 2 \ 3 \ 4 \ 5 \\ + \ 4 \ 5 \ 6 \ 7 \ 8 \\ \hline 2 \ 5 \ 8 \ 0 \ 2 \ 3 \end{array}$$

\therefore Length of the remaining wire = 90,66,544 m
 So, 90,66,544 m of electric wire was left.

5. Cost of a refrigerator = ₹ 1,75,000
 Cost of a washing machine = ₹ 25,670
 Cost of a LED TV = + ₹ 75,940

$$\begin{array}{r} \textcircled{1} \textcircled{1} \textcircled{1} \textcircled{1} \textcircled{1} \\ 1 \ 7 \ 5 \ 0 \ 0 \ 0 \\ + \ 2 \ 5 \ 6 \ 7 \ 0 \\ + \ 7 \ 5 \ 9 \ 4 \ 0 \\ \hline 2 \ 7 \ 6 \ 6 \ 1 \ 0 \end{array}$$

Total cost of these three items = ₹ 2,76,610

Mr. Sinha had = ₹ 8,85,750

He spent money = - ₹ 2,76,610

Money is left = ₹ 6,09,140

So, ₹ 6,09,140 are left with Mr Sinha.

6. The toys are manufactured in 2013 =
 The toys are manufactured in 2014 =
 The toys are manufactured in 2015 =
 Total number of toys are
 manufactured 9,65,27,905

$$\begin{array}{r} 3 \ 4 \ 5 \ 2 \ 0 \ 1 \ 5 \ 0 \\ 2 \ 0 \ 0 \ 7 \ 5 \ 8 \ 0 \\ + \ 6 \ 0 \ 0 \ 0 \ 0 \ 1 \ 7 \ 5 \\ \hline 9 \ 6 \ 5 \ 2 \ 7 \ 9 \ 0 \ 5 \end{array}$$

So, the company manufactured 9,65,27,905 toys in all.

Multiple Choice Questions

Tick (✓) the correct choice :

Ans. 1. b. subtrahend

2. a. 783686

3. b. 90989

4. a. 37945

4

Multiplication and Division

Look Back

Read the stories and find the answer :

Ans. 1.

$$\begin{array}{r} 4 \ 5 \\ \times \ 4 \\ \hline 1 \ 8 \ 0 \end{array}$$

2.

$$\begin{array}{r} 95 \\ 4 \overline{)380} \\ - 36 \\ \hline 20 \\ - 20 \\ \hline 0 \end{array}$$

3.

$$\begin{array}{r} 255 \\ 3 \overline{)765} \\ - 6 \\ \hline 16 \\ - 15 \\ \hline 15 \\ - 15 \\ \hline 0 \end{array}$$

4.

$$\begin{array}{r} 6 \ 5 \\ \times \ 2 \\ \hline 1 \ 3 \ 0 \end{array}$$

Exercise 4.1

1. Fill in the blanks using the multiplication facts.

a. $9990 \times 1 = 9990$

b. $1 \times 8288 = 8288$

c. $82728 \times 0 = 0$

d. $6945 \times 0 = 0$

e. $7125 \times 4212 = 4212 \times 7125$

f. $8175 \times 8943 = 8943 \times 8175$

g. $49 \times (50 \times 8) = (49 \times 50) \times 8 = 50 \times (49 \times 8)$

2. Multiply the following.

a. $6359 \times 3000 = 19077000$

b. $861 \times 900 = 774900$

c. $2369 \times 50 = 118450$

d. $178 \times 80 = 14240$

e. $12629 \times 600 = 7577400$

f. $9297 \times 5000 = 46485000$

3. Multiply :

a.

$$\begin{array}{r} 67245 \\ \times 1234 \\ \hline 268980 \\ 2017350 \\ 13449000 \\ + 67245000 \\ \hline 82980330 \end{array}$$

$$\therefore 67245 \times 1234 = 8,298,0330$$

b.

$$\begin{array}{r} 92421 \\ \times 2121 \\ \hline 92421 \\ 1848420 \\ 9242100 \\ + 184842000 \\ \hline 196024941 \end{array}$$

$$\therefore 92421 \times 2121 = 19,60,24,941$$

c.

$$\begin{array}{r} 24105 \\ \times 1505 \\ \hline 120525 \\ 00000 \\ 12052500 \\ 24105000 \\ \hline 36278025 \end{array}$$

$$\therefore 24105 \times 1505 = 3,62,78,025$$

d.

$$\begin{array}{r} 54321 \\ \times 1675 \\ \hline 271605 \\ 3802470 \\ 32592600 \\ 54321000 \\ \hline 90987675 \end{array}$$

$$\therefore 54321 \times 1675 = 9,09,87,675$$

e.

$$\begin{array}{r} 84710 \\ \times 4231 \\ \hline 84710 \\ 2541300 \\ 16942000 \\ 338840000 \\ \hline 358408010 \end{array}$$

$$\therefore 84710 \times 4231 = 35,84,08,010$$

f.

$$\begin{array}{r} 25671 \\ \times 6215 \\ \hline 128355 \\ 256710 \\ 5134200 \\ + 154026000 \\ \hline 159545265 \end{array}$$

$$\therefore 25671 \times 6215 = 15,95,45,265$$

g.

	9	2	3	4				
	×	3	2	5				
		4	6	1	7	0		
		1	8	4	6	8	0	
		2	7	7	0	2	0	0
		3	0	0	1	0	5	0

$$\therefore 9234 \times 325$$

$$= 30,01,050$$

i.

	1	9	4	3	4				
	×	1	5	6	2				
		3	8	8	6	8			
		1	1	6	6	0	4	0	
		9	7	1	7	0	0	0	
		1	9	4	3	4	0	0	0
		3	0	3	5	5	9	0	8

$$\therefore 19434 \times 1562$$

$$= 30355908$$

k.

	1	5	6	7	5			
	×	9	2	3				
		4	7	0	2	5		
		3	1	3	5	0	0	
+	1	4	1	0	7	5	0	0
	1	4	4	6	8	0	2	5

$$\therefore 15675 \times 923$$

$$= 1,44,68,025$$

m.

	3	5	5	3	2	1			
	×	2	4	3					
		1	0	6	5	9	6	3	
		1	4	2	1	2	8	4	0
+	7	1	0	6	4	2	0	0	
	8	6	3	4	3	0	0	3	

$$\therefore 355321 \times 243$$

$$= 8,63,43,003$$

h.

	1	0	6	5	4			
	×	8	7	5				
		5	3	2	7	0		
		7	4	5	7	8	0	
		8	5	2	3	2	0	0
		9	3	2	2	2	5	0

$$\therefore 10654 \times 875$$

$$= 93,22,250$$

j.

	1	1	2	6	7			
	×	2	4	3				
		3	3	7	8	0	1	
		4	5	0	6	8	0	
		2	2	5	3	4	0	0
		2	7	3	7	8	8	1

$$\therefore 11267 \times 243$$

$$= 27,37,881$$

l.

	1	2	3	7	6		
	×	4	7	6			
		7	4	2	5	6	
		8	6	6	3	2	0
+	4	9	5	0	4	0	0
	5	8	9	0	9	7	6

$$\therefore 12376 \times 476$$

$$= 58,90,976$$

n.

	2	1	3	5		
	×	1	3	5		
		1	0	6	7	5
		6	4	0	5	0
+	2	1	3	5	0	0
	2	8	8	2	2	5

$$\therefore 2135 \times 135$$

$$= 2,88,225$$

o.

$$\begin{array}{r}
 7304 \\
 \times 125 \\
 \hline
 36520 \\
 146080 \\
 730400 \\
 \hline
 913000
 \end{array}$$

$$\begin{aligned}
 \therefore 7304 \times 125 \\
 = 9,13,000
 \end{aligned}$$

4.

a.

$$\begin{array}{r}
 25412 \\
 \times 203 \\
 \hline
 76236 \\
 00000 \\
 + 5082400 \\
 \hline
 5158636
 \end{array}$$

$$\begin{aligned}
 \therefore 25412 \times 203 \\
 = 5158636
 \end{aligned}$$

c.

$$\begin{array}{r}
 20545 \\
 \times 775 \\
 \hline
 102725 \\
 + 1438150 \\
 14381500 \\
 \hline
 15922375
 \end{array}$$

$$\begin{aligned}
 \therefore 20545 \times 775 \\
 = 1,59,22,375
 \end{aligned}$$

e.

$$\begin{array}{r}
 30155 \\
 \times 1248 \\
 \hline
 241240 \\
 1206200 \\
 6031000 \\
 30155000 \\
 \hline
 37633440
 \end{array}$$

$$\begin{aligned}
 \therefore 30155 \times 1248 \\
 = 3,76,33,440
 \end{aligned}$$

b.

$$\begin{array}{r}
 56789 \\
 \times 135 \\
 \hline
 283945 \\
 + 1703670 \\
 5678900 \\
 \hline
 7666515
 \end{array}$$

$$\begin{aligned}
 \therefore 56789 \times 135 \\
 = 7666515
 \end{aligned}$$

d.

$$\begin{array}{r}
 50235 \\
 \times 3105 \\
 \hline
 251175 \\
 00000 \\
 5023500 \\
 150705000 \\
 \hline
 155979675
 \end{array}$$

$$\begin{aligned}
 \therefore 50235 \times 3105 \\
 = 15,59,79,675
 \end{aligned}$$

5. Find the following products without actual multiplication :

a. $964310 \times 9999 = 964310 \times (10000 - 1)$
 $= 9643100000 - 964310$
 $= 9,64,21,35,690$
 $\therefore 964310 \times 9999 = 963345690$

$$\begin{array}{r} \textcircled{2} \textcircled{10} \textcircled{9} \textcircled{9} \textcircled{10} \\ 9\ 6\ 4\ 3\ 1\ 0\ 0\ 0\ 0\ 0 \\ - \quad \quad 9\ 6\ 4\ 3\ 0\ 0 \\ \hline 9\ 6\ 4\ 2\ 1\ 3\ 5\ 6\ 9\ 0 \end{array}$$

b. $481964 \times 99 = 481964 \times (100 - 1)$
 $= 48196400 - 481964 = 47714436$

$$\begin{array}{r} \textcircled{7} \textcircled{11} \textcircled{5} \textcircled{13} \textcircled{9} \textcircled{10} \\ 4\ 8\ 1\ 9\ 6\ 4\ 0\ 0 \\ - \quad 4\ 8\ 1\ 9\ 6\ 4 \\ \hline 4\ 7\ 7\ 1\ 4\ 4\ 3\ 6 \end{array}$$

c. $23968 \times 999 = 23968 \times (1000 - 1)$
 $= 23968000 - 23968 = 23944032$

$$\begin{array}{r} \textcircled{7} \textcircled{9} \textcircled{9} \textcircled{10} \\ 2\ 3\ 9\ 6\ 8\ 0\ 0\ 0 \\ - \quad \quad 2\ 3\ 9\ 6\ 8 \\ \hline 2\ 3\ 9\ 4\ 4\ 0\ 3\ 2 \end{array}$$

Exercise 4.2

a.
$$\begin{array}{r} 2132 \\ 76 \overline{) 162097} \\ \underline{- 152} \\ 100 \\ \underline{- 76} \\ 249 \\ \underline{- 228} \\ 217 \\ \underline{- 152} \\ 65 \end{array}$$

Checking :
 Dividend = 162097, Quotient = 2132
 Divisor = 76, Remainder = 65
 Dividend = Quotient \times Divisor + Remainder
 $= 2132 \times 76 + 65$
 $= 162032 + 65 = 162097 = \text{dividend}$
 So, answer is correct.

b.
$$\begin{array}{r} 1190 \\ 36 \overline{) 42872} \\ \underline{- 36} \\ 68 \\ \underline{- 36} \\ 327 \\ \underline{- 324} \\ 32 \\ \underline{ 0} \\ 32 \end{array}$$

Quotient = 1190, Divisor = 36
 Remainder = 32, Dividend = 42872
 Checking :
 Dividend = $Q \times D + R$
 $= 1190 \times 36 + 32$
 $= 42840 + 32 = 42872$
 $= \text{Dividend}$
 So, answer is correct.

$$\begin{array}{r} 195 \\ 37 \overline{) 7239} \\ \underline{- 37} \\ 353 \\ \underline{- 333} \\ 209 \\ \underline{- 185} \\ 24 \end{array}$$

Checking

Quotient \times Divisor + Remainder

Quotient = 195, Divisor = 37

Remainder = 24, dividend = 7239

Dividend = $195 \times 37 + 24$

$= 7215 + 24$

$= 7239 = \text{Dividend}$

so, answer is correct.

$$\begin{array}{r} 473 \\ 68 \overline{) 32188} \\ \underline{- 272} \\ 498 \\ \underline{- 476} \\ 228 \\ \underline{- 204} \\ 24 \end{array}$$

Quotient 473, Divisor = 68

Remainder = 24, Dividend = 32188

Checking :

Dividend = $Q \times D + R$

$= 473 \times 68 + 24$

$= 32164 + 24$

$= 32188 = \text{Dividend}$

So, answer is correct.

$$\begin{array}{r} 224 \\ 115 \overline{) 25766} \\ \underline{- 230} \\ 276 \\ \underline{- 230} \\ 466 \\ \underline{- 460} \\ 6 \end{array}$$

Quotient 224, Divisor = 115

Remainder = 6, Dividend = 25766

Checking :

Dividend = $Q \times D + R$

$= 224 \times 115 + 6$

$= 32164 + 24$

$= 25760 + 6 = 25766 = \text{Dividend}$

So, answer is correct.

$$\begin{array}{r} 250 \\ 215 \overline{) 53962} \\ \underline{- 430} \\ 1096 \\ \underline{- 1075} \\ 212 \\ \underline{- 0} \\ 212 \end{array}$$

Quotient 250, Divisor = 215

Remainder = 212, Dividend = 53962

Checking :

Dividend = $Q \times D + R$

$= 250 \times 215 + 212$

$= 53750 + 212 = 53962 = \text{Dividend}$

So, answer is correct.

$$\begin{array}{r} \text{g.} \quad 162 \\ 453 \overline{) 73609} \\ \underline{- 453} \\ 2830 \\ \underline{- 2718} \\ 1129 \\ \underline{- 906} \\ 223 \end{array}$$

Quotient 162, Dividend = 493

Remainder = 223, Dividend = 73609

Checking :

Dividend = $Q \times D + R$

= $162 \times 453 + 223$

= $73386 + 223 = 73609$

= Dividend

So, answer is correct.

$$\begin{array}{r} \text{h.} \quad 79 \\ 533 \overline{) 42135} \\ \underline{- 3731} \\ 4825 \\ \underline{- 4797} \\ 28 \end{array}$$

Quotient = 79, divisor = 533

Remainder = 28, Dividend = 42135

Checking :

Dividend = $Q \times D + R$

= $79 \times 533 + 28$

= $42107 + 28 = 42135$

= Dividend

So, answer is correct.

$$\begin{array}{r} \text{i.} \quad 2000 \\ 65 \overline{) 130027} \\ \underline{- 130} \\ 002 \\ \underline{- 0} \\ 27 \\ \underline{- 0} \\ 27 \end{array}$$

Quotient = 2000, Divisor = 65

Remainder = 27, Dividend = 130027

Checking

Dividend = $Q \times D + R$

= $2000 \times 65 + 27 = 130027 = \text{Dividend}$

So, answer is correct.

$$\begin{array}{r} \text{j.} \quad 501 \\ 1055 \overline{) 528717} \\ \underline{- 5275} \\ 1217 \\ \underline{- 1055} \\ 162 \end{array}$$

Quotient = 501, Divisor = 1055

Remainder = 162, Dividend = 528717

Checking :

Dividend = $Q \times D + R$

= $501 \times 1055 + 162 = 528555 + 162$

= 528717 = Dividend

So, answer is correct.

$$\begin{array}{r} \text{k.} \quad \quad \quad 1 \\ 5838 \overline{) 9219} \\ \underline{- 5838} \\ 3381 \end{array}$$

Quotient 1, Divisor = 5838

Remainder = 3381,

Checking :

Dividend = Quotient \times Divisor + Remainder

= $1 \times 5838 + 3381 = 5838 + 3381 = 9219$

= Dividend

So, answer is correct.

$$\begin{array}{r} \text{l.} \quad \quad \quad 180 \\ 2045 \overline{) 369875} \\ \underline{- 2045} \\ 16537 \\ \underline{- 16360} \\ 1775 \\ \underline{\quad 0} \\ 1775 \end{array}$$

Quotient = 180, Divisor = 2045

Remainder = 1775, Dividend = 369879

Checking :

Dividend = $Q \times D + R$

= $180 \times 2045 + 1775$

= $368100 + 1775$

= 369875 = Dividend

So, answer is correct.

$$\begin{array}{r} \text{m.} \quad \quad \quad 1890 \\ 438 \overline{) 828175} \\ \underline{- 438} \\ 3901 \\ \underline{- 3504} \\ 3977 \\ \underline{\quad 3942} \\ 355 \\ \underline{\quad 0} \\ 355 \end{array}$$

Quotient = 1890, divisor = 438

Remainder = 355 dividend = 828175

dividend = 828175

Checking :

Dividend = $Q \times D + R$

= $1890 \times 438 + 355$

= $827820 + 355 = 828175$

= Dividend

So, answer is correct.

$$\begin{array}{r} \text{n.} \quad \quad \quad 1703 \\ 4035 \overline{) 6872879} \\ \underline{- 4035} \\ 28378 \\ \underline{- 28245} \\ 1337 \\ \underline{\quad 0} \\ 13379 \\ \underline{\quad 12105} \\ 1274 \end{array}$$

Quotient = 1703, Divisor = 4035

Remainder = 1274 Dividend = 6872879

Checking :

Dividend = $Q \times D + R$

= $1703 \times 4035 + 1274$

= $6871605 + 1274$

= 6872879 = Dividend

So, answer is correct.

$$\begin{array}{r}
 \text{o.} \quad \quad \quad 130 \\
 1234 \overline{) 160945} \\
 \underline{- 1234} \\
 3754 \\
 \underline{- 3702} \\
 525 \\
 \underline{0} \\
 525
 \end{array}$$

Quotient = 130, Divisor = 1234
 Remainder = 525 Dividend = 160945
 Checking :
 Dividend = $130 \times 1234 + 525$
 $= 160420 + 525 = 160945 = \text{Dividend}$
 So, answer is correct.

$$\begin{array}{r}
 \text{P.} \quad \quad \quad 1457 \\
 3135 \overline{) 4567890} \\
 \underline{- 3135} \\
 14328 \\
 \underline{- 12540} \\
 17889 \\
 \underline{- 15675} \\
 22140 \\
 \underline{- 21945} \\
 195
 \end{array}$$

Quotient = 1457, Divisor = 3135
 Remainder = 195, Dividend = 4567890
 Checking :
 Dividend = $Q \times D + R$
 $= 1457 \times 3135 + 195$
 $= 456765 + 195 = 4567890$
 $= \text{Dividend}$
 So, answer is correct.

Exercise 4.3

1. Fill in the blanks.

- a. $45451 \div 1 = \mathbf{45451}$ b. $29410 \div 29410 = \mathbf{1}$
 c. $0 \div 295 = \mathbf{0}$ d. $0 \div 63935 = \mathbf{0}$

2. Complete the table.

Number	Quotient	Remainder
a. $28973 \div 10$	2897	3
b. $8164 \div 10$	816	4
c. $57987 \div 100$	579	87
d. $18275 \div 100$	182	75
e. $723456 \div 1000$	723	456
f. $612345 \div 1000$	612	345

3. Find :

- a. Quotient = 22, Divisor = 35
 and Remainder = 14
 Number (Dividend) = $\text{Quotient} \times \text{Divisor} + \text{Remainder}$
 $\therefore \text{Number} = 22 \times 35 + 14 = 770 + 14 = 784$
 So, number is **784**

- b. Dividend = 3699, Quotient = 231, Remainder = 3

$$\text{Dividend} = \text{Quotient} \times \text{Divisor} + \text{Remainder}$$

$$3699 = 231 \times \text{Divisor} + 3$$

$$\therefore 3699 - 3 = 231 \times \text{Divisor}$$

$$\therefore 231 \times \text{Divisor} = 3699 - 3 = 3696$$

$$\therefore \text{Divisor} = \frac{3696}{231} = 16$$

$$\begin{array}{r} 16 \\ 231 \overline{) 3696} \\ \underline{- 231} \\ 1386 \\ \underline{- 1386} \\ 0 \end{array}$$

So, Divisor is **16**

Exercise 4.4

1. The cost of 1 set of books = ₹ 1459

$$\therefore \text{The cost of 375 sets of books} = ₹ 1459 \times 375 \\ = ₹ 547125$$

So, the school paid ₹ 5,47,125 for sets of book.

$$\begin{array}{r} 1459 \\ \times 375 \\ \hline 7295 \\ 102130 \\ + 437700 \\ \hline 547125 \end{array}$$

2. The cost of 125 washing machines = ₹ 31,94,375

$$\therefore \text{The cost of 1 washing machine} = ₹ 31,94,375 \div 125 \\ = ₹ 25,555$$

$$\begin{array}{r} 25555 \\ 125 \overline{) 3194375} \\ \underline{- 250} \\ 694 \\ \underline{- 625} \\ 687 \\ \underline{- 625} \\ 625 \\ \underline{- 625} \\ 0 \end{array}$$

So, the cost of one washing machine is ₹ **25,555**.

3. 1 year = 12 months

$$\therefore 2 \text{ years} = 2 \times 12 = 24 \text{ months}$$

$$\therefore \text{Mr Khan deposits in one month} = ₹ 48,290$$

$$\therefore \text{He will deposit in 24 months} = ₹ 48,290 \times 24 \\ = ₹ 11,58,960$$

So, he will have ₹ **11,58,960** in his bank account.

$$\begin{array}{r} 48290 \\ \times 24 \\ \hline 193160 \\ 965800 \\ \hline 1158960 \end{array}$$

4. Number of trees in 1 row = 208
 Number of rows = 1958
 Total number of trees altogether = $1958 \times 208 = 407264$

$$\begin{array}{r}
 1958 \\
 \times 208 \\
 \hline
 15664 \\
 0000 \\
 391600 \\
 \hline
 407264
 \end{array}$$

- So, there are **407264 trees** in Mr Justin's orchard.
5. Total number of apples = 6,48,550
 Number of apples in 1 box = 1526
 \therefore Number of boxes are required = $6,48,550 \div 1526 = 425$ boxes

$$\begin{array}{r}
 425 \\
 1526 \overline{) 648550} \\
 \underline{- 6104} \\
 3815 \\
 \underline{- 3052} \\
 7630 \\
 \underline{7630} \\
 0
 \end{array}$$

- So, **425 boxes** are required to pack 6,48,550 apples.
6. Total seats in stadium = 52,650
 Number of seats in 1 row = 975
 \therefore Number of rows = $52,650 \div 975 = 54$ rows

$$\begin{array}{r}
 54 \\
 975 \overline{) 52650} \\
 \underline{- 4875} \\
 3900 \\
 \underline{- 3900} \\
 0
 \end{array}$$

- So, there are 54 rows of seats in the stadium.
7. 1 book has = 236 pages
 \therefore 1135 books will have = 236×1135
 = 2,67,860 pages

$$\begin{array}{r}
 1135 \\
 \times 236 \\
 \hline
 6810 \\
 34050 \\
 227000 \\
 \hline
 267860
 \end{array}$$

So, **2,67,860 pages** were printed for 1135 books in all.

8. The cost of 216 tables = ₹ 3,35,232
 \therefore The cost of 1 table = ₹ 3,35,232 \div 216
 = ₹ 1552

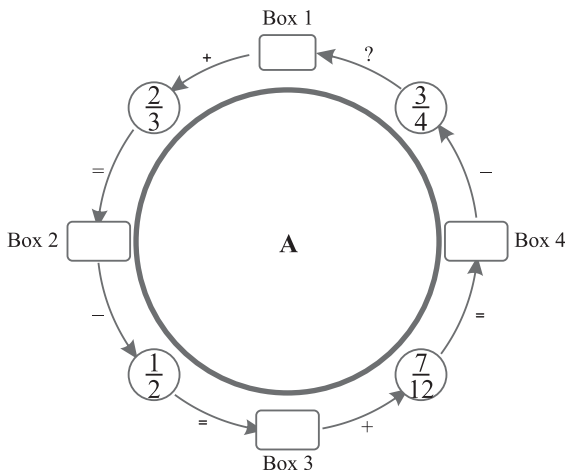
So, the cost of one table is ₹ 1552.

$$\begin{array}{r} 6369 \\ 147 \overline{)936243} \\ \underline{-882} \\ 542 \\ \underline{-441} \\ 1014 \\ \underline{882} \\ 1323 \\ \underline{1323} \\ 0 \end{array}$$

So, the factory manufactured **6369** toys in one day.

So, the other number is 489.

Look Back



Suppose fraction is $\frac{1}{3}$ in box 1

$$\frac{1}{3} + \frac{2}{3} = \frac{3}{3} \quad \text{Box 2}$$

$$\frac{3}{3} - \frac{1}{2} = \frac{6}{6} - \frac{3}{6} = \frac{3}{6} \quad \text{Box 3}$$

$$\frac{3}{6} + \frac{7}{12} = \frac{6}{12} + \frac{7}{12} = \frac{13}{12} \quad \text{Box 4}$$

$$\frac{13}{12} - \frac{3}{4} = \frac{13}{12} - \frac{9}{12} = \frac{4}{12} = \frac{1}{3}$$

Exercise 5.1

1. Simplify :

- a. $20 + 16 \div 2$ (Using DMAS rule)
 $= 20 + 16 \div 2$
 $= 20 + 8 = 28$
- b. $28 - 16 \div 4$ (Using DMAS rule)
 $= 28 - 16 \div 4$
 $= 28 - 4 = 24$

- c. $18 \div 3 - 2$ (Using DMAS rule)
 $= 6 - 2 = 4$
- d. $12 \div 4 + 2$ (Using DMAS rule)
 $= 3 + 2 = 5$
- e. $\frac{1}{2} \times \frac{1}{3} + \frac{1}{4}$ (Using DMAS rule)
 $= \frac{1}{6} + \frac{1}{4}$
 $= \frac{2 \times 1 + 3 \times 1}{12} = \frac{2 + 3}{12} = \frac{5}{12}$
- f. $\frac{3}{4} \times \frac{4}{9} - \frac{1}{8}$ (Using DMAS rule)
 $= \frac{\overset{1}{\cancel{3}}}{\underset{1}{\cancel{4}}} \times \frac{\overset{1}{\cancel{4}}}{\underset{3}{\cancel{9}}} - \frac{1}{8}$
 $= \frac{1}{3} - \frac{1}{8}$
 $= \frac{8 \times 1 - 3 \times 1}{24} = \frac{8 - 3}{24} = \frac{5}{24}$
- g. $60 \times 2 + 18 \div 2 - 43$ (Using DMAS rule)
 $= 60 \times 2 + 9 - 43$
 $= 120 + 9 - 43$
 $= 129 - 43$
 $= 86$
- h. $56 \div 4 + 12 \times 2$ (Using DMAS rule)
 $= 14 + 12 \times 2$
 $= 14 + 24$
 $= 38$
- i. $112 - 45 \div 9 \times 10$ (Using DMAS rule)
 $= 112 - 5 \times 10$
 $= 112 - 50$
 $= 62$
- j. $\frac{3}{7} \div \frac{1}{14} \times \frac{1}{6}$ (Using DMAS rule)
 $= \frac{\overset{1}{\cancel{3}}}{\underset{1}{\cancel{7}}} \times \frac{\overset{2}{\cancel{14}}}{\underset{1}{\cancel{1}}} \times \frac{\overset{1}{\cancel{1}}}{\underset{2}{\cancel{6}}} = \frac{1}{1} = 1$
- k. $\frac{4}{7} - \frac{1}{7} \times \frac{2}{3}$ (Using DMAS rule)
 $= \frac{4}{7} - \frac{2}{21}$

$$= \frac{3 \times 4 - 1 \times 2}{21} = \frac{12 - 2}{21} = \frac{10}{21}$$

1. $4\frac{1}{4} \div \frac{17}{16} + \frac{1}{2}$

$$= \frac{17}{4} \div \frac{17}{16} + \frac{1}{2} \text{ (Using DMAS rule)}$$

$$= \frac{\cancel{17}^1}{4_1} \times \frac{\cancel{16}^4}{\cancel{17}_1} + \frac{1}{2}$$

$$= \frac{4}{1} + \frac{1}{2} = \frac{2 \times 4 + 1 \times 1}{2} = \frac{8 + 1}{2} = \frac{9}{2} = 4\frac{1}{2}$$

2. **Fill in the correct symbol +, -, x or ÷ to make the sum correct.**

a. $15 \times 4 + 24 \div 3 = 68$

b. $8 \times 3 - 6 \div 2 = 21$

c. $6 \div 2 - 1 = 2$

d. $6 + 8 - 42 \div 6 = 7$

e. $15 \div 5 + 4 = 7$

f. $4 \times 3 + 2 = 14$

Mental Maths

1. **Fill in the missing numbers.**

$$5 + 3 + (4 + 5 \times 4 \times 3) = 72$$

Use the numbers : 2, 5, 3 and 4

2. **Fill in the missing operations.**

$$(7 + 5) + 3 \times 2 \times 4 + (2 \times 1) = 38$$

Use the operations : $\times, \div, \times, \div, +, -$ and $+$

Exercise 5.2

1. **Simplify using BODMAS rule :**

a. $\{32 - (15 + 7)\} \times 2$ (Using BODMAS rule)

$$= \{32 - 22\} \times 2$$

$$= 10 \times 2$$

$$= 20$$

b. $40 \div (1 + 6 - 2) + 5$ (Using BODMAS rule)

$$= 40 \div (1 + 4) + 5$$

$$= 40 \div 5 + 5$$

$$= 8 + 5$$

$$= 13$$

c. $\{5 + (48 \div 12)\} - 2 \times 3$ (Using BODMAS rule)

$$= \{5 + 4\} - 2 \times 3$$

$$= 9 - 6$$

$$= 3$$

d. $64 \div 16 \times (3 + 2)$ (Using BODMAS rule)

$$= 64 \div 16 \times (5)$$

- $$= 4 \times 5$$
- $$= 20$$
- e. $3 + [\{(4 \div 4) + 1\} \times 8]$ (Using BODMAS rule)
- $$= 3 + [\{1 + 1\} \times 8]$$
- $$= 3 + [2 \times 8]$$
- $$= 3 + 16$$
- $$= 19$$
- f. $[32 + \{44 - (32 \div 4)\}]$ (Using BODMAS rule)
- $$= [32 + \{44 - 8\}]$$
- $$= [32 + 36]$$
- $$= 68$$
- g. $17 + [8 - \{5 + (10 \div 5)\}]$ (Using BODMAS rule)
- $$= 17 + [8 - \{5 + 2\}]$$
- $$= 17 + [8 - 7]$$
- $$= 17 + 1$$
- $$= 18$$
- h. $[\{66 - (13 + 14)\} \div 3] + 9$ (Using BODMAS rule)
- $$= [\{66 - 27\} \div 3] + 9$$
- $$= [39 \div 3] + 9$$
- $$= 13 + 9$$
- $$= 22$$

2. Simplify these and reduce your answer to the lowest terms :

- a. $17 + [11 - \{8 + 3 - (9 \text{ of } 6 + 7 - 13 \times 4)\}]$ (Using BODMAS rule)
- $$= 17 + [11 - \{8 + 3 - (9 \times 6 + 7 - 13 \times 4)\}]$$
- $$= 17 + [11 - \{8 + 3 - (54 + 7 - 52)\}]$$
- $$= 17 + [11 - \{11 - (61 - 52)\}]$$
- $$= 17 + [11 - \{11 - 9\}]$$
- $$= 17 + [11 - 2]$$
- $$= 17 + 9$$
- $$= 26$$
- b. $15 + 9 \div 3 - [5 \times 3 - \{5 - (8 - 5)\}]$ (Using BODMAS rule)
- $$= 15 + 9 \div 3 - [5 \times 3 - \{5 - 3\}]$$
- $$= 15 + 9 \div 3 [15 - 2]$$
- $$= 15 + 9 \div 3 - 13$$
- $$= 15 + 3 - 13$$
- $$= 18 - 13$$
- $$= \underline{5}$$

- c. $14 + 3 \{34 - 18 - 14\} \div 3 [6 \times 2 + 17 - (2 \div 7)]$
 (Using BODMAS rule)
 $= 14 + 3 \{34 - 32\} \div 3 [12 + 17 - \frac{2}{7}]$
 $= 14 + 3 \times 2 \div 3 [29 - \frac{2}{7}]$
 $= 14 + 3 \times 2 \div 3 [\frac{29}{1} - \frac{2}{7}]$
 $= 14 + 3 \times 2 \div 3 [\frac{203 - 2}{7}]$
 $= 14 + 3 \times 2 \div \frac{3 \times 201}{7}$
 $= 14 + \frac{3 \times 7 \times 2}{3 \times 201}$
 $= 14 + \frac{14}{201}$
 $= 14 \frac{14}{201}$
- d. $27 \div 3 \times (7 - 4) + 2 \times 9 \div (4 + 2)$
 (Using BODMAS rule)
 $= 9 \times (3) + 2 \times 9 \div 6$
 $= 27 + \frac{2 \times 9}{\cancel{6} 3}$
 $= 27 + 3$
 $= \mathbf{30}$
- e. $20 - [5 \times \{(7 + 2) \div 3\}]$
 (Using BODMAS rule)
 $= 20 - [5 \times \frac{\cancel{9}^3}{\cancel{3}_1}]$
 $= 20 - 15$
 $= \mathbf{5}$
- f. $9 + \{20 - 3 \text{ of } 5 + (20 + 40 - 25 \div 5)\}$
 (Using BODMAS rule)
 $= 9 + \{20 - 15 + (60 - 5)\}$
 $= 9 + \{5 + 55\}$
 $= 9 + 60$
 $= \mathbf{69}$

Hots

$$\begin{aligned} &= 4 + 4 - 4 \div 4 \\ &= 4 + 4 - 1 \\ &= 8 - 1 \\ &= 7 \end{aligned}$$

Multiple Choice Questions

Tick (✓) the correct choice :

- Ans. 1. b. 1 2. b. BODMAS 3. a. 31.6
4. c. 9 5. a. 13

6

Multiples and Factors

Look Back

Complete the following table and encircle the common multiples.

20 multiples of 2	10 multiples of 4	10 multiples of 5
2, 4, 6, 8, 10, 12, 14, 16, 18, <u>20</u> , 22, 24, 26, 28, 30, 32, 34, 36, 38, <u>40</u>	4, 8, 12, 16, <u>20</u> , 24, 28, 32, 36, <u>40</u> .	5, 10, 15, <u>20</u> , 25, 30, 35, <u>40</u> , 45, 50.

- a. Common multiples of 2 and 4 are **4, 8, 12, 16, 20, 24, 28, 36, 40**.
b. Common multiples of 2, 4 and 5 are **20, 40**

Mental Maths

Write the

1. 4, 8, 12. 2. 7, 21, 35, 49, 63. 3. 30
4. 9 5. 5, 15

Mental Maths

A. Fill in the blanks.

- 1 is a factor of all numbers.
- 2 is a factor of all **even** numbers.
- The smallest factor of 14 is **1**.
- 6 is a factor of 18 as 18 can be divided by **6** exactly.
- All numbers except 1 have at least **2** factors.

Exercise 6.1

1. Test whether the following numbers are divisible by 2, 3, 5 and 10.

- a. In 140, the digit at the ones place is 0. So 140 is **divisible by 2, 5 and 10.**

$$140 \Rightarrow 1 + 4 + 0 = 5$$

5 is not divisible by 3. So 140 is not divisible by 3.

- b. In 3650, the digit at the ones place is 0. So 3650 is **divisible by 2, 5 and 10.**

$$1650 \Rightarrow 3 + 6 + 5 + 0 = 14$$

14 is not divisible by 3. So 3650 is not divisible by 3.

- c. In 56,982 the digit at the ones place is 2. So 56,982 is **divisible by 2 but not divisible by 5 and 10.**

$$56,982 \Rightarrow 5 + 6 + 9 + 8 + 2 = 30$$

30 is divisible by 3. So, 56982 is **divisible by 3.**

- d. In 83,001, the digit at ones place is 1. So it is not **divisible by 2, 5 and 10.**

$$83,001 \Rightarrow 8 + 3 + 0 + 0 + 1 = 12$$

12 is divisible by 3. So it is divisible by 3.

- e. In 37,100 the digit at ones place is 0. So 37,100 is **divisible by 2, 5 and 10.**

$$37,100 \Rightarrow 3 + 7 + 1 + 0 + 0 = 11$$

11 is not divisible by 3. So 37,100 is **not divisible by 3.**

- f. In 69,313, the digit at ones place is 3. So 69,313 is **not divisible by 2, 5 and 10.**

$$69313 \Rightarrow 6 + 9 + 3 + 1 + 3 = 22.$$

22 is not divisible by 3. So 69,313 is **not divisible by 3.**

2. Test whether the following numbers are divisible by 6.

- a. In 5070, the digit at ones place is 0. So it is divisible by 2.

$$5070 \Rightarrow 5 + 0 + 7 + 0 = 12 \text{ is divisible by 3.}$$

So it is **divisible by 3.** So it is **divisible by 6.**

- b. In 12,460 the digit at ones place is 0. So it is divisible by 2.

$$12460 \Rightarrow 1 + 2 + 4 + 6 + 0 = 13. 13 \text{ is not divisible by 3 so}$$

12460 is **not divisible by 3** and also 6.

- c. 30654

In 30,654, the digit at ones place is 4. So it is **divisible by 2.**

$$30654 \Rightarrow 3 + 0 + 6 + 5 + 4 = 18. 18 \text{ is divisible by 3}$$

So, 30,654 is **divisible** by 3. So it is **divisible** by 2 and 3, so it is also **divisible by 6**.

d. 324368

In 3,24,368, the digit at the ones place is 8. So it is divisible by 2.

$324368 \Rightarrow 3 + 2 + 4 + 3 + 6 + 8 = 26$. 26 is not divisible by 3. So 324368 is **not divisible** by 6

e. In 75,642, the digit at the ones place is 2. So 75,642 is divisible by 2.

$75,642 \Rightarrow 7 + 5 + 6 + 4 + 2 = 24$. 24 is divisible by 3.

So, 75,642 is divisible by 3.

So 75,642 is **divisible by 2** and 3 so is also **divisible by 6**.

f. In 56,523, the digit at ones place is 3.

So it not divisible by 2.

Hence 56,523 is **not divisible by 6**.

3. Test whether the following numbers are divisible by 4 and 8.

a. The number formed by the last two digits of 35056 is 56 which is divisible by 4.

So, 35056 is divisible by 4.

The number formed by the last three digits of 35056 is 056 which is divisible by 8.

So, 35056 is divisible by 8

b. The number formed by the last two digits of 810524 is 24 which divisible by 4.

So, 810524 is divisible by 4

The number formed by last three digits of 810524 is 524 which is not divisible by 8.

So, 810524 is **not divisible by 8**.

c. The number formed by last two digits of 13408 is 08 which is divisible by 4.

So, 13408 is **divisible by 4**.

The number formed by last three digits of 13408 is 408 which is **divisible by 8**.

So, 13408 is divisible by 8.

d. The number formed by last two digits of 125032 is 32 which is divisible by 4.

So 125032 is **divisible by 4**.

The number formed by last three digits of 125032 is 032 which is divisible by 8.

So, 125032 is divisible by 8.

- e. Since the last two digit of 2627000 are zeros, it is divisible by 4.

Since the last three digits of 2627000 are zeros, it is divisible by 8.

- f. The number formed by last two digits of 9876214 is 14 which is not **divisible by 4**.

So 9876214 is not divisible by 4.

the number formed by last three digits of 9876214 is 214 which is not divisible by 8.

So 9876214 is not **divisible by 8**.

4. Test which of the following numbers are divisible by 9.

- a. $64 \Rightarrow 6 + 4 = 10$ the sum of digit of 64 is 10 which is **not divisible by 9**.

So, 64 is not divisible by 9.

- b. $8108 \Rightarrow 8 + 1 + 0 + 8 = 17$ the sum of digits of 8108 is 17 which is **not divisible by 9**.

So, 8108 is not divisible by 9.

- c. $174331 \Rightarrow 1 + 7 + 4 + 3 + 3 + 1 = 19$ the sum of digits of 174331 is 19 which is not divisible by 9.

So, 174331 is **not divisible by 9**.

- d. $72432 \Rightarrow 7 + 2 + 4 + 3 + 2 = 18$, the sum of digit of 72432 is 18 which is divisible by 9.

So, 72432 is **divisible by 9**.

- e. $432981 \Rightarrow 4 + 3 + 2 + 9 + 8 + 1 = 27$, the sum of digits of 432 981 is 27 which is divisible by 9.

So, 432981 is **divisible by 9**.

- f. $2872364 \Rightarrow 2 + 8 + 7 + 2 + 3 + 6 + 4 = 32$, the sum of digits of 2872364 is 32 which is not divisible by 9.

So, 2872364 is **not divisible by 9**.

5. Test of the following numbers are divisible by 11.

- a. In 3663, sum of first alternate digits = $3 + 6 = 9$

Sum of second alternate digit = $6 + 3 = 9$

Difference between the sum of alternate digits of 3663 = $9 - 9 = 0$

Difference between the sum of alternate digits is zero. So 3663 **is divisible by 11**.

- b. In 57950, sum of the first alternate digits = $5 + 9 + 0 = 14$

Sum of the second alternate digits = $7 + 5 = 12$

Difference between the sum of alternate digits = $14 - 12 = 2$

Difference between the sum of alternate digits is not zero or not a multiple of 11.

So, 57950 **is not divisible by 11**

- c. In 247269

Sum of first alternate digits = $2 + 7 + 6 = 15$

Sum of second alternate digits = $4 + 2 + 9 = 15$

Difference between alternate digits is zero

So, 247269 **is divisible by 11**.

- d. In 84927,

Sum of first alternate digits = $8 + 9 + 7 = 24$

Sum of second alternate digits = $4 + 2 = 6$

Difference between the alternate digits = $24 - 6 = 18$

Difference between the alternate digits is not zero nor the multiple of 11.

So, 84,927 is not divisible by 11.

- e. In 3330976

Sum of the first alternate digits = $3 + 3 + 9 + 6 = 21$

Sum of the second alternate digits = $3 + 0 + 7 = 10$

Difference between the sum of alternate digits = $21 - 10 = 11$

So, 3330976 **is divisible by 11**.

- f. In 437194,

Sum of the first alternate digits = $4 + 7 + 9 = 20$

Sum of the second alternate digits = $3 + 1 + 4 = 8$

Difference between the sum of alternate digits = $20 - 8 = 12$

Which is not zero not multiple of 11.

So, 437194 **is not divisible by 11**.

Exercise 6.2

1. Make a factor tree for the following numbers.

a.

$$\begin{array}{c}
 98 \\
 \swarrow \quad \searrow \\
 2 \times 49 \\
 \swarrow \quad \searrow \quad \swarrow \quad \searrow \\
 2 \quad 7 \times 7 \\
 \therefore 98 = 2 \times 7 \times 7
 \end{array}$$

b.

$$\begin{array}{c}
 24 \\
 \swarrow \quad \searrow \\
 2 \times 12 \\
 \swarrow \quad \searrow \quad \swarrow \quad \searrow \\
 2 \times 2 \times 6 \\
 \swarrow \quad \searrow \quad \swarrow \quad \searrow \\
 2 \times 2 \times 2 \times 3 \\
 \therefore 24 = 2 \times 2 \times 2 \times 3
 \end{array}$$

c.

$$\begin{array}{c}
 35 \\
 \swarrow \quad \searrow \\
 5 \times 7 \\
 \therefore 35 = 5 \times 7
 \end{array}$$

d.

$$\begin{array}{c}
 132 \\
 \swarrow \quad \searrow \\
 2 \times 66 \\
 \swarrow \quad \searrow \quad \swarrow \quad \searrow \\
 2 \times 2 \times 33 \\
 \swarrow \quad \searrow \quad \swarrow \quad \searrow \\
 2 \times 2 \times 3 \times 11 \\
 \therefore 132 = 2 \times 2 \times 3 \times 11
 \end{array}$$

e.

$$\begin{array}{c}
 111 \\
 \swarrow \quad \searrow \\
 3 \times 37 \\
 \therefore 111 = 3 \times 37
 \end{array}$$

2. Write the following numbers as the product of their prime factors. Use division method.

a.

$$\begin{array}{r}
 2 \overline{)156} \\
 \underline{2 78} \\
 3 39 \\
 \underline{3 13} \\
 13 13 \\
 \underline{13 13} \\
 1
 \end{array}$$

$\therefore 156 = 2 \times 2 \times 3 \times 13$

b.

$$\begin{array}{r}
 2 \overline{)500} \\
 \underline{2 250} \\
 5 125 \\
 \underline{5 25} \\
 5 5 \\
 \underline{5 5} \\
 1
 \end{array}$$

$\therefore 500 = 2 \times 2 \times 5 \times 5 \times 5$

c.

$$\begin{array}{r}
 2 \overline{)750} \\
 \underline{3 375} \\
 5 125 \\
 \underline{5 25} \\
 5 5 \\
 \underline{5 5} \\
 1
 \end{array}$$

$\therefore 750 = 2 \times 3 \times 5 \times 5 \times 5$

d.

$$\begin{array}{r}
 2 \overline{)864} \\
 \underline{2 432} \\
 2 216 \\
 \underline{2 108} \\
 2 54 \\
 \underline{3 27} \\
 3 9 \\
 \underline{3 3} \\
 1
 \end{array}$$

$\therefore 864 = 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$

$$\begin{array}{r|l} 2 & 242 \\ \hline 11 & 121 \\ \hline 11 & 11 \\ \hline & 1 \end{array}$$

$$\therefore 242 = 2 \times 11 \times 11$$

3. Which of the following pairs are co-prime?

a. Factor of 24 = 1, 2, 3, 4, 6, 8, 12, 24

Factor of 39 = 1, 3, 13, 39

Common factor of 24 and 39 = 1, 3 (two)

So, 24 and 39 **are not co-prime numbers.**

b. Factor of 16 = 1, 2, 4, 8, 16

Factor of 21 = 1, 3, 7, 21

Common factor of 16 and 21 is 1 (only)

So 16 and 21 **are co-prime numbers.**

c. Factor of 1 = 1

Factor of 35 = 1, 5, 7, 35

Common factor of 1 and 35 = 1 (only one)

So, 1 and 35 **are co-prime numbers.**

d. Factor of 55 = 1, 5, 11, 55

Factor of 57 = 1, 57

Common factor of 55 and 57 = 1 (only one)

So 55 and 57 **are co-prime numbers.**

e. 46 and 108

Factor of 46 = 1, 2, 23

Factor of 108 = 1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 108

Common factor of 46 and 108 = 1, 2 (two)

So 46 and 108 **are not co-prime numbers.**

4. Sort the prime, composite and all pairs of co-prime numbers from the table.

In the table,

Prime numbers – 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43 and 47.

Composite numbers – 4, 6, 8, 9, 10, 12, 14, 15, 16, 18, 20, 21, 22, 24, 25, 26, 27, 28, 30, 32, 33, 34, 35, 36, 38, 39, 40, 42, 44, 45, 46, 48 and 50

Pairs of co-prime numbers – 1 and all numbers other than 1, 2 and all odd numbers 3 and other than multiples of 3, 4 and all odd numbers, 5 and other than multiples of 5 and so on.

Exercise 6.3

1. Find the HCF by prime factorization method :

- a. Factors of 28 = $2 \times 2 \times 7$
Factors of 35 = $5 \times 1 \times 7$
HCF of 28 and 35 = 7
- b. Factors of 15 = 3×5
Factors of 30 = $3 \times 5 \times 2$
HCF of 15 and 30 = $3 \times 5 = 15$
- c. Factors of 27 = $3 \times 3 \times 3$
Factors of 54 = $3 \times 3 \times 3 \times 2$
HCF of 27 and 54 = $3 \times 3 \times 3 = 27$
- d. Factors of 24 = $2 \times 2 \times 2 \times 3$
Factors of 32 = $2 \times 2 \times 2 \times 2 \times 2$
Factors of 56 = $2 \times 2 \times 2 \times 7$
HCF of 24, 32 and 56 = $2 \times 2 \times 2 = 8$
- e. Factors of 99 = $3 \times 3 \times 11$
Factors of 33 = 3×11
HCF of 99 and 33 = $3 \times 11 = 33$
- f. Factors of 20 = $2 \times 2 \times 5$
Factors of 50 = $2 \times 5 \times 5$
Factors of 90 = $2 \times 3 \times 3 \times 5$
HCF of 20, 50 and 90 = $2 \times 5 = 10$
- g. Factors of 64 = $2 \times 2 \times 2 \times 2 \times 2 \times 2$
Factors of 74 = 2×37
Factors of 84 = $2 \times 2 \times 3 \times 7$
HCF of 64, 74 and 84 = 2
- h. Factors of 31 = 1×31
Factors of 37 = 1×37
Factors of 33 = $1 \times 3 \times 11$
 \therefore HCF of 31, 37 and 33 = 1
- i. Factors of 96 = $2 \times 2 \times 2 \times 2 \times 3 \times 2 \times 2$
Factors of 48 = $2 \times 2 \times 2 \times 3 \times 2$
Factors of 120 = $2 \times 2 \times 2 \times 3 \times 5$
HCF of 96, 48 and 120 = $2 \times 2 \times 2 \times 3 = 24$
- j. Factors of 45 = $3 \times 3 \times 5$
Factors of 65 = 13×5
Factors of 75 = $3 \times 5 \times 5$
 \therefore HCF of 45, 65 and 75 = 5

2. Find the HCF using the long division method.

$$\begin{array}{r} 18 \overline{)22} 1 \\ - 18 \\ \hline 4 \overline{)18} \\ - 16 \\ \hline 2 \overline{)4} 2 \\ - 4 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of 22 and 18} = 2$$

$$\begin{array}{r} 15 \overline{)30} 2 \\ - 30 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of 15 and 30} = 15$$

$$\begin{array}{r} 10 \overline{)18} 1 \\ - 10 \\ \hline 8 \overline{)10} 1 \\ - 8 \\ \hline 2 \overline{)8} 4 \\ - 8 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of 18 and 10} = 2$$

$$\begin{array}{r} 27 \overline{)30} 1 \\ - 27 \\ \hline 3 \overline{)27} 9 \\ - 27 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of 27 and 30} = 3$$

$$\begin{array}{r} 28 \overline{)56} 2 \\ - 56 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of 28 and 56} = 28$$

$$\begin{array}{r} 28 \overline{)35} 1 \\ - 28 \\ \hline 7 \overline{)28} 4 \\ - 28 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of 28 and 35} = 7$$

$$\begin{array}{r} 64 \overline{)80} 1 \\ - 64 \\ \hline 16 \overline{)64} 4 \\ - 64 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of 64 and 80} = 16$$

$$\begin{array}{r} 25 \overline{)36} 1 \\ - 25 \\ \hline 11 \overline{)25} 2 \\ - 22 \\ \hline 3 \overline{)11} 2 \\ - 9 \\ \hline 3 \overline{)11} 3 \\ - 9 \\ \hline 2 \overline{)3} 1 \\ - 2 \\ \hline 1 \overline{)2} 2 \\ - 2 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 1 \overline{)80} 80 \\ - 8 \\ \hline 00 \\ - 0 \\ \hline 0 \end{array}$$

$$\therefore \text{HCF of 25, 36 and 80} = 1$$

$$\begin{array}{r} 15 \overline{)30} 2 \\ - 30 \\ \hline 0 \\ 15 \overline{)105} 7 \\ - 105 \\ \hline 0 \end{array}$$

\therefore HCF of 15, 30 and 105 = **15**

$$\begin{array}{r} 60 \overline{)100} 1 \\ - 60 \\ \hline 40 \overline{)60} 1 \\ - 40 \\ \hline 20 \overline{)40} 2 \\ - 40 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 20 \overline{)125} 66 \\ - 120 \\ \hline 5 \overline{)20} 4 \\ - 20 \\ \hline 0 \end{array}$$

\therefore HCF of 60, 100 and 125 = 5

3. a. When we divide 163 and 243 by the required number we get a remainder 3.

It means that the required number is HCF of $163 - 3 = 160$ and $243 - 3 = 240$.

HCF = 80

So required largest number is 80.

$$\begin{array}{r} 160 \overline{)240} 1 \\ - 160 \\ \hline 80 \overline{)16} 2 \\ - 16 \\ \hline 0 \end{array}$$

- b. The capacity of the largest container = HCF of 16 and 24.

HCF of 16 and 24 = 8

So, the capacity of the largest container is 8 L.

$$\begin{array}{r} 16 \overline{)24} 1 \\ - 16 \\ \hline 8 \overline{)16} 2 \\ - 16 \\ \hline 0 \end{array}$$

- c. Maximum length of each piece of ropes = HCF of 18 and 24.

HCF of 18 and 24 = 6

\therefore Maximum length of each piece = **6 m**.

$$\begin{array}{r} 18 \overline{)24} 1 \\ - 16 \\ \hline 6 \overline{)18} 3 \\ - 18 \\ \hline 0 \end{array}$$

- d. Maximum number of flower pots that can be arrange in a single row will be HCF of 36, 48 and 60.

HCF of 36, 48 and 60 = 12

So, 12 flower pots can be arranged in a single row.

$$\begin{array}{r} 36 \overline{)48} 1 \\ - 36 \\ \hline 12 \overline{)36} 3 \\ - 36 \\ \hline 0 \end{array}$$

Exercise 6.4

1. Find the LCM using the prime factorization method.

a. $12 = 2 \times 2 \times 3$

$15 = 1 \times 1 \times 3 \times 5$

$LCM = 2 \times 2 \times 3 \times 5 = 60$

- b. $18 = 2 \times 3 \times 3$
 $27 = 1 \times 3 \times 3 \times 3$
 $\text{LCM} = 2 \times 3 \times 3 \times 3 = \mathbf{54}$
- c. $42 = 2 \times 3 \times 7$
 $70 = 2 \times 1 \times 7 \times 5$
 $\text{LCM} = 2 \times 3 \times 7 \times 5 = \mathbf{210}$
- d. $40 = 2 \times 2 \times 2 \times 5$
 $32 = 2 \times 2 \times 2 \times 1 \times 2 \times 2$
 $\text{LCM} = 2 \times 2 \times 2 \times 5 \times 2 \times 2 = \mathbf{160}$
- e. $24 = 2 \times 2 \times 2 \times 3$
 $36 = 2 \times 2 \times 1 \times 3 \times 3$
 $\text{LCM} = 2 \times 2 \times 2 \times 3 \times 3 = \mathbf{72}$
- f. $12 = 2 \times 2 \times 3$
 $15 = 1 \times 1 \times 3 \times 5$
 $40 = 2 \times 2 \times 1 \times 5 \times 2$
 $\text{LCM} = 2 \times 2 \times 3 \times 5 \times 2 = \mathbf{120}$
- g. $15 = 3 \times 5$
 $25 = 1 \times 5 \times 5$
 $30 = 3 \times 5 \times 1 \times 2$
 $\text{LCM} = 3 \times 5 \times 5 \times 2 = \mathbf{150}$
- h. $20 = 2 \times 2 \times 5$
 $30 = 2 \times 1 \times 5 \times 3$
 $50 = 2 \times 1 \times 5 \times 1 \times 5$
 $\text{LCM} = 2 \times 2 \times 5 \times 3 \times 5 = \mathbf{300}$
- i. $10 = 2 \times 5$
 $15 = 1 \times 5 \times 3$
 $20 = 2 \times 5 \times 1 \times 2$
 $\text{LCM} = 2 \times 5 \times 3 \times 2 = \mathbf{60}$
- j. $30 = 2 \times 3 \times 5$
 $45 = 1 \times 3 \times 5 \times 3$
 $60 = 2 \times 3 \times 5 \times 1 \times 2$
 $\text{LCM} = 2 \times 3 \times 5 \times 3 \times 2 = \mathbf{180}$
- k. $33 = 3 \times 11$
 $22 = 1 \times 11 \times 2$
 $11 = 1 \times 11 \times 1$
 $\text{LCM} = 3 \times 11 \times 2 = \mathbf{66}$
- l. $25 = 5 \times 5$
 $50 = 5 \times 5 \times 2$
 $70 = 5 \times 1 \times 2 \times 7$
 $\text{LCM} = 5 \times 5 \times 2 \times 7 = \mathbf{350}$

2. Find the LCM by the short division method.

$$\begin{array}{r|l} 2 & 30, 55 \\ \hline 3 & 15, 55 \\ \hline 5 & 5, 55 \\ \hline 11 & 1, 11 \\ \hline & 1, 11 \end{array}$$

$$\text{LCM} = 2 \times 3 \times 5 \times 11 \\ = \mathbf{330}$$

$$\begin{array}{r|l} 2 & 18, 45 \\ \hline 3 & 9, 45 \\ \hline 3 & 3, 15 \\ \hline 5 & 1, 5 \\ \hline & 1, 1 \end{array}$$

$$\text{LCM} = 2 \times 3 \times 3 \times 5 \\ = \mathbf{90}$$

$$\begin{array}{r|l} 2 & 20, 65 \\ \hline 2 & 10, 65 \\ \hline 5 & 5, 65 \\ \hline 13 & 1, 13 \\ \hline & 1, 1 \end{array}$$

$$\text{LCM} = 2 \times 2 \times 5 \times 13 \\ = \mathbf{260}$$

$$\begin{array}{r|l} 3 & 9, 27 \\ \hline 3 & 3, 9 \\ \hline 3 & 1, 3 \\ \hline & 1, 1 \end{array}$$

$$\text{LCM} = 3 \times 3 \times 3 \\ = \mathbf{27}$$

$$\begin{array}{r|l} 2 & 72, 32 \\ \hline 2 & 36, 16 \\ \hline 2 & 18, 8 \\ \hline 2 & 9, 4 \\ \hline 2 & 9, 2 \\ \hline 3 & 9, 1 \\ \hline 3 & 3, 1 \\ \hline & 1, 1 \end{array}$$

$$\text{LCM} = 2 \times 2 \times 2 \times 2 \times \\ 2 \times 3 \times 3 = \mathbf{288}$$

$$\begin{array}{r|l} 2 & 12, 20 \\ \hline 2 & 6, 10 \\ \hline 3 & 3, 5 \\ \hline 5 & 1, 5 \\ \hline & 1, 1 \end{array}$$

$$\text{LCM} = 2 \times 2 \times 3 \times 5 \\ = \mathbf{60}$$

$$\begin{array}{r|l} 2 & 11, 24, 33 \\ \hline 2 & 11, 12, 33 \\ \hline 2 & 11, 6, 33 \\ \hline 3 & 11, 1, 11 \\ \hline 11 & 1, 1, 1 \end{array}$$

$$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 11 \\ = \mathbf{264}$$

$$\begin{array}{r|l} 2 & 27, 54, 63 \\ \hline 3 & 27, 27, 63 \\ \hline 3 & 9, 9, 21 \\ \hline 3 & 3, 3, 7 \\ \hline 7 & 1, 1, 7 \\ \hline & 1, 1, 1 \end{array}$$

$$\text{LCM} = 2 \times 3 \times 3 \times \\ 3 \times 7 = \mathbf{378}$$

$$\begin{array}{r|l} 2 & 10, 15, 25 \\ \hline 3 & 5, 15, 25 \\ \hline 5 & 5, 5, 25 \\ \hline 5 & 1, 1, 5 \\ \hline & 1, 1, 1 \end{array}$$

$$\text{LCM} = 2 \times 3 \times \\ 5 \times 5 = \mathbf{150}$$

$$\begin{array}{r|l} 2 & 14, 16, 8 \\ \hline 2 & 7, 8, 4 \\ \hline 2 & 7, 4, 2 \\ \hline 2 & 7, 2, 1 \\ \hline 7 & 1, 1, 1 \end{array}$$

$$\text{LCM} = 2 \times 2 \\ \times 2 \times 2 \times 7 \\ = \mathbf{112}$$

$$\begin{array}{r|l}
 2 & 16, 32, 40 \\
 \hline
 2 & 8, 16, 20 \\
 \hline
 2 & 4, 8, 10 \\
 \hline
 2 & 2, 4, 5 \\
 \hline
 2 & 1, 2, 5 \\
 \hline
 5 & 1, 1, 5 \\
 \hline
 & 1, 1, 1
 \end{array}$$

$$\begin{aligned}
 \text{LCM} &= 2 \times 2 \times 2 \times 2 \times 2 \times 5 \\
 &= \mathbf{160}
 \end{aligned}$$

3. a. The required number will be the LCM of 105, 91 and 130.

$$\begin{array}{r|l}
 3 & 105, 91, 130 \\
 \hline
 5 & 35, 91, 130 \\
 \hline
 7 & 7, 91, 26 \\
 \hline
 2 & 1, 13, 26 \\
 \hline
 13 & 1, 13, 13 \\
 \hline
 & 1, 1
 \end{array}$$

$$\text{LCM} = 3 \times 5 \times 7 \times 2 \times 13 = \mathbf{2730}$$

So, the smallest number which is exactly divisible by 105, 91 and 130.

- b. The time in seconds with the three bells toll together will be the LCM of 15, 18, 45.

$$\text{LCM} = 2 \times 3 \times 3 \times 5 = 90$$

90 seconds time with three bells toll together.

$$\begin{array}{r|l}
 2 & 15, 18, 45 \\
 \hline
 3 & 15, 9, 45 \\
 \hline
 3 & 5, 3, 15 \\
 \hline
 5 & 5, 1, 5 \\
 \hline
 & 1, 1, 1
 \end{array}$$

- c. The least number that divisible by all numbers from 1 to 10 will be the LCM of 1 to 10.

$$\begin{aligned}
 \text{LCM} &= 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 7 = 2520
 \end{aligned}$$

The least 2520 will be divisible by all numbers from 1 to 10.

$$\begin{array}{r|l}
 2 & 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 \\
 \hline
 2 & 1, 1, 3, 2, 5, 3, 7, 4, 9, 5 \\
 \hline
 2 & 1, 1, 3, 1, 5, 3, 7, 2, 9, 5 \\
 \hline
 3 & 1, 1, 3, 1, 5, 1, 7, 1, 9, 5 \\
 \hline
 3 & 1, 1, 1, 1, 5, 1, 7, 1, 3, 5 \\
 \hline
 5 & 1, 1, 1, 1, 5, 1, 7, 1, 1, 5 \\
 \hline
 7 & 1, 1, 1, 1, 5, 1, 7, 1, 1, 1 \\
 \hline
 & 1, 1, 1, 1, 1, 1, 1, 1, 1, 1
 \end{array}$$

- d. The least number of marbles will be the LCM of 12, 15 and 20.

LCM = $2 \times 2 \times 3 \times 5 = 60$
 So, 60 marbles will be the number
 that piles of 12, 15 and 20 marbles
 can be made.

2	12, 15, 20
2	6, 15, 10
3	3, 15, 5
5	1, 5, 5
	1, 1

Exercise 6.5

Solve the following.

1. LCM of two numbers = 96

HCF of two number = 8

Ist number = 32

$$\therefore \text{Ist number} \times 2\text{nd} = \text{LCM} \times \text{HCF} = 96 \times 8$$

$$2\text{nd number} = \frac{96 \times 8}{\text{Ist number}} = \frac{96^3 \times 8}{32_1} = 24$$

So, other number will be 24.

2. LCM of two numbers = 60

HCF of two numbers = 4

Ist number = 20

$$\text{Ist number} \times 2\text{nd number} = \text{LCM} \times \text{HCF} = 60 \times 4$$

$$2\text{nd number} = \frac{60 \times 4}{\text{Ist number}} = \frac{60^3 \times 4}{20_1} = 12$$

So, other number will be 12.

3. Two numbers are co-prime

So, HCF of them = 1

LCM of them = 156

Ist number = 13

$$\text{Ist number} \times 2\text{nd number} = \text{LCM} \times \text{HCF} = 156 \times 1$$

$$\therefore 2\text{nd number} = \frac{156 \times 1}{\text{Ist number}} = \frac{156}{13} = 12$$

So, the other number will be 12.

4. The product of two numbers = 3072

LCM of two numbers = 192

$$\text{HCF} \times \text{LCM} = \text{Product of two numbers} = 3072$$

$$\therefore \text{HCF} = \frac{3072}{\text{LCM}} = \frac{3072}{192} = 16$$

So, HCF will be 16.

$$\begin{array}{r} 192 \overline{)3072} 16 \\ - 192 \\ \hline 1152 \\ - 1152 \\ \hline 0 \end{array}$$

Hots

- Ans. 1. LCM 144 2. Time will be 4: 54 P.M. 3. 40 years

Multiple Choice Questions

Tick (✓) the correct choice :







- Ans. 1. b. 3 2. a. 1 3. b. 1 4. c. 10 5. c. 12

7

Fractions

Look Back

1. Match the following using different colours.

a. $\frac{5}{7}$	(i)		one-third
b. $\frac{1}{4}$	(ii)		five-eighths
c. $\frac{2}{3}$	(iii)		five-sevenths
d. $\frac{5}{8}$	(iv)		three-fourth
e. $\frac{3}{4}$	(v)		two-thirds
f. $\frac{1}{3}$	(vi)		one-fourth

2. Join the dots in ascending order and complete the picture.
Colour the picture too.

Do it yourself.

Exercise 7.1

1. Classify the following fractions are proper, improper, mixed and unit :

- | | | |
|--------------------------------------|--------------------------------------|-----------------------------------|
| a. $\frac{1}{9}$ Unit Fraction | b. $\frac{17}{21}$ Proper Fraction | c. $1\frac{9}{20}$ Mixed Fraction |
| d. $\frac{45}{21}$ Improper Fraction | e. $\frac{65}{56}$ Improper Fraction | f. $\frac{4}{5}$ Proper Fraction |

2. Convert the following improper fractions into mixed fractions :

- | | | |
|----------------------------------|------------------------------------|-------------------------------------|
| a. $\frac{18}{7} = 2\frac{4}{7}$ | b. $\frac{129}{8} = 16\frac{1}{8}$ | c. $\frac{49}{13} = 3\frac{10}{13}$ |
|----------------------------------|------------------------------------|-------------------------------------|

$$\text{d. } \frac{106}{25} = 4 \frac{6}{25} \quad \text{e. } \frac{78}{9} = 8 \frac{6}{9}$$

3. Convert the following mixed fractions into improper fractions :

$$\text{a. } 4 \frac{1}{5} = \frac{4 \times 5 + 1}{5} = \frac{21}{5} \quad \text{b. } 3 \frac{9}{11} = \frac{3 \times 11 + 9}{11} = \frac{42}{11}$$

$$\text{c. } 7 \frac{3}{4} = \frac{4 \times 7 + 3}{4} = \frac{31}{4} \quad \text{d. } 9 \frac{1}{7} = \frac{7 \times 9 + 1}{7} = \frac{64}{7}$$

$$\text{e. } 8 \frac{1}{5} = \frac{8 \times 5 + 1}{5} = \frac{41}{5}$$

4. Find three equivalent fractions of the following by multiplication.

$$\text{a. } \frac{5}{7} = \frac{5 \times 2}{7 \times 2}, \frac{5 \times 3}{7 \times 3}, \frac{5 \times 4}{7 \times 4} = \frac{5}{7} = \frac{10}{14}, \frac{15}{21}, \frac{20}{28}$$

$$\text{b. } \frac{6}{7} = \frac{6 \times 2}{7 \times 2}, \frac{6 \times 3}{7 \times 3}, \frac{6 \times 4}{7 \times 4} = \frac{12}{14}, \frac{18}{21}, \frac{24}{28}$$

$$\text{c. } \frac{1}{8} = \frac{1 \times 2}{8 \times 2}, \frac{1 \times 3}{8 \times 3}, \frac{1 \times 4}{8 \times 4} = \frac{2}{16}, \frac{3}{24}, \frac{4}{32}$$

$$\text{d. } \frac{5}{9} = \frac{5 \times 2}{9 \times 2}, \frac{5 \times 3}{9 \times 3}, \frac{5 \times 4}{9 \times 4} = \frac{10}{18}, \frac{15}{27}, \frac{20}{36}$$

$$\text{e. } \frac{2}{5} = \frac{2 \times 2}{5 \times 2}, \frac{2 \times 3}{5 \times 3}, \frac{2 \times 4}{5 \times 4} = \frac{4}{10}, \frac{6}{15}, \frac{8}{20}$$

5. Find the equivalent fraction of $\frac{8}{13}$, having :

$$\text{a. } \frac{8}{13} = \frac{8 \times 3}{13 \times 3} = \frac{24}{39} \quad \text{b. } \frac{8}{13} = \frac{8 \times 5}{13 \times 5} = \frac{40}{65} \quad \text{c. } \frac{8}{13} = \frac{8 \times 7}{13 \times 7} = \frac{56}{91}$$

6. Fill in the blanks :

- Fraction whose value is less than 1 is called **proper** fraction.
- Fractions with the same denominator are called **like** fractions.
- If in a fraction, **numerator** is greater than **denominator** then it is an improper fraction.
- In fraction $\frac{7}{8}$, 7 is the **numerator** and 8 is the **denominator**.

Exercise 7.2

1. Fill in the blanks using <, > or =.

$$\begin{array}{llll} \text{a. } \frac{7}{4} > \frac{3}{5} & \text{b. } \frac{8}{12} > \frac{17}{27} & \text{c. } \frac{1}{12} < \frac{5}{7} & \text{d. } \frac{3}{4} > \frac{2}{3} \\ \text{e. } \frac{2}{8} < \frac{3}{5} & \text{f. } \frac{4}{5} > \frac{3}{4} & \text{g. } \frac{9}{10} > \frac{7}{8} & \text{h. } \frac{7}{10} < \frac{3}{4} \end{array}$$

2. Which is greater?

a. $\frac{7}{8}$ or $\frac{3}{4}$

$$= \frac{7}{8} \text{ or } \frac{3 \times 2}{4 \times 2}$$

$$= \frac{7}{8} \text{ or } \frac{6}{8}$$

$$\therefore \frac{7}{8} > \frac{6}{8}$$

$$\therefore \frac{7}{8} > \frac{3}{4}$$

c. $\frac{8}{11}$ or $\frac{3}{55}$

$$= \frac{8 \times 5}{11 \times 5} \text{ or } \frac{3}{55}$$

$$= \frac{40}{55} \text{ or } \frac{3}{55}$$

$$\therefore \frac{40}{55} > \frac{3}{55}$$

$$\frac{8}{11} > \frac{3}{55}$$

e. $\frac{9}{12}$ or $\frac{8}{18}$

$$= \frac{9 \times 3}{12 \times 3} \text{ or } \frac{8 \times 2}{18 \times 2}$$

$$= \frac{27}{36} \text{ or } \frac{16}{36}$$

$$\therefore \frac{27}{36} > \frac{16}{36}$$

$$= \frac{9}{12} > \frac{8}{18}$$

b. $\frac{3}{4}$ or $\frac{9}{10}$

$$= \frac{3 \times 5}{4 \times 5} \text{ or } \frac{9 \times 2}{10 \times 2}$$

$$= \frac{15}{20} \text{ or } \frac{18}{20}$$

$$= \frac{15}{20} > \frac{18}{20}$$

$$\therefore \frac{9}{10} > \frac{3}{4}$$

d. $\frac{4}{5}$ or $\frac{2}{7}$

$$= \frac{4 \times 7}{5 \times 7} \text{ or } \frac{2 \times 5}{7 \times 5}$$

$$= \frac{28}{35} \text{ or } \frac{10}{35}$$

$$\therefore \frac{28}{35} > \frac{10}{35}$$

$$\therefore \frac{4}{5} > \frac{2}{7}$$

f. $\frac{3}{8}$ or $\frac{9}{15}$

$$= \frac{3 \times 15}{8 \times 15} \text{ or } \frac{2 \times 5}{7 \times 5}$$

$$= \frac{45}{120} \text{ or } \frac{72}{120}$$

$$\therefore \frac{72}{120} > \frac{45}{120}$$

$$\therefore \frac{9}{15} > \frac{3}{8}$$

3. Arrange in ascending order.

a. $\frac{3}{7}, \frac{12}{7}, \frac{5}{7}, \frac{2}{7}$

$$\therefore \frac{2}{7} < \frac{3}{7} < \frac{5}{7} < \frac{12}{7}$$

Thus, ascending order is $\frac{2}{7} < \frac{3}{7} < \frac{5}{7} < \frac{12}{7}$

b. $\frac{5}{20}, \frac{3}{5}, \frac{11}{10}, \frac{13}{15}$ (LCM of 20, 5, 10, 15 = 60)

$$= \frac{5 \times 3}{20 \times 3}, \frac{3 \times 12}{5 \times 12}, \frac{11 \times 6}{10 \times 6}, \frac{13 \times 4}{15 \times 4}$$

$$= \frac{15}{60}, \frac{36}{60}, \frac{66}{60}, \frac{52}{60}$$

$$\text{In ascending order} = \frac{15}{60} < \frac{36}{60} < \frac{52}{60} < \frac{66}{60}$$

$$= \frac{5}{20} < \frac{3}{5} < \frac{13}{15} < \frac{11}{10}$$

c. $\frac{3}{8}, \frac{2}{3}, \frac{7}{12}, \frac{1}{4}$

$$= \frac{3 \times 3}{8 \times 3}, \frac{2 \times 8}{3 \times 8}, \frac{7 \times 2}{12 \times 2}, \frac{1 \times 6}{4 \times 6}$$

$$= \frac{9}{24}, \frac{16}{24}, \frac{14}{24}, \frac{6}{24}$$

In ascending order

$$= \frac{6}{24} < \frac{9}{24} < \frac{14}{24} < \frac{16}{24}$$

$$= \frac{1}{4} < \frac{3}{8} < \frac{7}{12} < \frac{2}{3}$$

d. $\frac{1}{2}, \frac{2}{3}, \frac{3}{4}, \frac{1}{3}$ (LCM of 2, 3, 4, 3 = 12)

$$= \frac{3 \times 3}{8 \times 3}, \frac{2 \times 8}{3 \times 8}, \frac{7 \times 2}{12 \times 2}, \frac{1 \times 6}{4 \times 6}$$

$$= \frac{6}{12}, \frac{8}{12}, \frac{9}{12}, \frac{4}{12}$$

$$= \frac{4}{12} < \frac{6}{12} < \frac{8}{12} < \frac{9}{12}$$

$$\therefore \frac{1}{3} < \frac{1}{2} < \frac{2}{3} < \frac{3}{4}$$

e. $\frac{3}{12}, \frac{7}{8}, \frac{2}{4}, \frac{2}{6}$ (LCM of 12, 8, 4, 6 = 24)

$$= \frac{3 \times 2}{12 \times 2}, \frac{7 \times 3}{8 \times 3}, \frac{2 \times 6}{4 \times 6}, \frac{2 \times 4}{6 \times 4}$$

$$= \frac{6}{24}, \frac{21}{24}, \frac{12}{24}, \frac{8}{24}$$

In ascending order

$$= \frac{6}{24} < \frac{8}{24} < \frac{12}{24} < \frac{21}{24}$$

$$= \frac{3}{12} < \frac{2}{6} < \frac{2}{4} < \frac{7}{8}$$

f. $\frac{4}{5}, \frac{2}{3}, \frac{1}{2}, \frac{5}{6}, \frac{6}{10}$ (LCM of 5, 3, 2, 6, 10 = 30)

$$= \frac{4 \times 6}{5 \times 6}, \frac{2 \times 10}{3 \times 10}, \frac{1 \times 15}{2 \times 15}, \frac{5 \times 5}{6 \times 5}, \frac{6 \times 3}{10 \times 3}$$

$$= \frac{24}{30}, \frac{20}{30}, \frac{15}{30}, \frac{25}{30}, \frac{18}{30}$$

In ascending order

$$= \frac{5}{30} < \frac{18}{30} < \frac{20}{30} < \frac{24}{30} < \frac{25}{30}$$

$$= \frac{1}{2} < \frac{6}{10} < \frac{2}{3} < \frac{4}{5} < \frac{5}{6}$$

4. Arrange in descending order.

a. $\frac{3}{10}, \frac{2}{5}, \frac{7}{15}$ (LCM of 10, 5, 15 = 30)

$$= \frac{3 \times 3}{10 \times 3}, \frac{2 \times 6}{5 \times 6}, \frac{7 \times 2}{15 \times 2}$$

$$= \frac{9}{30}, \frac{12}{30}, \frac{14}{30}$$

In descending order

$$= \frac{14}{30} > \frac{12}{30} > \frac{9}{30}$$

$$= \frac{7}{15} > \frac{2}{5} > \frac{3}{10}$$

b. $\frac{2}{3}, \frac{1}{5}, \frac{1}{2}, \frac{5}{6}$ (LCM of 3, 5, 2, 6 = 30)

$$= \frac{2 \times 10}{3 \times 10}, \frac{1 \times 6}{5 \times 6}, \frac{1 \times 15}{2 \times 15}, \frac{5 \times 5}{6 \times 5}$$

$$= \frac{20}{30}, \frac{6}{30}, \frac{15}{30}, \frac{25}{30}$$

In descending order

$$= \frac{25}{30} > \frac{20}{30} > \frac{15}{30}$$

$$= \frac{5}{6} > \frac{2}{3} > \frac{1}{2} > \frac{1}{5}$$

c. $\frac{3}{8}, \frac{11}{12}, \frac{15}{16}$ (LCM of 8, 12, 16 = 48)

$$= \frac{3 \times 6}{8 \times 6}, \frac{11 \times 4}{12 \times 4}, \frac{15 \times 3}{16 \times 3}$$

$$= \frac{18}{48}, \frac{44}{48}, \frac{45}{48}$$

In descending order

$$= \frac{48}{48} > \frac{44}{48} > \frac{18}{48}$$

$$= \frac{15}{16} > \frac{11}{12} > \frac{3}{8}$$

d. $\frac{1}{8}, \frac{5}{12}, \frac{2}{6}, \frac{3}{4}$

$$= \frac{1 \times 3}{8 \times 3}, \frac{5 \times 2}{12 \times 2}, \frac{2 \times 4}{6 \times 4}, \frac{3 \times 6}{4 \times 6}$$

$$= \frac{3}{24}, \frac{10}{24}, \frac{8}{24}, \frac{18}{24}$$

In descending order $= \frac{18}{24} > \frac{10}{24} > \frac{8}{24} > \frac{3}{24}$

$$= \frac{3}{4} > \frac{5}{12} > \frac{2}{6} > \frac{1}{8}$$

e. $4\frac{2}{7}, 4\frac{8}{2}, 4\frac{11}{14}, 4\frac{3}{7}$

$$= \frac{30}{7}, \frac{16}{2}, \frac{67}{14}, \frac{31}{7} \text{ (LCM of 7, 2, 14 = 14)}$$

$$= \frac{18}{24} > \frac{10}{24} > \frac{8}{24} > \frac{3}{24}$$

$$= \frac{30 \times 2}{7 \times 2}, \frac{16 \times 7}{2 \times 7}, \frac{67}{14}, \frac{31 \times 2}{7 \times 2}$$

In descending order $= \frac{112}{14} > \frac{67}{14} > \frac{62}{14} > \frac{60}{14}$

$$4\frac{8}{2} > 4\frac{11}{14} > 4\frac{3}{7} > 4\frac{2}{7}$$

f. $\frac{3}{4}, \frac{2}{3}, \frac{5}{8}, \frac{7}{9}, \frac{11}{12}$ (LCM of 4, 3, 8, 9, 12 = 72)

$$= \frac{3 \times 18}{4 \times 18}, \frac{2 \times 24}{3 \times 24}, \frac{5 \times 9}{8 \times 9}, \frac{7 \times 8}{9 \times 8}, \frac{11 \times 6}{12 \times 6}$$

$$= \frac{54}{72}, \frac{48}{72}, \frac{45}{72}, \frac{56}{72}, \frac{66}{72}$$

In descending order $= \frac{66}{72} > \frac{56}{72} > \frac{54}{72} > \frac{48}{72} > \frac{45}{72}$

$$= \frac{11}{12} > \frac{7}{9} > \frac{3}{4} > \frac{2}{3} > \frac{5}{8}$$

Exercise 7.3

1. Add.

$$\begin{aligned}
 \text{a. } 2\frac{1}{10} + 3\frac{4}{5} &= \frac{21}{10} + \frac{19}{5} \\
 &= \frac{21}{10} + \frac{19 \times 2}{5 \times 2} \\
 &= \frac{21}{10} + \frac{38}{10} \\
 &= \frac{21+38}{10} \\
 &= \frac{59}{10} \\
 &= 5\frac{9}{10}
 \end{aligned}$$

$$\begin{aligned}
 \text{b. } \frac{9}{20} + \frac{13}{15} &= \frac{9 \times 3}{20 \times 3} + \frac{13 \times 4}{15 \times 4} \\
 &= \frac{27}{60} + \frac{52}{60} \\
 &= \frac{27+52}{60} \\
 &= \frac{79}{60} \\
 &= 1\frac{19}{60}
 \end{aligned}$$

$$\begin{aligned}
 \text{c. } 3\frac{2}{3} + 1\frac{1}{4} &= \frac{11}{3} + \frac{5}{4} \quad (\text{LCM of 3, 4} = 12) \\
 &= \frac{11 \times 4}{3 \times 4} + \frac{5 \times 3}{4 \times 3} \\
 &= \frac{44}{12} + \frac{15}{12} \\
 &= \frac{44+15}{12} \\
 &= \frac{59}{12} = 4\frac{11}{12}
 \end{aligned}$$

$$\begin{aligned}
 \text{d. } 3 + 1\frac{4}{9} + 2\frac{2}{3} &= \frac{3}{1} + \frac{13}{9} + \frac{8}{3} \quad (\text{LCM of 1, 9, 3} = 9) \\
 &= \frac{3 \times 9}{1 \times 9} + \frac{13}{9} + \frac{8 \times 3}{3 \times 3} \\
 &= \frac{27}{9} + \frac{13}{9} + \frac{24}{9} \\
 &= \frac{27+13+24}{9} \\
 &= \frac{64}{9} = 7\frac{1}{9}
 \end{aligned}$$

$$\begin{aligned}
 \text{e. } 4\frac{4}{9} + \frac{7}{24} + \frac{23}{36} &= \frac{40}{9} + \frac{7}{24} + \frac{23}{36} \quad (\text{LCM of 9, 24, 36} = 72) \\
 &= \frac{40 \times 8}{9 \times 8} + \frac{7 \times 3}{24 \times 3} + \frac{23 \times 2}{36 \times 2} \\
 &= \frac{320}{72} + \frac{21}{72} + \frac{46}{72} \\
 &= \frac{320+21+46}{72} = \frac{387}{72}
 \end{aligned}$$

$$\begin{aligned}
 \text{f. } 1\frac{3}{11} + \frac{2}{5} + \frac{4}{55} &= \frac{14}{11} + \frac{2}{5} + \frac{4}{55} \\
 &= \frac{14 \times 5}{11 \times 5} + \frac{2 \times 11}{5 \times 11} + \frac{4}{55} \quad (\text{LCM of 11, 5, 55} = 55) \\
 &= \frac{70}{55} + \frac{22}{55} + \frac{4}{55}
 \end{aligned}$$

$$= 5 \frac{27}{72} = 5 \frac{27 \div 9}{72 \div 9} = 5 \frac{3}{8}$$

$$= \frac{70 + 22 + 4}{55} = \frac{96}{55} = 1 \frac{41}{55}$$

2. Subtract.

a. $10 - \frac{6}{7}$

$$= \frac{10}{1} - \frac{6}{7}$$

$$= \frac{10 \times 7}{1 \times 7} - \frac{6}{7}$$

$$= \frac{70}{7} - \frac{6}{7}$$

$$= \frac{70 - 6}{7}$$

$$= \frac{64}{7} = 9 \frac{1}{7}$$

b. $2\frac{4}{9} - \frac{5}{12}$

$$= \frac{22}{9} - \frac{5}{12} \quad (\text{LCM of } 9 \times 12 = 36)$$

$$= \frac{22 \times 4}{9 \times 4} - \frac{5 \times 3}{12 \times 3}$$

$$= \frac{88}{36} - \frac{15}{36}$$

$$= \frac{88 - 15}{36} = \frac{73}{36} = 2 \frac{1}{36}$$

c. $2\frac{13}{36} - 1\frac{5}{9}$

$$= \frac{85}{36} - \frac{14}{9}$$

(LCM of 36 and 9 = 36)

$$= \frac{85}{36} - \frac{14 \times 4}{9 \times 4}$$

$$= \frac{85}{36} - \frac{56}{36}$$

$$= \frac{85 - 56}{36} = \frac{29}{36}$$

d. $3\frac{4}{7} - \frac{3}{4}$

$$= \frac{25}{7} - \frac{3}{4}$$

(LCM of 7 and 4 = 28)

$$= \frac{25 \times 4}{7 \times 4} - \frac{3 \times 7}{4 \times 7}$$

$$= \frac{100}{28} - \frac{21}{28}$$

$$= \frac{100 - 21}{28} = \frac{79}{28} = 2 \frac{23}{28}$$

e. $4\frac{1}{5} - \frac{2}{3}$

$$= \frac{21}{5} - \frac{2}{3} \quad (\text{LCM of } 5, 3 = 15)$$

$$= \frac{21 \times 3}{5 \times 3} - \frac{2 \times 5}{3 \times 5}$$

$$= \frac{63}{15} - \frac{10}{15}$$

$$= \frac{63 - 10}{15} = \frac{53}{15}$$

$$= 3 \frac{8}{15}$$

f. $5\frac{3}{8} - 1\frac{3}{4}$

$$= \frac{43}{8} - \frac{7}{4}$$

(LCM of 8, 4 = 8)

$$= \frac{43}{8} - \frac{7 \times 2}{4 \times 2}$$

$$= \frac{43}{8} - \frac{14}{8}$$

$$= \frac{43 - 14}{8} = \frac{29}{8} = 3 \frac{5}{8}$$

3. Fill in the blanks :

a. $\frac{9}{13} + 0 = \frac{9}{13}$

b. $\frac{95}{460} + \frac{33}{103} = \frac{33}{103} + \frac{95}{460}$

c. $\frac{16}{29} - \frac{16}{29} = 0$

d. $\frac{19}{31} - 0 = \frac{19}{31}$

e. $\frac{9}{7} + \frac{3}{5} = \frac{3}{5} + \frac{9}{7}$

f. $\frac{143}{275} - \frac{143}{275} = 0$

Exercise 7.4

1. Megh spent on a movie = $\frac{1}{2}$ of pocket money

She spent on a pen = $\frac{1}{4}$ of pocket money

Total expenditure = $\left(\frac{1}{2} + \frac{1}{4}\right)$ of pocket money

= $\left(\frac{1 \times 2}{2 \times 2} + \frac{1}{4}\right)$ of pocket money

= $\left(\frac{2}{4} + \frac{1}{4}\right)$ of pocket money

= $\left(\frac{2+1}{4}\right)$ of pocket money

= $\frac{3}{4}$ of pocket money

So, Megh spent $\frac{3}{4}$ of her allowance.

2. Home work was done on Saturday = $\frac{3}{8}$

Home work was done on Sunday = $\frac{1}{4}$

Total home work was done = $\frac{3}{8} + \frac{1}{4}$

= $\frac{3}{8} + \frac{1 \times 2}{4 \times 2} = \frac{3}{8} + \frac{2}{8} = \frac{3+2}{8} = \frac{5}{8}$

So, Jasmin did $\frac{5}{8}$ of her homework over the weekend.

3. Length of rope = $5\frac{1}{2}$ m = $\frac{11}{2}$ m

Cutting length of rope = $3\frac{2}{3}$ m = $\frac{11}{3}$ m

Length of the rope is left = $\frac{11}{2} - \frac{11}{3}$ (LCM of 2, 3 = 6)

$$\begin{aligned}
 &= \frac{11 \times 3}{2 \times 3} - \frac{11 \times 2}{3 \times 2} \\
 &= \frac{33}{6} - \frac{22}{6} \\
 &= \frac{33 - 22}{6} \\
 &= \frac{33 - 22}{6} = \frac{11}{6} \text{ m} = 1\frac{5}{6} \text{ m}
 \end{aligned}$$

So, $1\frac{5}{6}$ m of rope is left.

4. There was petrol in bike = 6 L
 Petrol was left = $1\frac{1}{4}$ L = $\frac{5}{4}$ L
 \therefore Petrol was used = $\left(6 - \frac{5}{4}\right)$ L
 $= \left(\frac{6}{1} - \frac{5}{4}\right)$ L = $\left(\frac{6 \times 4}{1 \times 4} - \frac{5}{4}\right)$ L
 So, $4\frac{3}{4}$ L of Petrol was used.

Exercise 7.5

1. a. $24 \times 3\frac{1}{4}$
 $= \frac{24}{1} \times \frac{13}{4}_1$
 $= 78$
- b. $\frac{9}{22} \times 33$
 $= \frac{9}{22} \times \frac{33^3}{1} = \frac{27}{2} = 13\frac{1}{2}$
- c. $\frac{11}{24} \times 32$
 $= \frac{11}{24}_3 \times \frac{32^4}{1} = \frac{44}{3} = 14\frac{2}{3}$
- d. $15 \times \frac{12}{20}$
 $= \frac{315}{1} \times \frac{12^3}{20}_1 = \frac{9}{1}$
 $= 9$
- e. $10 \times 2\frac{1}{5} = \frac{10^2}{1} \times \frac{11}{5}_1$
 $= \frac{22}{1} = 22$
- f. $3 \times 2\frac{2}{15}$
 $= \frac{13}{1} \times \frac{32}{15}_5 = \frac{32}{5}$
 $= 6\frac{2}{5}$
- g. $5\frac{1}{5} \times 4$
 $= \frac{41}{8}_2 \times \frac{4^1}{1}$
 $= \frac{41}{2} = 20\frac{1}{2}$
- h. $6\frac{1}{16} \times 36$
 $= \frac{97}{16}_4 \times \frac{2}{5}_1 \times \frac{4^1}{5} = \frac{873}{4}$
 $= 218\frac{1}{4}$

$$\begin{aligned}
 2. \quad a. \quad & \frac{3}{8} \text{ of } 36 \\
 &= \frac{3}{8} \times 36 \\
 &= \frac{3}{\cancel{2}^1 \cancel{8}^4} \times \frac{36^9}{1} \\
 &= \frac{27}{2} = 13\frac{1}{2}
 \end{aligned}$$

$$\begin{aligned}
 c. \quad & \frac{4}{15} \text{ of } \frac{20}{21} \\
 &= \frac{4}{\cancel{15}_3} \times \frac{20^4}{21} = \frac{16}{63}
 \end{aligned}$$

$$\begin{aligned}
 e. \quad & \frac{7}{8} \text{ of } \frac{16}{21} \\
 &= \frac{\cancel{7}_1}{\cancel{8}_2} \times \frac{16^2}{\cancel{21}_3} = \frac{2}{3}
 \end{aligned}$$

$$3. \quad a. \quad \frac{1}{9} \times \frac{1}{2} = \frac{1}{18}$$

$$\begin{aligned}
 c. \quad & 1\frac{2}{7} \times 3\frac{1}{5} \\
 &= \frac{9}{7} \times \frac{16}{5} = \frac{144}{35} \\
 &= 4\frac{4}{35}
 \end{aligned}$$

$$\begin{aligned}
 e. \quad & \frac{1}{8} \times \frac{1}{6} \times 1\frac{1}{18} \\
 &= \frac{1}{8} \times \frac{1}{\cancel{6}_2} \times \frac{3^1}{2} \\
 &= \frac{1}{32}
 \end{aligned}$$

$$\begin{aligned}
 g. \quad & 1\frac{1}{2} \times 2\frac{1}{3} \times 3\frac{1}{4} \\
 &= \frac{3^1}{2} \times \frac{7}{\cancel{3}_1} \times \frac{13}{4} \\
 &= \frac{91}{8} = 11\frac{3}{8}
 \end{aligned}$$

$$\begin{aligned}
 b. \quad & \frac{4}{11} \text{ of } 55 \\
 &= \frac{4}{11} \times 55 \\
 &= \frac{4}{\cancel{11}_1} \times \frac{55^7}{1} \\
 &= \frac{20}{1} = 20
 \end{aligned}$$

$$\begin{aligned}
 d. \quad & \frac{24}{25} \text{ of } \frac{35}{36} \\
 &= \frac{\cancel{24}_3}{25} \times \frac{35^7}{\cancel{36}_3} = \frac{14}{15}
 \end{aligned}$$

$$\begin{aligned}
 f. \quad & 1\frac{1}{2} \text{ of } 3\frac{4}{5} \\
 &= \frac{3}{2} \text{ of } \frac{19}{5} \\
 &= \frac{3}{2} \times \frac{19}{5} = \frac{57}{10} = 5\frac{7}{10}
 \end{aligned}$$

$$b. \quad \frac{2}{7} \times \frac{8}{9} \times \frac{1}{4} = \frac{4}{63}$$

$$\begin{aligned}
 d. \quad & 3\frac{3}{5} \times 5\frac{1}{2} \\
 &= \frac{18^9}{5} \times \frac{11}{\cancel{2}_1} = \frac{99}{5} = 19\frac{4}{5}
 \end{aligned}$$

$$\begin{aligned}
 f. \quad & 10\frac{3}{8} \times 3\frac{1}{9} \\
 &= \frac{83}{\cancel{2}_1 \cancel{8}_4} \times \frac{28^7}{9} = \frac{581}{18} \\
 &= 32\frac{5}{8}
 \end{aligned}$$

$$\begin{aligned}
 h. \quad & 1\frac{1}{4} \times \frac{2}{5} \times \frac{4}{5} \\
 &= \frac{\cancel{15}_3}{4} \times \frac{2}{\cancel{5}_1} \times \frac{4^1}{5} \\
 &= \frac{2}{5}
 \end{aligned}$$

4. Fill in the blanks :

$$\begin{array}{lll} \text{a. } \frac{11}{15} \times 1 = \frac{11}{15} & \text{b. } \frac{8}{7} \times 14 = 14 \times \frac{8}{7} & \text{c. } 0 \times \frac{25}{27} = 0 \\ \text{d. } \frac{7}{9} \times \frac{4}{5} = \frac{4}{5} \times \frac{7}{9} = \frac{28}{45} & \text{e. } \frac{11}{17} \times 0 = 0 & \text{f. } \frac{17}{19} \times 1 = \frac{17}{19} \end{array}$$

Exercise 7.6

1. Find the reciprocal (or multiplicative inverse) of each of the following :

$$\begin{array}{l} \text{a. Reciprocal of } \frac{11}{3} \text{ to } \frac{3}{11} \\ \text{b. Reciprocal of } 2\frac{1}{7} = \frac{15}{7} \text{ is } \frac{7}{15} \\ \text{c. Reciprocal of } \frac{15}{23} \text{ is } \frac{23}{15} \\ \text{d. Reciprocal of } \frac{21}{8} \text{ is } \frac{8}{21} \\ \text{e. Reciprocal of } \frac{2}{5} \text{ is } \frac{5}{2} \\ \text{f. Reciprocal of } 19 = \frac{19}{1} \text{ is } \frac{1}{19} \\ \text{g. Reciprocal of } 1 \text{ is } 1 \\ \text{h. Reciprocal of } \left(1\frac{6}{9} = \frac{15}{9}\right) \text{ is } \frac{9}{15} \end{array}$$

2. Divide and write the answer in the lowest term :

$$\begin{array}{ll} \text{a. } \frac{72 \div \frac{6}{7}}{\frac{12}{72} \times \frac{7}{6} = \frac{84}{1}} & \text{b. } \frac{\frac{5}{9} \div 15}{= \frac{5^1}{9} \div \frac{1}{15}_3} \\ & = \frac{1}{27} \\ \text{c. } \frac{\frac{1}{3} \div 4}{= \frac{1}{3} \div \frac{4}{1}} & \text{d. } \frac{48 \div 2\frac{2}{5}}{= 48 \div \frac{12}{5}} \\ & = \frac{48}{1} \times \frac{5}{12} = \frac{20}{1} = 20 \\ \text{e. } \frac{\frac{12}{13} \div 9}{= \frac{12}{13} \div \frac{9}{1}} & \text{f. } \frac{77 \div \frac{11}{3}}{= \frac{77}{1} \times \frac{3}{11} = \frac{21}{1} = 21} \\ & = \frac{412}{13} \times \frac{1}{9}_3 = \frac{4}{39} \end{array}$$

$$\begin{aligned} \text{g. } \frac{11}{4} \div 55 &= \frac{11}{4} \div \frac{55}{1} \\ &= \frac{\cancel{11}^1}{4} \times \frac{1}{\cancel{55}_5} = \frac{1}{20} \end{aligned}$$

$$\begin{aligned} \text{h. } 6 \div 8 \\ &= \frac{6}{1} \div \frac{8}{1} = \frac{\cancel{6}^3}{1} \times \frac{1}{\cancel{8}_4} = \frac{3}{4} \end{aligned}$$

3. Find the value of each of the following :

$$\begin{aligned} \text{a. } \frac{5}{9} \div \frac{15}{36} \\ &= \frac{5}{9} \times \frac{36}{15} = \frac{4}{3} = 1\frac{1}{3} \end{aligned}$$

$$\begin{aligned} \text{b. } \frac{12}{13} \div \frac{1}{52} \\ &= \frac{12}{13} \times \frac{52}{1} = \frac{48}{1} = 48 \end{aligned}$$

$$\begin{aligned} \text{c. } 16 \div \frac{2}{5} &= \frac{16}{1} \div \frac{2}{5} \\ &= \frac{16}{1} \times \frac{5}{2} = \frac{40}{1} = 40 \end{aligned}$$

$$\begin{aligned} \text{d. } 9\frac{5}{6} \div 5\frac{1}{6} \\ &= \frac{59}{6} \times \frac{6}{31} = \frac{59}{\cancel{6}} \times \frac{\cancel{6}}{31} \\ &= \frac{59}{31} = 1\frac{28}{31} \end{aligned}$$

$$\begin{aligned} \text{e. } 7\frac{3}{5} \div 19 \\ &= \frac{38}{5} \div \frac{19}{1} \\ &= \frac{38}{5} \times \frac{1}{19} \\ &= \frac{2}{5} \end{aligned}$$

$$\begin{aligned} \text{f. } 8\frac{2}{5} \div 2\frac{2}{15} \\ &= \frac{42}{5} \div \frac{32}{15} \\ &= \frac{42}{5} \times \frac{15}{32} \\ &= \frac{63}{16} = 3\frac{15}{16} \end{aligned}$$

$$\begin{aligned} \text{g. } 1\frac{2}{11} \div 2\frac{5}{22} \\ &= \frac{13}{11} \div \frac{49}{22} \\ &= \frac{13}{11} \times \frac{22}{49} \\ &= \frac{26}{49} \end{aligned}$$

$$\begin{aligned} \text{h. } 4\frac{1}{2} \div 4\frac{1}{5} \\ &= \frac{9}{2} \div \frac{21}{5} \\ &= \frac{9}{2} \times \frac{5}{21} = \frac{15}{14} = 1\frac{1}{14} \end{aligned}$$

4. Fill in the blanks :

$$\text{a. } 7 \times \frac{1}{7} = 1$$

$$\text{b. } \frac{5}{8} \times \frac{8}{5} = 1$$

$$\text{c. } \frac{15}{13} \times \frac{13}{15} = 1$$

$$\text{d. } 2\frac{1}{7} \div 1 = 2\frac{1}{7}$$

$$\text{b. } \frac{9}{20} \times 2\frac{2}{9} = 1$$

$$\text{c. } 0 \div \frac{3}{7} = 0$$

Exercise 7.7

1. The paint is required for 1sq m. area = $2\frac{3}{4}$ L

$$\therefore \text{The paint is required for } 3\frac{1}{2} \text{ sq more} = \left(2\frac{3}{4} \times 3\frac{1}{2}\right) \text{ L} \\ = \left(\frac{11}{4} \times \frac{7}{2}\right) \text{ L} = \frac{77}{8} \text{ L} = 9\frac{5}{8} \text{ L}$$

So, $9\frac{5}{8}$ L paint is required to colour the wall.

2. In $2\frac{1}{2}$ hours Rahul walked = $5\frac{3}{4}$ km

$$\text{In 1 hours Rahul walk} = \left(5\frac{3}{4} \div 2\frac{1}{2}\right)$$

$$= \left(\frac{23}{4} \div \frac{5}{2}\right) \text{ km} = \left(\frac{23}{4} \times \frac{2}{5}\right) \text{ km}$$

$$= \frac{23}{10} \text{ km} = 2\frac{3}{10} \text{ km}$$

so, Rahul walked $2\frac{3}{10}$ km per hour.

3. The cost of $3\frac{1}{2}$ kg apples = ₹ $157\frac{1}{2}$

$$\text{The cost of 1 kg apples} = ₹ \left(157\frac{1}{2} \div 3\frac{1}{2}\right)$$

$$= ₹ \left(\frac{315}{2} \div \frac{7}{2}\right)$$

$$= ₹ \left(\frac{315}{\cancel{2}_1} \times \frac{\cancel{2}_1}{7}\right) = ₹ 45$$

So, the cost of 1 kg apples is ₹45.

4. Cocoa is needed for 1 chocolate bar = $\frac{3}{4}$ cups

$$\therefore \text{Cocoa is needed for 16 chocolate bars} = \left(\frac{3}{4} \times 16\right)$$

$$= \frac{3}{\cancel{4}_1} \times \frac{\cancel{16}^4}{1} \text{ cups} = \frac{12}{1} \text{ cups} = 12 \text{ cups}$$

so, to make 16 chocolates, 12 cups cocoa is needed.

5. Weight of 1 cement block = $2\frac{1}{5}$ kg

$$\therefore \text{Weight of 5 cement blocks} = \left(2\frac{1}{5} \times 5\right) \text{ kg}$$

$$= \left(\frac{11}{\cancel{5}_1} \times \frac{\cancel{5}_1}{1}\right) \text{ kg} = 11 \text{ kg}$$

= So, Weight of 5 cement blocks is 11 kg

6. The cost of $3\frac{1}{2}$ kg apples = ₹280

$$\begin{aligned}
 \therefore \text{The cost of 1 kg apples} &= ₹ \left(280 \div 3 \frac{1}{2} \right) \\
 &= ₹ \left(\frac{280}{1} \div \frac{2}{7} \right) \\
 &= ₹ \left(\frac{280}{1} \times \frac{7}{2} \right) = ₹ 80
 \end{aligned}$$

So, the cost of 1 kg apples is ₹80.

Hots

- a. 3,33,333.33 b. $\frac{9}{50}$ c. $\frac{1}{50}$

Mental Maths

Write the multiplication inverse of these fractions.

1. $\frac{5}{2}$ 2. $\frac{7}{4}$ 3. $\frac{2}{1}$ 4. $\frac{7}{6}$ 5. $\frac{3}{1}$ 6. $\frac{5}{6}$
 7. $\frac{9}{8}$ 8. $\frac{5}{3}$ 9. $\frac{7}{9}$

Multiple Choice Questions

Tick (✓) the correct choice :

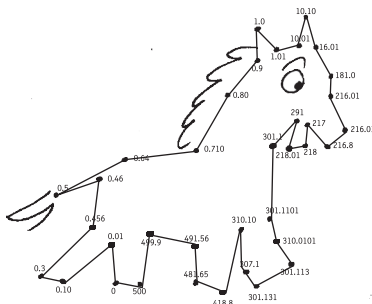
- Ans. 1. a. $\frac{7}{8}$ 2. c. $\frac{2}{3}$ 3. a. 2 m 4. c. 8 5. c. 1

8

Decimals

Look Back

Join the dots in ascending order from zero to 500 to complete the picture.



Mental Maths




Write the decimals for the coloured part.

2. 0.7, seven tenths

3. 0.9, nine tenths

Exercise 8.1

1. Complete the table of the coloured part.

	Coloured Parts	Decimal form	Read as
a.		0.47	zero point four seven
b.		2.89	Two point eight nine
c.		1.2	One point two

2. Write the decimals.

a. 3.34

b. 69.637

c. 100.001

d. 0.7

e. 0.010

f. 1000.8

3. Write in words.

a. nine point zero zero eight

b. forty one point zero seven

c. eight point seven three

d. zero point nine four three

e. fifty-eight point zero-seven
six

f. zero point six

Exercise 8.2

1. Write the place value of the coloured digit.

a. Place value of 8 in 8.365 is 8 ones = $8 \times 1 = 8$

b. Place value of 7 in 8.782 is 7 tenths = $\frac{7}{10} = 0.7$

c. Place value of 4 in 25.849 is 4 hundredths = $\frac{4}{100} = 0.04$

d. Place value of 6 in 96.121 is 6 ones = $6 \times 1 = 6$

e. Place value of 8 in 150.895 is 8 tenths = $\frac{8}{10} = 0.8$

f. Place value of 2 in 902.802 is 2 thousandths = $\frac{2}{1000} = 0.002$

g. Place value of 5 in 59.405 is tens = $5 \times 10 = 50$

h. Place value of 3 in 842.039 is 3 hundredths = $\frac{3}{100} = 0.03$

2. Write the following in expanded form using decimal expansion.

- a. Expanded form of $44.444 = 40 + 4 + 0.4 + 0.04 + 0.004$
- b. Expanded form of $0.48 = 0.4 + 0.08$
- c. Expanded form of $6.003 = 6 + 0.003$
- d. Expanded form of $1.482 = 1 + 0.4 + 0.08 + 0.002$
- e. Expanded form of $5.09 = 5 + 0.09$
- f. Expanded form of $856.787 = 800 + 50 + 6 + 0.7 + 0.08 + 0.007$
- g. Expanded form of $609.92 = 600 + 9 + 0.9 + 0.02$
- h. Expanded form of $124.35 = 100 + 20 + 4 + 0.3 + 0.05$

3. Write the following in short form.

- a. 20.026 b. 2.813 c. 936.508 d. 8.234

4. Write the following in decimal form.

- a. 0.20 b. 0.4 c. 0.036 d. 0.0008
- e. 0.575 f. 38.4 g. 38.46 h. 3.941

5. Express in the fractional form.

- a. $\frac{1483}{1000}$ b. $\frac{67}{100}$ c. $\frac{837}{1000}$ d. $\frac{81153}{100}$
- e. $\frac{24455}{1000}$ f. $\frac{710053}{10000}$ g. $\frac{29380}{1000}$ h. $\frac{142625}{100}$

Mental Maths

Compare by using the signs $>$, $<$ or $=$.

- 1. $>$ 2. $>$ 3. $>$ 4. $<$

Exercise 8.3

1. Write the equivalent decimals.

- a. **0.5** = 0.50 = 0.500 b. $0.7 = 0.70 = \mathbf{0.700}$
- c. $6.8 = \mathbf{6.80} = 6.800$ d. **4.2** = **4.20** = 4.200
- e. $1.5 = 1.50 = \mathbf{1.500}$ f. $3.7 = \mathbf{3.70} = \mathbf{3.700}$

2. Circle the unlike fractions.

- a. (5.8), 5.08, 5.81, 58.01
- b. 9.6, (5.38), 23.1, 65.4
- c. 14.99, 6.62, (483.3), 11.34
- d. 0.071, 1.001, (56.01), 561.008

3. Fill in the blanks using $<$, $>$ or $=$:

- a. $<$ b. $>$ c. $>$ d. $=$
- e. $<$ f. $<$

4. Arrange the following decimals in the ascending order :

- a. 8.86, 8.094, 8.9
 $= 8.860, 8.094, 8.900$
 $\therefore 8.094 < 8.860 < 8.900$ In ascending order
 $= 8.094 < 8.86 < 8.9$
- b. 11.1, 11.21, 11.001
 In ascending order
 $= 11.001 < 11.100 < 11.210$
 $= 11.001 < 11.1 < 11.21$
- c. 9.82, 9.9, 9.795
 $= 9.820, 9.900, 9.795$
 In ascending order
 $9.795 < 9.820 < 9.900$
 $= 9.795 < 9.82 < 9.9$
- d. 20.3, 30.2, 23.25
 In ascending order
 $20.3 < 23.25 < 30.2$

5. Arrange the following in descending order.

- a. 69.84, 7.68, 7.063, 16.09
 $= 69.840, 7.680, 7.063, 16.090$
 In descending order
 $69.84 > 16.09 > 7.68 > 7.063$
- b. 0.046, 4.06, 4.36, 4.236
 $= 0.046, 4.060, 4.360, 4.236$
 In descending order
 $4.360 > 4.236 > 4.060 > 0.046$
 $= 4.36 > 4.236 > 4.06 > 0.046$
- c. 48.231, 46.236, 1.64, 36.23
 In descending order
 $48.231 > 46.231 > 36.23 > 1.64$
- d. 6.38, 6.234, 16.234, 31.46
 $= 6.380, 6.234, 16.234, 31.460$
 $31.46 > 16.234 > 6.38 > 6.234$

Exercise 8.4

1. Find the sums or difference :

a.
$$\begin{array}{r} \textcircled{1} \\ 27.5 \\ + 31.9 \\ \hline 59.4 \end{array}$$

b.
$$\begin{array}{r} \textcircled{1} \textcircled{1} \\ 153.304 \\ + 67.291 \\ \hline 220.535 \end{array}$$

c.
$$\begin{array}{r} \textcircled{3} \textcircled{11} \\ 144.516 \\ + 38.504 \\ \hline 103.012 \end{array}$$

d.

	3	11	4	9	10
	4	2	8	.	8
				0	0
+	3	6	0	.	3
				6	5
				6	0
				1	3
				5	

2. Add :

a.

	6	.	2
+	6	.	2
	1	2	.
			4

$6.2 + 6.2 = 12.4$

b.

	1	1	1
	7	.	6
			5
	1	9	.
			1
			5
+	0	.	7
			5
	2	7	.
			5

c.

	1	1	1
	1	1	.
			4
			0
			8
			6
+	2	9	.
			5
			5
	4	1	.
			8
			1

$7.65 + 19.15 + 0.75 = 27.55$

$11.4 + 0.86 + 29.55 = 41.81$

d.

	1	.	0	0	1	0	0
					2	.	9
					2	0	0
+	0	.	0	0	2	9	2
					3	.	9
					2	3	9
					2		

e.

	2	1
	1	.
		3
		6
		9
		0
		8
		0
+	6	.
		0
		9
		3
	1	4
	.	
	7	
	4	
	2	

f.

	1	1	1
	3	8	.
			5
			0
			5
			0
+	2	9	.
			1
			6
			7
			6
			5
	3	3	.
			0
			5
			6
			6
			5

$1.001 + 2.92 + 0.00292 = 3.92392$

$1.369 + 7.28 + 6.093 = 14.742$

$38.505 + 0.385 + 291.6765 = 330.5665$

g.

	1	1	1	1
	1	5	.	9
				6
				7
				3
				9
+	5	.	0	0
				5
	3	4	.	2
				6
				5

h.

	1	2
	1	7
		.
		8
		0
		5
		0
+	8	.
		5
		9
		6
	1	1
	.	
	9	
	.	
	2	
	6	

$15.967 + 13.293 + 5.005 = 34.265$

$17.80 + 15.50 + 85.96 = 119.26$

3. Subtract :

a. $18.95 - 15.86 = 3.09$

	8	15
	1	8
	.	
	9	
	5	
-	1	5
	.	
	8	
	6	
	3	.
		0
		9

b. $63.125 - 28.350 = 34.775$

	5	12	10	12
	6	3	.	
				1
				2
				5
				0
-	2	8	.	
				3
				5
				0
	3	4	.	
				7
				7
				5

c. $113 - 14.101 = 98.899$

$$\begin{array}{r} \textcircled{10} \textcircled{12} \quad \textcircled{9} \textcircled{9} \textcircled{10} \\ 113.000 \\ - 14.101 \\ \hline 98.899 \end{array}$$

d. $15.963 - 13.89 = 2.073$

$$\begin{array}{r} \textcircled{8} \textcircled{16} \\ 15.963 \\ - 13.890 \\ \hline 2.073 \end{array}$$

e. $70 - 45.904 = 24.096$

$$\begin{array}{r} \textcircled{6} \textcircled{9} \quad \textcircled{9} \textcircled{9} \textcircled{10} \\ 70.000 \\ - 45.904 \\ \hline 24.096 \end{array}$$

f. $400 - 350.937 = 49.063$

$$\begin{array}{r} \textcircled{3} \textcircled{9} \textcircled{9} \quad \textcircled{9} \textcircled{9} \textcircled{10} \\ 400.000 \\ - 350.937 \\ \hline 49.063 \end{array}$$

g. $37.750 - 25.850 = 11.9$

$$\begin{array}{r} \textcircled{6} \textcircled{17} \\ 37.750 \\ - 25.850 \\ \hline 11.900 \end{array}$$

h. $9 - 7.473 = 1.527$

$$\begin{array}{r} \textcircled{8} \quad \textcircled{9} \textcircled{9} \textcircled{10} \\ 9.000 \\ - 7.473 \\ \hline 1.527 \end{array}$$

i. $56.813 - 27.303 = 29.51$

$$\begin{array}{r} \textcircled{4} \textcircled{16} \\ 56.813 \\ - 27.303 \\ \hline 29.510 \end{array}$$

Exercise 8.5

1. Find the product.

a. $5.215 \times 19 = 99.0375$

$$\begin{array}{r} 5.2125 \\ \times 19 \\ \hline 469125 \\ 521250 \\ \hline 99.0375 \end{array}$$

b. $36.5 \times 5 = 182.5$

$$\begin{array}{r} 36.5 \\ \times 5 \\ \hline 182.5 \end{array}$$

c. $11.11 \times 92 = 1022.12$

$$\begin{array}{r} 11.11 \\ \times 92 \\ \hline 2222 \\ 99990 \\ \hline 1022.12 \end{array}$$

d. $1.11 \times 2.2 \times 0.9 = 2.4 \times 0.9 = 2.1978$

$$\begin{array}{r} 1.11 \\ \times 2.2 \\ \hline 222 \\ 2220 \\ \hline 2.442 \end{array}$$

$$\begin{array}{r} 2.442 \\ \times 0.9 \\ \hline 2.1978 \end{array}$$

e. $0.478 \times 17.6 = \mathbf{8.4128}$

$$\begin{array}{r} 0.478 \\ \times 17.6 \\ \hline 2868 \\ 33460 \\ 47800 \\ \hline 8.4128 \end{array}$$

f. $11.11 \times 1.1 \times 0.1 = \mathbf{12.221 \times 0.1 = 1.2221}$

$$\begin{array}{r} 11.11 \\ \times 1.1 \\ \hline 1111 \\ 11110 \\ \hline 12.221 \end{array}$$

g. $0.75 \times 0.29 = \mathbf{0.2175}$

$$\begin{array}{r} 0.75 \\ \times 0.29 \\ \hline 675 \\ 1500 \\ \hline 0.2175 \end{array}$$

h. $0.93 \times 0.84 = \mathbf{0.7812}$

$$\begin{array}{r} 0.93 \\ \times 0.84 \\ \hline 372 \\ 7440 \\ \hline 0.7812 \end{array}$$

i. $8.6 \times 1.4 = \mathbf{12.04}$

$$\begin{array}{r} 8.6 \\ \times 1.4 \\ \hline 344 \\ 860 \\ \hline 12.04 \end{array}$$

2. Multiply :

a. $0.05 \times 1000 = \mathbf{50.00}$

b. $6.25 \times 10 = \mathbf{62.5}$

c. $0.2345 \times 100 = \mathbf{23.45}$

d. $19.09 \times 10 = \mathbf{190.9}$

e. $28.625 \times 1000 = \mathbf{28625}$

f. $3.835 \times 100 = \mathbf{383.5}$

g. $0.12 \times 10000 = \mathbf{1200}$

h. $0.003 \times 100 = \mathbf{0.3}$

i. $1.098 \times 1000 = \mathbf{1098}$

3. Fill in the blanks :

a. $1.23 \times 1 = \mathbf{1.23}$

b. $3.26 \times 0 = \mathbf{0}$

c. $3.7 \times \mathbf{4.2} = 4.2 \times 3.7$

d. $7.235 \times \mathbf{1} = 7.235$

e. $4.5 \times 0 = \mathbf{0}$

f. $1 \times \mathbf{2.35} = 2.35$

Exercise 8.6

1. Divide.

a. $8.1 \div 8 = 1.0125$

$$\begin{array}{r} 1.0125 \\ 5 \overline{) 8.1} \\ \underline{-8} \\ 10 \\ \underline{-8} \\ 20 \\ \underline{-16} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

b. $6.14 \div 5 = 1.228$

$$\begin{array}{r} 1.228 \\ 5 \overline{) 6.14} \\ \underline{-5} \\ 11 \\ \underline{-10} \\ 14 \\ \underline{-10} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

c. $587.298 \div 15 = 39.1532$

$$\begin{array}{r} 39.1532 \\ 15 \overline{) 587.298} \\ \underline{-45} \\ 137 \\ \underline{-135} \\ 22 \\ \underline{-15} \\ 79 \\ \underline{-75} \\ 48 \\ \underline{-45} \\ 30 \\ \underline{-30} \\ 0 \end{array}$$

d. $45.7 \div 8 = 5.7125$

$$\begin{array}{r} 5.7125 \\ 8 \overline{) 45.7} \\ \underline{-40} \\ 57 \\ \underline{-56} \\ 10 \\ \underline{-8} \\ 20 \\ \underline{-16} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

e. $0.153 \div 6 = 0.0255$

$$\begin{array}{r} 0.0255 \\ 6 \overline{) 0.153} \\ \underline{-12} \\ 33 \\ \underline{-30} \\ 30 \\ \underline{-30} \\ 0 \end{array}$$

f. $72.93 \div 5 = 14.586$

$$\begin{array}{r} 14.586 \\ 5 \overline{) 72.93} \\ \underline{-5} \\ 22 \\ \underline{-20} \\ 29 \\ \underline{-25} \\ 40 \\ \underline{-40} \\ 30 \\ \underline{-30} \\ 0 \end{array}$$

g. $91.89 \div 2 = 45.945$

$$\begin{array}{r} 45.945 \\ 2 \overline{) 91.89} \\ \underline{- 8} \\ 11 \\ \underline{- 10} \\ 18 \\ \underline{- 18} \\ 9 \\ \underline{- 8} \\ 10 \\ \underline{- 10} \\ 0 \end{array}$$

h. $0.1365 \div 2 = 0.06825$

$$\begin{array}{r} 0.06825 \\ 2 \overline{) 0.1365} \\ \underline{- 12} \\ 16 \\ \underline{- 16} \\ 5 \\ \underline{- 4} \\ 10 \\ \underline{- 10} \\ 0 \end{array}$$

2. Write the quotient.

a. $0.8 \div 10 = \mathbf{0.08}$

b. $1.45 \div 100 = \mathbf{0.0145}$

c. $67.3 \div 10 = \mathbf{6.73}$

d. $8.75 \div 100 = \mathbf{0.0875}$

e. $3.71 \div 1000 = \mathbf{0.00371}$

f. $33.5 \div 100 = \mathbf{0.335}$

g. $0.6 \div 1000 = \mathbf{0.0006}$

h. $9.1 \div 10 = \mathbf{0.91}$

3. Divide.

a. $6.25 \div 0.5 = \frac{6.25}{0.5} = \frac{62.5}{5} = \mathbf{12.5}$

$$\begin{array}{r} 12.5 \\ 5 \overline{) 62.5} \\ \underline{- 5} \\ 12 \\ \underline{- 10} \\ 25 \\ \underline{- 25} \\ 0 \end{array}$$

b. $109.02 \div 2.3 = \frac{109.02}{2.3} = \frac{1090.2}{23} = \mathbf{47.4}$

$$\begin{array}{r} 47.4 \\ 23 \overline{) 1090.2} \\ \underline{- 92} \\ 170 \\ \underline{- 161} \\ 92 \\ \underline{- 92} \\ 0 \end{array}$$

$$c. \quad 6.4 \div 1.6 = \frac{6.4}{1.6} = \frac{64}{16} = 4$$

$$\begin{array}{r} 4 \\ 16 \overline{) 64} \\ \underline{- 64} \\ 0 \end{array}$$

$$d. \quad 1.404 \div 0.108 = \frac{1.404}{0.108} = \frac{1404}{108} = 4$$

$$\begin{array}{r} 13 \\ 108 \overline{) 1404} \\ \underline{- 108} \\ 324 \\ \underline{- 324} \\ 0 \end{array}$$

$$e. \quad 1.8 \div 0.2 = \frac{1.8}{0.2} = \frac{18}{2} = 9$$

$$f. \quad 22 \div 0.11 = \frac{22}{0.11} = \frac{2200}{11} = 200$$

$$\begin{array}{r} 200 \\ 11 \overline{) 2200} \\ \underline{- 22} \\ 00 \\ \underline{- 0} \\ 0 \\ \underline{- 0} \\ 0 \end{array}$$

Exercise 8.7

1. The cost of 1 book = ₹ 25.35
 \therefore The cost of 45 books = ₹ 25.35 \times 45
 = ₹ 1140.75
 So, ₹ 1140.75 is the cost of 45 books

$$\begin{array}{r} 25.35 \\ \times 45 \\ \hline 12675 \\ 101400 \\ \hline 1140.75 \end{array}$$

2. Sonu had = ₹ 55.50
 He spent = ₹ 27
 Money is left = ₹ (55.50 - 27) = ₹ 28.50
 So, ₹ 28.50 are left with Sonu.

$$\begin{array}{r} 55.50 \\ - 27.00 \\ \hline 28.50 \end{array}$$

3. Madhu had = ₹ 100
 She spent = ₹ 75.75
 Money is left = ₹ (100 - 75.75) = ₹ 24.25
 So, ₹ 24.25 is left with Madhu.

$$\begin{array}{r} \textcircled{9} \textcircled{9} \quad \textcircled{9} \textcircled{10} \\ 100.00 \\ - 75.75 \\ \hline 24.25 \end{array}$$

4. The cost of a tennis racket = ₹ 650.75

The cost of a box of 6 balls = ₹ 110.50

$$\therefore \text{Total cost of both items} = ₹ (650.75 + 110.50) \\ = ₹ 761.25$$

So, ₹ 761.25 are the cost of both items.

5. The product of two numbers = 4832

One number of them = 25

$$\therefore \text{Other number} = \frac{\text{Product}}{\text{One number}} = \frac{4832}{25} \\ = 193.28$$

So, the other number is 193.28

$$\begin{array}{r} \overset{9}{6} \overset{9}{5} 0 . \overset{9}{7} \overset{10}{5} \\ - 110.50 \\ \hline 761.25 \end{array}$$

$$\begin{array}{r} 193.28 \\ 25 \overline{) 4832} \\ \underline{- 25} \\ 233 \\ \underline{- 225} \\ 82 \\ \underline{- 75} \\ 70 \\ \underline{- 50} \\ 200 \\ \underline{- 200} \\ 0 \end{array}$$

6. The cost of 25 chocolates = ₹ 63.50

$$\therefore \text{The cost of 1 chocolate} = ₹ (63.50 \div 25) \\ = ₹ 2.54$$

So, the cost of 1 chocolate is ₹ 2.54

$$\begin{array}{r} 2.54 \\ 25 \overline{) 63.50} \\ \underline{- 50} \\ 135 \\ \underline{- 125} \\ 100 \\ \underline{- 100} \\ 0 \end{array}$$

7. The cost of 1 litre of petrol = ₹ 75.50

$$\text{The cost of 4 litres of petrol} = ₹ 75.50 \times 4 \\ = ₹ 302$$

So, the cost of 4 L of petrol will be ₹ 302.

$$\begin{array}{r} 75.50 \\ \times 4 \\ \hline 302.00 \end{array}$$

8. The distance is covered by a bike in 1 hour
= 40.5 km

$$\therefore \text{The distance is covered by a bike in 18 hours} \\ = 40.5 \times 18 \\ = 729 \text{ km}$$

So, the bike will cover 729 km in 18 hours.

$$\begin{array}{r} 40.5 \\ \times 18 \\ \hline 729.0 \end{array}$$

Fun with Maths

	Fraction Words	Decimal Words
Ex.	$\frac{3}{4}$ Three fourths	0.75 Zero point seven five
1.	$\frac{75}{100}$ Seventy five hundredths	0.75 Zero point seven five
2.	$\frac{52}{100}$ Fifty two hundredths	0.52 Zero point five two
3.	$\frac{5}{8}$ Five-eighths	0.625 Zero point six two five
4.	$\frac{65}{100}$ Sixty five hundredths	0.65 Zero point six five
5.	$\frac{74}{100}$ Seventy four hundredths	0.74 Zero point seven four
6.	$\frac{1}{100}$ one hundredths	0.01 zero point zero one

Multiple Choice Questions

Tick (✓) the correct choice :

- Ans. 1. b. 158.51 2. c. 0.005 3. b. 95.307
 4. a. 56.25 5. a. 3.7561

9

Unitary Method

Look Back

1. 156 2. 140 3. No 4. 36

Exercise 9

- The cost of 39 bats = ₹ 39000
 \therefore The cost of 1 bats = ₹ 39000 \div 39 = ₹ 1000
 So, the cost of 1 bats is ₹ 1000
- The cost of 36 books = ₹ 6480
 \therefore The cost of 1 book = ₹ 6480 \div 36 = ₹ 180
 ₹ 180 will be the cost of one book.

$$\begin{array}{r}
 180 \\
 36 \overline{) 6480} \\
 \underline{- 36} \\
 288 \\
 \underline{- 288} \\
 0 \\
 \underline{- 0} \\
 0
 \end{array}$$

3. The weight of 1 bag = 451 kg
 The weight of 125 bags = 451×125 kg
 = 56375 kg
 So, the weight of 125 bags will be 56375 kg.

$$\begin{array}{r} 451 \\ \times 125 \\ \hline 2255 \\ 9020 \\ 45100 \\ \hline 56375 \end{array}$$

4. 1 year = 12 months.
 In 12 months Raghav spends = ₹ 1,27,200
 In 1 months Raghav spends = $\text{₹ } 1,27,200 \div 12$
 = ₹ 10600
 In 8 months Ragave spends = ₹ 10,600 \times 8
 = ₹ 84,800
 So, Raghav spends ₹ 84,800 in 8 months.

$$\begin{array}{r} 10600 \\ 12 \overline{) 127200} \\ \underline{- 12} \\ 72 \\ \underline{- 72} \\ 0 \\ \underline{- 0} \\ 0 \\ \underline{- 0} \\ 0 \end{array}$$

5. In 8 minutes Arjun covers = 480 metres
 In 1 minutes Arjun covers = $\frac{480}{8} = 60$ metres
 In 20 minutes Arjun covers = $60 \times 20 = 1200$ metres
 So, Arjun will cover 1200 metres.
6. 1 month = 30 days.
 In 30 days the factory produces = 824,40 bottles.
 In 1 day the factory produces = $\frac{82,440}{30}$
 In 25 days the factory produces = $\frac{82,440 \times 25}{30} = 68,700$ bottles.
 So, the factory will produce 68,700 bottles.

7. The cost of 9 trousers = ₹ 1791
 The cost of 1 trouser = $\text{₹ } 1791 \div 9 = \text{₹ } 199$
 In ₹ 199 Pankay bought = 1 trouser
 In ₹ 5,373 panky bought = $\text{₹ } 5373 \div 199$
 = 27 trousers.
 So, Pankay bought 27 trousers.

$$\begin{array}{r} 199 \\ 9 \overline{) 1791} \\ \underline{- 9} \\ 89 \\ \underline{- 81} \\ 81 \\ \underline{- 81} \\ 0 \end{array}$$

$$\begin{array}{r}
 8. \text{ The cost of 24 computers} = ₹ 6,36,000 \\
 \text{The cost of 1 computers} = ₹ 6,36,000 \div 24 \\
 = ₹ 26,500 \\
 \text{In ₹ 26,500 the company can buy} = ₹ 1 \text{ computer} \\
 \text{In ₹ 14,57,500 the company can buy} \\
 = 14,57,500 \div 26,500 \\
 = 55 \text{ computers} \\
 \text{So, the company can buy 55 computers.}
 \end{array}
 \begin{array}{r}
 26500 \\
 24 \overline{) 636000} \\
 \underline{- 48} \\
 156 \\
 \underline{- 144} \\
 120 \\
 \underline{- 120} \\
 0 \\
 \underline{- 0} \\
 0 \\
 \underline{- 0} \\
 0
 \end{array}$$

9. In 9 months Azad saves = ₹ 63000
 In 1 months Azad saves = ₹ 63000 ÷ 9 = ₹ 7000
 So, Azad saves ₹ 7000 in 1 month.

10. The cost of 5 T-shirts = ₹ 320

$$\therefore \text{The cost of 1 T-shirt} = ₹ 320 \div 5 = ₹ 64$$

So, Meera paid ₹ 64 for each T-shirt.

11. 1 dozen pins = 12 hair pins

$$\therefore \text{one and a half dozens pins} = 18 \text{ hair pins.}$$

The cost of 18 hair-pins = ₹ 48

$$\therefore \text{The cost of 1 hair pin} = ₹ 48 \div 18$$

$$= ₹ 2.666 = ₹ 2.67$$

$$\begin{array}{r}
 2.666 \\
 18 \overline{) 48} \\
 \underline{- 36} \\
 120 \\
 \underline{- 108} \\
 120 \\
 \underline{- 108} \\
 120 \\
 \underline{- 108} \\
 12
 \end{array}$$

So, Chetna paid ₹ 2.67 for each hair pain.

12. $1\frac{1}{2} \text{ kg} = \frac{3}{2} \text{ kg}$

$$1 \text{ kg} = 1000 \text{ g.}$$

$$\text{The cost of } 1\frac{1}{2} \text{ kg of sugar} = ₹ 25$$

$$\begin{aligned}
 \therefore \text{The cost of 1 kg of Sugar} &= ₹ 25 \div \frac{3}{2} = ₹ 25 \times \frac{2}{3} \\
 &= ₹ \frac{50}{3} = ₹ 16.66
 \end{aligned}$$

$$\therefore \text{The cost of 1000 g of sugar} = ₹ 16.66$$

$$\therefore \text{The cost of 1 g of sugar} = ₹ \frac{16.66}{1000}$$

$$\therefore \text{The cost of 500 g of sugar} = ₹ \left(\frac{16.66 \times 500}{1000} \right) = ₹ 8.33$$

So, Mahi will pay ₹ 8.33 for 500 gram sugar

13. The cost of 20 m of cloth = ₹ 180

∴ The cost of 1 m of cloth = ₹ $180 \div 20$ = ₹ 9

∴ The cost of 75 m of cloth = ₹ 9×75 = ₹ 675

So, ₹ 675 are the cost of 75 m of cloth.

14. The cost of 3 L of milk = ₹ 75

The cost of 1 L of milk = ₹ $75 \div 3$ = ₹ 25

The cost of $5\frac{1}{2}$ L of milk = ₹ $25 \times 5\frac{1}{2}$ = ₹ $25 \times \frac{11}{2}$
= $\frac{275}{2}$ = ₹ 137.50

So, the cost of $5\frac{1}{2}$ L of milk is ₹ 137.50

15. 1 dozen packets = 12 packets

The cost of 12 packets of biscuit = ₹ 120

∴ The cost of 1 packet of biscuit = ₹ $120 \div 12$ = ₹ 10

So, the cost of 19 packets of biscuit will be ₹ 190

16. The cost of 20 packets = ₹ 240

∴ The cost of 1 packet = ₹ $240 \div 20$ = ₹ 12

∴ The cost of 52 packet = ₹ 12×52 = ₹ 624

So, the cost of 52 packets will be ₹ 624.

$$\begin{array}{r} 12 \\ 20 \overline{)240} \\ \underline{-20} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

17. 1 week = 7 days

Money spent in 7 days = ₹ 210

∴ Money spent in 1 day = ₹ $210 \div 7$ = ₹ 30

So Raj spent ₹ 30 for lunch in 1 day.

$$\begin{array}{r} 41.5 \\ \times 18 \\ \hline 729.0 \end{array}$$

18. 8 pieces of Gol Gappa = 1 plate

∴ 1 piece of Gol Gappa = $\frac{1}{8}$ plate

∴ 20 pieces of Gol Gappa = $\frac{20 \times 1}{8} = \frac{5}{2} = 2\frac{1}{2}$ plates

Cost of 1 plate = ₹ 12

∴ Cost of $\frac{5}{2}$ plates = ₹ $12 \times \frac{5}{2}$ = ₹ $\frac{60}{2}$ = ₹ 30

So, Ravi paid ₹ 30 for $2\frac{1}{2}$ plates of 20 pieces.

19. 1 month = 30 days

The bus fare for 30 days = ₹ 99.90

The bus fare for 1 day = ₹ $99.90 \div 30$ = ₹ 3.33

So, the bus fare for a day is ₹ 3.33

Mental maths

Fill in the blanks :

- Ans. 1. ₹ 5.50 2. ₹360 3. ₹ 600

Hots

- Ans. 1. Manish gets the pen cheaper.
2. Gambhir made more runs per over.

Multiple Choice Questions

Tick (✓) the correct choice :

- Ans. 1. b. ₹ 72 2. c. ₹ 36.48 3. c. ₹ 185
4. a. ₹ 13,125

10

Measurement of Length, Weight and Capacity

Look back

1. Fill in the blanks using correct unit :

- a. The length of my bed is 210 **cm**.
b. My water bottle has 750 **mL** of water.
c. My maths book weighs about 600 **g**.
d. The length of an ant is approximately **mm**.
e. The bucket can be filled with 15 **L**.

2. Express in the unit mentioned :

- a. 1250 b. 305 c. 5355 d. 4750 g
e. 3 m 20 cm f. 3 g 750 mg

Mental Maths

1. Fill in the blanks.

1. 5000 2. 0.5 3. 0.05 4. 50 5. 5 6. 5

Exercise 10.1

1. Convert.

a. $17.08 \text{ km} = 17.08 \times 1000 \text{ m} = \mathbf{17080 \text{ m}}$

b. $13.05 \text{ m} = \frac{13.05}{100} \text{ hm} = \mathbf{0.1305 \text{ hm}}$

$13.05 \text{ m} = \frac{13.05}{10} \text{ dam} = \mathbf{1.305 \text{ dam}}$

c. $915 \text{ cm} = \frac{915}{100} \text{ m} = \mathbf{9.15 \text{ m}}$

- d. $1.76 \text{ m} = \frac{1.76}{10} \text{ dam} = \mathbf{0.176 \text{ dam}}$
- e. $4.09 \text{ km} = 4.09 \times 100 \text{ dam} = \mathbf{409 \text{ dam}}$
- f. $13.78 \text{ hm} = 13.78 \times 100 \text{ m} = \mathbf{1378 \text{ m}}$
- g. $5217 \text{ m} = \frac{5217}{1000} \text{ km} = 5.217 \text{ km}$
- h. $3869 \text{ m} = \frac{3869}{1000} \text{ km} = 3.869 \text{ km}$
 $3869 \text{ m} = \frac{3869}{100} \text{ hm} = 38.69 \text{ hm}$
 $3869 \text{ m} = \frac{3869}{10} \text{ dam} = 386.9 \text{ dam}$
- i. $700 \text{ cm} = \frac{700}{1000} \text{ dam} = 0.7 \text{ dam}$

2. Convert the following metric measure :

- a. $22 \text{ hg} = 22 \times 100 \text{ g} = 2200 \text{ g}$
- b. $7 \text{ g} = \frac{7}{1000} \text{ kg} = 0.007 \text{ kg}$
- c. $659 \text{ g} = \frac{659}{1000} \text{ kg} = 0.65 \text{ kg}$
- d. $750 \text{ cg} = \frac{750}{100} \text{ g} = 7.5 \text{ g}$
- e. $23 \text{ dag } 96 \text{ cg} = 23 \text{ dag} + 96 \text{ cg} = 23 \text{ dag} + \frac{96}{1000} \text{ dag}$
 $= 23 \text{ dag} + 0.096 \text{ dag} = 23.096 \text{ dag}$
- f. $17 \text{ dg } 6 \text{ mg} = 17 \text{ dg} + 6 \text{ mg} = 17 \text{ dg} + \frac{6}{100} \text{ dg}$
 $= 17 \text{ dg} + 0.06 \text{ dg} = 17.06 \text{ dg}$

3. Convert the following :

- a. $36 \text{ L} = 36 \times 100 \text{ CL} = \mathbf{3600 \text{ CL}}$
- b. $7800 \text{ mL} = \frac{7800}{1000} \text{ L} = \mathbf{7.8 \text{ L}}$
- c. $52 \text{ hL } 45 \text{ dL} = 52 \text{ h} + 45 \text{ dL} = 52 \times 1000 \text{ dL} + 45 \text{ dL} = (\mathbf{52000} + \mathbf{45}) \text{ dL} = \mathbf{52045 \text{ dL}}$
- d. $30 \text{ dL } 5 \text{ mL} = 30 \text{ dL} + \frac{5}{10} \text{ dL} = 30 \text{ dL} + 0.5 \text{ dL} = (30 + 0.5) \text{ dL}$
 $= \mathbf{30.5 \text{ dL}}$
- e. $99 \text{ dL} = \frac{99}{10000} \text{ kL} = \mathbf{0.0099 \text{ kL}}$
- f. $26 \text{ L } 375 \text{ mL} = 26 \text{ L} + 375 \text{ mL} \times 1000 \text{ mL} + 375 \text{ mL} =$
 $26000 \text{ mL} + 375 \text{ mL} = \mathbf{26375 \text{ mL}}$

Mental Maths

Fill in the blanks.

- Ans. 1. **5000** 2. **0.5** 3. **0.05** 4. **50**
 5. **5** 6. **5**

Exercise 10.2

1. Add the following metric measures :

<p>a.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <th style="text-align: center;">m</th> <th style="text-align: center;">cm</th> </tr> <tr> <td style="text-align: center;">① 9 6</td> <td style="text-align: center;">① 2 5</td> </tr> <tr> <td style="text-align: center;">+ 8</td> <td style="text-align: center;">0 7</td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">1 0 4</td> <td style="border: 1px solid black; text-align: center;">3 2</td> </tr> </table>	m	cm	① 9 6	① 2 5	+ 8	0 7	1 0 4	3 2	<p>b.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <th style="text-align: center;">g</th> <th style="text-align: center;">mg</th> </tr> <tr> <td style="text-align: center;">① 2 4</td> <td style="text-align: center;">① ① 1 7 5</td> </tr> <tr> <td style="text-align: center;">+ 1 6</td> <td style="text-align: center;">0 2 8</td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">4 0</td> <td style="border: 1px solid black; text-align: center;">2 0 3</td> </tr> </table>	g	mg	① 2 4	① ① 1 7 5	+ 1 6	0 2 8	4 0	2 0 3	<p>c.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <th style="text-align: center;">KL</th> <th style="text-align: center;">L</th> </tr> <tr> <td style="text-align: center;">9</td> <td style="text-align: center;">① 1 2 5</td> </tr> <tr> <td style="text-align: center;">+ 6</td> <td style="text-align: center;">2 4 8</td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">1 5</td> <td style="border: 1px solid black; text-align: center;">3 7 3</td> </tr> </table>	KL	L	9	① 1 2 5	+ 6	2 4 8	1 5	3 7 3
m	cm																									
① 9 6	① 2 5																									
+ 8	0 7																									
1 0 4	3 2																									
g	mg																									
① 2 4	① ① 1 7 5																									
+ 1 6	0 2 8																									
4 0	2 0 3																									
KL	L																									
9	① 1 2 5																									
+ 6	2 4 8																									
1 5	3 7 3																									

2. Subtract :

<p>a.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <th style="text-align: center;">m</th> <th style="text-align: center;">cm</th> </tr> <tr> <td style="text-align: center;">⑦ 1 8</td> <td style="text-align: center;">①⑥ 6 5</td> </tr> <tr> <td style="text-align: center;">- 1 6</td> <td style="text-align: center;">9 5</td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">1</td> <td style="border: 1px solid black; text-align: center;">7 0</td> </tr> </table>	m	cm	⑦ 1 8	①⑥ 6 5	- 1 6	9 5	1	7 0	<p>b.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <th style="text-align: center;">g</th> <th style="text-align: center;">mg</th> </tr> <tr> <td style="text-align: center;">② ①④ 3 4</td> <td style="text-align: center;">① ⑨ ①⑤ 1 0 5</td> </tr> <tr> <td style="text-align: center;">- 8</td> <td style="text-align: center;">0 9 6</td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">2 6</td> <td style="border: 1px solid black; text-align: center;">0 0 9</td> </tr> </table>	g	mg	② ①④ 3 4	① ⑨ ①⑤ 1 0 5	- 8	0 9 6	2 6	0 0 9	<p>c.</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <th style="text-align: center;">KL</th> <th style="text-align: center;">L</th> </tr> <tr> <td style="text-align: center;">④ 2 5</td> <td style="text-align: center;">⑩ ⑫ 1 2 0</td> </tr> <tr> <td style="text-align: center;">- 1 4</td> <td style="text-align: center;">2 5 0</td> </tr> <tr> <td style="border: 1px solid black; text-align: center;">1 0</td> <td style="border: 1px solid black; text-align: center;">8 7 0</td> </tr> </table>	KL	L	④ 2 5	⑩ ⑫ 1 2 0	- 1 4	2 5 0	1 0	8 7 0
m	cm																									
⑦ 1 8	①⑥ 6 5																									
- 1 6	9 5																									
1	7 0																									
g	mg																									
② ①④ 3 4	① ⑨ ①⑤ 1 0 5																									
- 8	0 9 6																									
2 6	0 0 9																									
KL	L																									
④ 2 5	⑩ ⑫ 1 2 0																									
- 1 4	2 5 0																									
1 0	8 7 0																									

3. Add the following :

a. Add 9.61 kg and 6.750 kg
 $\therefore 9.61 \text{ kg} + 6.750 \text{ kg} = \mathbf{16.360 \text{ kg}}$

①
9 . 6 1 0 kg
+ 6 . 7 5 0 kg
1 6 . 3 6 0 kg

b. Add 9 kg 660 g, 18 kg 65 g
 $\therefore 9 \text{ kg } 660 \text{ g} + 18 \text{ kg } 65 \text{ g} = \mathbf{27 \text{ kg } 725 \text{ g}}$

kg	g
① 9	6 6 0
+ 1 8	0 6 5
2 7	7 2 5

c. Add 59 kL 35 L, 80 kL 10 L
 $\therefore 59 \text{ kL } 35 \text{ L} + 80 \text{ kL } 10 \text{ L} = \mathbf{39 \text{ kL } 45 \text{ L}}$

KL	L
5 9	3 5
+ 8 0	1 0
1 3 9	4 5

d. Add 9 cm 8 mm, 10 cm 5 mm, 6 mm
 $\therefore 9 \text{ cm } 8 \text{ mm} + 10 \text{ cm } 5 \text{ mm} + 6 \text{ mm}$
 $= \mathbf{20 \text{ cm } 9 \text{ mm}}$

cm	mm
① ① 9	8
1 0	5
+ 0	6
2 0	9

- e. Add 859 km, 63 m
 $859 \text{ km} + 63 \text{ m} = 859 \text{ km } 063 \text{ m}$
 $= 859 \text{ km} + 0.063 \text{ km}$
 $= \mathbf{859.063 \text{ km}}$

	Km	m
	8 5 9	0 0 0
+	0	0 6 3
	8 5 9	0 6 3

- f. Add 99 L 65 mL, 90 mL, 10 L 86 mL
 $99 \text{ L } 65 \text{ mL} + 90 \text{ mL} + 10 \text{ L } 86 \text{ mL}$
 $= \mathbf{109 \text{ L } 241 \text{ mL}}$

	L	mL
	9 9	0 6 5
	0	0 9 0
+	1 0	0 8 6
	1 0 9	2 4 1

4. Subtract :

- a. Subtract 15 L 396 mL from 17 L
 $17 \text{ L} - 15 \text{ L } 396 \text{ mL}$
 $= \mathbf{1 \text{ L } 604 \text{ mL}}$

	L	mL
	⑥	⑨⑨⑩
	1 7	0 0 0
-	1 5	3 9 6
	1	6 0 4

- b. 17 km 60 m from 28 km 46 m
 $28 \text{ km } 46 \text{ m} - 17 \text{ km } 60 \text{ m}$
 $= \mathbf{10 \text{ km } 986 \text{ m}}$

	km	m
	⑦	⑨⑩④
	2 8	0 4 6
-	1 7	0 6 0
	1 0	9 8 6

- c. Subtract 985 mL from 2 L 630 mL
 $2 \text{ L } 630 \text{ mL} - 985 \text{ mL}$
 $= \mathbf{1 \text{ L } 645 \text{ mL}}$

	L	mL
	①	①⑤⑩⑩
	2	6 3 0
-	0	9 8 5
	1	6 4 5

- d. 31 g 4 mg, from 32 g 74 mg
 $32 \text{ g } 74 \text{ mg} - 31 \text{ g } 4 \text{ mg}$
 $= \mathbf{1 \text{ g } 70 \text{ mg}}$

	km	m
	3 2	0 7 4
-	3 1	0 0 4
	1	0 7 0

- e. From 21 L, subtract 18 L 214 mL
 $21 \text{ L} - 18 \text{ L } 214 \text{ mL}$
 $= \mathbf{2 \text{ L } 786 \text{ mL}}$

	L	mL
	①	⑨⑨⑩
	2 1	0 0 0
-	1 8	2 1 4
	0 2	7 8 6

- f. 26 m 7 cm from 49 m 15 cm
 $49 \text{ m } 15 \text{ cm} - 26 \text{ m } 7 \text{ cm}$
= 23 m 8 cm

m	cm
49	15
- 26	07
23	08

- g. From 19 L 780 mL subtract 12319 mL
 $19 \text{ L } 780 \text{ mL} - 12319 \text{ mL}$
 = 19 L 780 m – 12 L 319 mL
= 7 L 461 mL

kg	g
216	
368	025
- 277	000
91	025

- h. 277 kg from 368 kg 25 g
 $368 \text{ kg } 25 \text{ g} - 277 \text{ kg}$
= 91 kg 25 g

L	mL
	710
19	780
- 12	319
7	461

Exercise 10.3

1. Distance from Reena's house to friend's house = 2.750 km
 Distance from market to friends house = 5.630 km

km	m
2.750	0
+ 5.630	0
8.380	0

∴ Total distance covered by Reena in one side

$$= (2.750 + 5.630) \text{ km} = 8.380 \text{ km}$$

Total distance covered by Reena in both side = $2 \times 8.380 \text{ km}$
 = 16.760 km

So, the distance covered ingoing and coming back is **16.760 km**

2. Nisha's height = 118.5 cm = **1 m 18 cm 5 mm**

Razia's height = 158.9 cm = **1 m 58 cm 9 mm**

1 m 58 cm 9 mm > 1 m 18 cm 5 mm

So Razia is taller than Nisha.

Difference between heights of both

= 1 m 58 cm 9 m – 1 m

18 cm 5 mm = 40 cm 4 m

So, Razia is 40 cm 4 m taller than Nisha.

m	cm	mm
1	58	9
- 1	18	5
0	40	4

3. Weight of potatoes = 4 kg 200 g
 Weight of bringals = 2 kg 800 g
 Weight of tomatoes = + 5 kg 750 g

Total weight = **12 kg 750 g** = 12.750 kg

So, Maya purchased 12.750 kg vegetables.

4. Quantity of milk to prepare sweets = 17.950 L
 Quantity of milk to prepare curd = 18.695 L
 Quantity of milk to make tea = + 5.165 L
 Total quantity of milk = 41.810 L

So, 41.810 L of milk is needed.

5. Length of one roll of ribbon = 13.75 m
 Length of another roll of ribbon = 1585 cm
 = 15.85 m

$$\begin{array}{r} \textcircled{1} \quad \textcircled{1} \\ 13.75 \\ + 15.85 \\ \hline 29.60 \end{array}$$

Total length of both roll of ribbon = (13.75 + 15.85) m
 = 29.60 m

So, total length of ribbon = 29.60 m

6. Weight of box with dry fruits = 12.650 kg = 12650 g
 Weight of dry fruits = 9 kg 800 g = - 9800 g
 Weight of empty box = 2850 g

So, the weight of empty box is 2850 g

7. The capacity of water tank = 1000.00 L
 It has water = - 873.73 L
 More water can be stored = 126.27 L

So, 126.27 L of more water can be stored in the tank.

Exercise 10.4

1. Multiply :

a. $6.970 \text{ km} \times 1.70$
 = 11.84900 km = **11.849 km**

$$\begin{array}{r} 6.970 \\ \times 1.70 \\ \hline 0000 \\ 487900 \\ 697000 \\ \hline 11.84900 \end{array}$$

b. $3.57 \text{ g} \times 2 = 7.14 \text{ g}$

$$\begin{array}{r} 3.57 \\ \times 2 \\ \hline 7.14 \end{array}$$

c. $6.60 \text{ cm} \times 5.50$
 = 36.3000 cm = 36.3 cm

$$\begin{array}{r} 6.60 \\ \times 5.50 \\ \hline 000 \\ 33000 \\ \hline 36.3000 \end{array}$$

d. $5.061 \text{ kg} \times 2.1$
 = 10.6281 kg

$$\begin{array}{r} 5.061 \\ \times 2.1 \\ \hline 5061 \\ 101220 \\ \hline 10.6281 \end{array}$$

e. $9.61 \text{ mg} \times 1.2$
 $= 11.532 \text{ mg}$

$$\begin{array}{r} 9.61 \\ \times 1.2 \\ \hline 1922 \\ 9610 \\ \hline 11.532 \end{array}$$

f. $8.60 \text{ m} \times 5.2 = 44.720 \text{ m}$
 $= 44.72 \text{ m}$

$$\begin{array}{r} 8.60 \\ \times 5.2 \\ \hline 1720 \\ 43000 \\ \hline 44.720 \end{array}$$

2. **Divide :**

a. $9.960 \text{ g} \div 1.6 = \frac{9.960}{1.6} \text{ g}$
 $= \frac{99.60}{16} \text{ g} = 6.225 \text{ g}$

$$\begin{array}{r} 6.225 \\ 16 \overline{)99.60} \\ \underline{96} \\ 36 \\ \underline{32} \\ 40 \\ \underline{32} \\ 80 \\ \underline{80} \\ 0 \end{array}$$

b. $10956 \text{ L} \div 1.7 = \frac{10956}{1.7} \text{ L}$
 $= \frac{109560}{17} \text{ L} = 6444.705 \text{ L}$

$$\begin{array}{r} 6444.705 \\ 17 \overline{)109560} \\ \underline{-102} \\ 75 \\ \underline{-68} \\ 76 \\ \underline{-68} \\ 80 \\ \underline{-68} \\ 120 \\ \underline{-119} \\ 100 \\ \underline{-85} \\ 15 \end{array}$$

c. $90.674 \text{ kg} \div 0.12 = \frac{90.674}{0.12} \text{ kg}$ d. $93.285 \text{ m} \div 4.5 = \frac{93.285}{4.5} \text{ m}$
 $= \frac{9067.4}{12} \text{ kg} = 755.616 \text{ kg}$ $= \frac{932.85}{45} \text{ m} = 20.73 \text{ m}$

$$\begin{array}{r} 755.61 \\ 12 \overline{)9067.4} \\ \underline{-84} \\ 66 \\ \underline{-60} \\ 67 \\ \underline{60} \\ 74 \\ \underline{-72} \\ 20 \\ \underline{-12} \\ 8 \end{array}$$

$$\begin{array}{r} 20.73 \\ 45 \overline{)932.85} \\ \underline{-90} \\ 328 \\ \underline{-315} \\ 135 \\ \underline{-135} \\ 0 \end{array}$$

$$\begin{aligned} \text{e. } 19\text{g } 98\text{ mg} \div 18 &= 19.098\text{ g} \div 18 \\ &= 1.061\text{ g} = 7.113\text{ km} \end{aligned}$$

$$\begin{array}{r} 1.061 \\ 18 \overline{)19.098} \\ \underline{-18} \\ 109 \\ \underline{-108} \\ 18 \\ \underline{-18} \\ 0 \end{array}$$

$$\begin{aligned} \text{f. } 128\text{ km } 34\text{ m} \div 18 &= 128.034\text{ km} \div 18 \\ &= 7.113 \end{aligned}$$

$$\begin{array}{r} 7.113 \\ 18 \overline{)128.034} \\ \underline{-126} \\ 20 \\ \underline{-18} \\ 23 \\ \underline{-18} \\ 54 \\ \underline{-54} \\ 0 \end{array}$$

Exercise 10.5

- The cost of 1 m canvas = ₹ 197
 \therefore The cost of 6.75 m canvas = ₹ 197×6.75
 = ₹ 1329.75

So, the cost of 6.75 m of canvas is ₹ 1329.75

- 1 week = 7 days

In 1 day the restaurant uses vegetables
 = 25.275 kg

In 7 days the restaurant uses vegetables
 = $25.275\text{ kg} \times 7 = 176.925\text{ kg}$

So, 176.925 kg vegetables are used in a week.

- The weight of 1 water melon = 2 kg 695 g
 = 2.695 kg

\therefore The weight of such 13 water
 melons = $2.695\text{ kg} \times 13$
 = 35.035 kg

So, 35.035 kg will be the weight of 13 water melons.

- In 32 tanks, the petrol is stored = 4242.56 L

In 1 tanks, the petrol is stored = $4242.56\text{ L} \div 32$
 = 132.58 L

So, 132.58 L of petrol is store in each tanks.

$$\begin{array}{r} 197 \\ \times 6.75 \\ \hline 985 \\ 13790 \\ 118200 \\ \hline 1329.75 \end{array}$$

$$\begin{array}{r} 25.275 \\ \times 7 \\ \hline 176.925 \end{array}$$

$$\begin{array}{r} 2.695 \\ \times 13 \\ \hline 8085 \\ 26950 \\ \hline 35035 \end{array}$$

$$\begin{array}{r} 132.58 \\ 32 \overline{)4242.56} \\ \underline{-32} \\ 104 \\ \underline{-96} \\ 82 \\ \underline{-64} \\ 185 \\ \underline{-160} \\ 256 \\ \underline{-256} \\ 0 \end{array}$$

5. The length of 1 saree = 5.672 m
 \therefore The length of 50 sarees = $5.67 \text{ m} \times 50$
 $= 283.600 \text{ m}$
 $= 283.6 \text{ m}$

So, the length of 50 sarees is 283.6 m

$$\begin{array}{r} 5.672 \\ \times 50 \\ \hline 0000 \\ 283600 \\ \hline 283600 \end{array}$$

6. The weight of 25 toffees = 275 g
 The weight of 1 toffees = $275 \text{ g} \div 25 = 11 \text{ g}$
 The weight of 80 toffees = $11 \text{ g} \times 80 = 880 \text{ g}$
 So, the weight of 80 toffees is 880 g

$$\begin{array}{r} 11 \\ 25 \overline{) 275} \\ \underline{-25} \\ 25 \\ \underline{-25} \\ 0 \end{array}$$

7. A dose of a cough syrup in 1 time = 5 mL
 A dose of cough syrup in 3 times in a day = $5 \text{ mL} \times 3$
 $= 15 \text{ mL}$

$$\begin{array}{r} 15 \\ \times 3 \\ \hline 45 \end{array}$$

In 1 day, the quantity of cough syrup is taken = 15 mL

In 15 days the quantity of cough syrup is taken = $15 \text{ mL} \times 15$
 $= 225 \text{ mL}$

So, 225 mL of cough syrup is taken in 15 days.

8. Distance is travelled in 4 days = 1582.4 km
 Distance is travelled in 1 day = $1582.4 \text{ km} \div 4$
 $= 395.6 \text{ km}$

$$\begin{array}{r} 395.6 \\ 4 \overline{) 1582.4} \\ \underline{-12} \\ 38 \\ \underline{-36} \\ 22 \\ \underline{-20} \\ 24 \\ \underline{-24} \\ 0 \end{array}$$

So, 395.6 km distance is travelled in 1 day.

9. In 30 days the length of road was constructed = 28.500 km
 \therefore In 1 day, the length of road was constructed = $28.500 \text{ km} \div 30$
 $= 28500 \text{ m} \div 30$
 $= 950 \text{ m}$

$$\begin{array}{r} 950 \\ 30 \overline{) 28500} \\ \underline{-270} \\ 150 \\ \underline{-150} \\ 0 \\ \underline{-0} \\ 0 \end{array}$$

950 m road was constructed in 1 day.

Multiple Choice Questions

Tick (✓) the correct choice :

Ans. 1. b. 820

2. b. 5

3. b. 54.089 km

11

Percentage

Hots

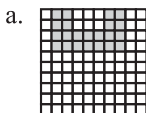
2. $\frac{3}{10}$, 0.3, 30%

3. $\frac{2}{10}$, 0.2, 20%

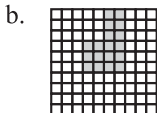
4. $\frac{3}{10}$, 0.3, 30%

Exercise 11.1

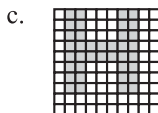
1. What percentage of the square is shaded?



$$\frac{22}{100} = 22\%$$



$$\frac{18}{100} = 18\%$$



$$\frac{38}{100} = 38\%$$

2. Write the following fractions as percentage.

a. $\frac{25}{100} = 25\%$ b. $\frac{40}{100} = 40\%$ c. $\frac{60}{100} = 60\%$ d. $\frac{50}{100} = 50\%$

3. Write the following percentage as fraction.

a. $\frac{60}{100} = \frac{3}{5}$ b. $\frac{35}{100} = \frac{7}{20}$ c. $\frac{45}{100} = \frac{9}{20}$ d. $\frac{85}{100} = \frac{17}{20}$

4. Write the following decimal fraction as percentage.

a. $\frac{5.8}{100} = 5.8\%$ b. $\frac{43}{100} = 43\%$ c. $\frac{32}{100} = 32\%$ d. $\frac{85}{100} = 85\%$

5. Write percentage as decimal fraction.

a. $\frac{62}{100} = 0.62$ b. $\frac{83}{100} = 0.83$ c. $\frac{35}{100} = 0.35$ d. $\frac{26}{100} = 0.26$

Exercise 11.2

1. Solve as directed :

a. $\frac{80}{100} \times 12 = 8 \times 12 \text{ m} = 96 \text{ m}$

So, 80% of 120 m = **96 m**

b. $\frac{25}{100} \times 140 \text{ g} = \frac{25}{100} \times 140 \text{ g} = 35 \text{ g}$

So, 25% of 140 g = **35 g**

c. $\frac{20}{100} \times 1500 \text{ kg} = \frac{20 \times 1500}{100} \text{ kg} = 300 \text{ kg}$

So, 20% of 1500 kg = **300 kg**

$$d. \frac{21}{100} \times 200 = \frac{21 \times 200}{100} = 42$$

So, 21% of 200 = **42**

$$e. \frac{6}{100} \times 1000 \text{ L} = \frac{6 \times 1000}{100} \text{ L} = 60 \text{ L}$$

So, 6% of 1000 L = **60 L**

$$f. \frac{10}{100} \times ₹ 500 = ₹ \frac{10 \times 500}{100} = ₹ 50$$

So, 10% of ₹ 500 = **₹ 50**

2. Solve as directed :

$$a. ₹ 30 \text{ of } ₹ 150$$

$$= \frac{₹ 30}{150} = \frac{3}{15}$$

$$\therefore \frac{3}{15} = \frac{3^1}{15^1} \times 100\%$$

$$= \mathbf{20\%}$$

$$c. 250 \text{ g of } 1200 \text{ g}$$

$$= \frac{250 \text{ g}}{1200 \text{ g}} = \frac{10^5}{48^{126}} \times 100\%$$

$$= \frac{5 \times 25}{6} \% = \frac{125}{6} \%$$

$$= \mathbf{20.83\%}$$

$$e. 60 \text{ kg of } 150 \text{ kg}$$

$$= \frac{60 \text{ kg}}{150 \text{ kg}} = \frac{2}{5} \times 100\%$$

$$= \mathbf{40\%}$$

$$b. 22 \text{ of } 44$$

$$= \frac{22}{44} = \frac{22^1}{44^1} \times 100\%$$

$$= \mathbf{50\%}$$

$$d. 5.6 \text{ m of } 560 \text{ cm}$$

$$= 5.6 \text{ m of } 5.6 \text{ m}$$

$$= \frac{5.6 \text{ m}}{5.6 \text{ m}} \times 100\% = \frac{1}{1} \times 100\%$$

$$= \mathbf{100\%}$$

$$f. 86 \text{ L of } 2580 \text{ L}$$

$$= \frac{86 \text{ L}}{2580 \text{ L}} = \frac{43}{1290} \times 100\%$$

$$= \frac{43^1}{1230^{30}} \times 100\%$$

$$= \frac{100}{30} \% = 3.33\%$$

3. Solve.

$$a. \text{ Salary of preet} = ₹ 24000 \text{ per month}$$

$$\text{His saving} = 28\% \text{ of } ₹ 24000 = \frac{₹ 24000 \times 28}{100}$$

$$= ₹ 6,720 \text{ per month}$$

$$\text{Her expenditure} = ₹ (24,000 - 6,720) = ₹ 17,280$$

50, Preet spends **₹ 17,280** every month.

- b. Number of student = 40

$$\text{Number of present students} = 35\% \text{ of } 40 = \frac{35}{100} \times 40 = 14 \text{ students}$$

$$\text{Number of absent students} = 40 - 14 = 26 \text{ students}$$

So, on the rainy day 26 students were absent.

- c. Suresh got 89% marks out of 750 marks

$$= \frac{89}{100} \times 750 = \frac{1335}{2} = 667.5 \text{ marks}$$

So, Suresh got **667.5 marks**

- d. Income of Anish = ₹ 9000

His expenditure on paying bill = 20% of ₹ 9000

$$= \frac{20}{100} \times ₹ 9000 = ₹ 1800$$

His expenditure for paying groceries = 15% of ₹ 9000

$$= \frac{15}{100} \times ₹ 9000 = ₹ 1350$$

$$\text{Total expenditure on bills and groceries} = ₹ (1800 + 1350) = ₹ 3150$$

So, ₹ 3,150 are spent on bills and groceries by Anish.

- e. Anju's weight = 63 kg

$$14\% \text{ of } 63 \text{ kg} = \frac{14}{100} \times 63 = \frac{882}{100} \text{ kg} = 8.82 \text{ kg}$$

$$\therefore \text{Manju's weight} = 63 \text{ kg} + 8.82 \text{ kg} = 71.82 \text{ kg}$$

So, Manju's weight is **71.82 kg**

- f. Population of the village = 2400

$$\text{Number of children} = 12\% \text{ of } 2400 = \frac{12}{100} \times 2400 = 288$$

$$\text{Number of Adults} = 2400 - 288 = 2112$$

So, number of Adults in the village is 2112


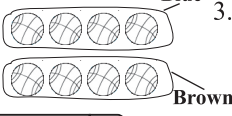
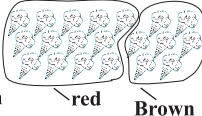
Multiple Choice Questions

Tick (✓) the correct choice :

- Ans. 1. c. 60% 2. c. 76 3. a. 25% 4. c. ₹ 55.5

Fun with Maths

Colour as many object as required

- Ans. 1.  2.  3. 

12

Profit, Loss and Simple Interest

Look Back

Red the bills to find the total amount and the money left over.

Ans.	S.No.	Item	Quantity	Cost (₹)
	1.	Potatoes	$\frac{1}{2}$ kg	7.50
	2.	Onions	1 kg	16.00
	3.	Apples	1 kg	120.00
	4.	Tomatoes	1 kg	15.00
			Total =	<u>158.50</u>
			Money left over =	200.00 – 158.50 = ₹41.50

Exercise 12.1

1. Find the profit or loss.

S.N	Item	Cost Price	Selling Price	Profit	Loss
a.	Toy	₹ 5,000	₹ 6,000	₹1000	—
b.	Fruits	₹ 12,000	₹ 10,000	—	₹2,000
c.	Pen	₹ 1,800	₹ 2,400	₹600	—
d.	Jam Bottle	₹ 5,400	₹ 7,200	₹1800	—
e.	Oil	₹ 9,100	₹ 8,000	—	₹1,100

2. Fill in the blanks.

S.No.	C.P.	S.P.	P	L
a.	₹ 2,400	₹ 2,800	₹ 400	—
b.	₹ 1,650	₹ 1,590	—	₹ 60
c.	₹ 2800	₹ 2,900	₹ 100	—
d.	₹ 1,900	₹ 1,600	—	300
e.	₹ 4,100	₹ 4,400	₹ 300	—

3. Solve these story problems.

a. Selling price of a pen ₹ 22.00

Cost price of it = ₹ 17.50

SP > CP, there fore, profit = ₹ (22.00 – 17.50) = ₹ 4.50

- So, profit of Ritesh is ₹ 4.50
- b. Selling price of a mobile phone = ₹ 3,629
 Cost price of a mobile phone = ₹ 2,675
 $SP > CP$ there fore, profit = ₹ (3629 – 2675) = ₹ 954
 So, Arman's profit is ₹ 954
- c. Selling price of book = ₹ 360
 Profit = ₹ 85
 \therefore The cost price of a book = $SP - \text{Profit} = ₹ (360 - 85)$
 $= ₹ 275$
- So, the cost price of a book was ₹ 275
- d. The cost price of a fan = ₹ 725
 Loss = ₹ 50
 The selling price of a fan = cost price – loss = ₹ (725 – 50)
 $= ₹ 675$
- So, the selling price of a fan is ₹ 675
- e. The cost price of a cycle = ₹ 1695
 Profit = ₹ 825
 The selling price of a cycle = $CP + \text{Profit} = ₹ (1695 + 825)$
 $= ₹ 2520$
- So, the selling price of a cycle is ₹ 2520
- f. The cost price of a radio = ₹ 740
 Loss = ₹ 95
 The selling price of a radio = $CP - \text{Loss} = ₹ (740 - 95)$
 $= ₹ 645$
- So, Mr Thomson sold a radio for ₹ 645.

Exercise 12.2

1. Fill in the blanks.

Principal	Rate of interest	Time of deposit	Interest	Amount
a. ₹ 1800	5%	2 years	₹ 180	₹ 1,980
b. ₹ 560	8%	10 years	₹ 448	₹ 1,008
c. ₹ 2500	10%	5 years	₹ 1,250	₹ 3,750
d. ₹ 6500	12%	3 years	₹ 2,340	₹ 8,840
e. ₹ 15000	11%	2 years	₹ 3,300	₹ 18,300

2. Find the interest and the amount for 1 year when the principal and the rate of interest are given to you.

- a. $P = ₹ 10,000$, $R = 3\%$

Principal (P) = ₹10,000, Rate (R) = 3% and Time (T) = 1 year

$$\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{10,000 \times 3 \times 1}{100} = ₹ 300$$

Amount = Principal + Interest = ₹ 10,000 + ₹ 300 = ₹ 10,300

So, Interest = ₹ 300 and Amount ₹ 10,300

- b. $P = ₹ 1,500$, $R = 7\%$

Principal (P) = ₹ 1,500, Rate (R) = 7% and Time (T) = 1 year

$$\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{1500 \times 7 \times 1}{100} = ₹ 105$$

Amount = Principal + Interest = ₹ 1500 + ₹ 105 = ₹ 1605

So, Interest = ₹ 105 and Amount ₹ 1605

- c. $P = ₹ 2,500$, $R = 12\%$

Principal (P) = ₹ 2500, Rate (R) = 12% and Time (T) = 1 year

$$\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{2500 \times 12 \times 1}{100} = ₹ 300$$

Amount = Principal + Interest = ₹ 2,500 + ₹ 300 = ₹ 2800

So, Interest = ₹ 300 and Amount = ₹ 2800

- d. $P = ₹ 14,000$, $R = 8\%$

Principal (P) = ₹ 14,000, Rate (R) = 8% and Time (T) = 1 year

$$\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{14000 \times 8 \times 1}{100} = ₹ 1120$$

Amount (A) = P + SI = ₹ 14,000 + ₹ 1,120 = ₹ 15,120

So, Interest = ₹ 1120 and Amount = ₹ 15,120

- e. $P = ₹ 2,800$, $R = 10\%$

Principal (P) = ₹ 28,00 Rate (R) = 10% and Time (T) = 1 year

$$\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{2800 \times 10 \times 1}{100} = ₹ 280$$

Amount (A) = P + SI = ₹ 2800 + ₹ 280 = ₹ 3080

So, Interest = ₹ 280 and Amount = ₹ 3080

- f. $P = ₹ 2000$, $R = 5\%$

Principal (P) = ₹ 2,000, Rate (R) = 5% and Time (T) = 1 year

$$\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{2000 \times 5 \times 1}{100} = ₹ 100$$

Amount (A) = P + SI = ₹ 2,000 + ₹ 100 = ₹ 2100

So, Interest = ₹ 100 and Amount = ₹ 2100

3. Find the interest and the amount when.

- a. $P = ₹ 10,000$, $R = 6\frac{1}{2}\%$, $T = 4$ years
Principal (P) = ₹ 10,000, Rate (R) = $6\frac{1}{2}\% = \frac{13}{2}\%$,
Time (T) = 4 year
 $\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{10000 \times 13 \times 4^2}{100 \times 2} = ₹ 2600$
Amount (A) = $P + SI = ₹ 10,000 + ₹ 2,600 = ₹ 12,600$
So, Interest = ₹ 2600 and Amount = ₹ 12,600
- b. $P = ₹ 1,000$, $R = 2\frac{1}{2}\%$, $T = 3$ years
Principal (P) = ₹ 1,000, Rate (R) = $2\frac{1}{2}\% = \frac{5}{2}\%$,
Time (T) = 3 year
 $\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{1000 \times 5 \times 3}{100 \times 2_1} = ₹ 75$
Amount = $P + SI = ₹ 1000 + ₹ 75 = ₹ 1,075$
So, Interest = ₹ 75 and Amount = ₹ 1,075
- c. $P = ₹ 2,500$, $R = 12\frac{1}{2}\%$, $T = 10$ years
Principal (P) = ₹ 2,500, Rate (R) = $12\frac{1}{2}\% = \frac{25}{2}\%$,
Time (T) = 10 years
 $\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{2500 \times 25 \times 10^5}{100 \times 2_1} = ₹ 3,125$
Amount (A) = $P + SI = ₹ 2,500 + ₹ 3,125 = ₹ 5,625$
So, Interest = ₹ 3,125 and Amount = ₹ 5,625
- d. $P = ₹ 750$, $R = 5\%$, $T = 2\frac{1}{2}$ years
Principal (P) = ₹ 750, Rate (R) = 5 % and
Time (T) = $2\frac{1}{2}$ years = $\frac{5}{2}$ years
 $\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{2780 \times 5 \times 5}{100 \times 2_1} = ₹ 93.75$
Amount (A) = $P + SI = ₹ 750 + ₹ 93.75 = ₹ 843.75$
So, Interest = ₹ 93.75 and Amount = ₹ 843.75
- e. Principal (P) = ₹ 5,000, Rate (R) = 10% and
Time (T) = $3\frac{1}{2}$ years = $\frac{7}{2}$ years
 $\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{5000 \times 10 \times 7}{100 \times 2_1} = ₹ 1750$

$$\text{Amount (A)} = P + \text{SI} = ₹ 5,000 + ₹ 1,750 = ₹ 6750$$

So, Interest = ₹ 1750 and Amount = ₹ 6,750

f. $P = ₹ 1,5000$, $R = 5\%$, $T = 7\frac{1}{2}$ years

Principal (P) = ₹ 15,000, Rate (R) = 5% and

Time (T) = $7\frac{1}{2}$ years = $\frac{15}{2}$ years

$$\therefore \text{Interest (SI)} = \frac{P \times R \times T}{100} = ₹ \frac{15000 \times 5 \times 15}{100 \times 2} = ₹ 5625$$

$$\text{Amount (A)} = P + \text{SI} = ₹ 15,000 + ₹ 5,625 = ₹ 20,625$$

So, Interest = ₹ 5,625 and Amount = ₹ 20,625

4. Solve these problems.

a. Principal (P) = ₹ 12,000, Time = 5 years and Rate (R) = $6\frac{1}{2}\%$
 $= \frac{13}{2}\%$ per annum.

$$\text{Simple Interest (SI)} = \frac{P \times R \times T}{100} = \frac{12000 \times 13 \times 5}{100 \times 2} = ₹ 3900$$

So, Simple Interest will be ₹ 3900

b. Principal (P) = ₹ 3,500, Time (T) = 3 years and Rate (R) = 7%

$$\text{Simple Interest (SI)} = \frac{P \times R \times T}{100} = \frac{3500 \times 7 \times 3}{100} = ₹ 735$$

So, Priyanka got interest ₹ 735 after 3 years

c. Principal (P) = ₹ 70,000, Time (T) = 6 years, Rate (R) = 11% per annum

$$\text{Simple Interest (SI)} = \frac{P \times R \times T}{100} = \frac{70000 \times 11 \times 6}{100} = ₹ 46200$$

So, Ayush will have to pay ₹ 46,200 as interest.

d. Principal (P) = ₹ 4500, Rate (R) = 12% per year, Time (T) = 5 years

$$\text{Simple interest (SI)} = \frac{P \times R \times T}{100} = \frac{4500 \times 12 \times 5}{100 \times 2} = ₹ 2700$$

$$\text{Amount} = P + \text{SI} = ₹ 4,500 + ₹ 2,700 = ₹ 7,200$$

So, Vivak will repay ₹ 7,200 at the end of 5 years.

Fun with Maths

Aman and Arman went separately to the weekly market with their mothers to purchase fruits and vegetable. They bought the following different prices. Who bought the items cheaper.

Ans. Arman bought the items cheaper.

1. Arman 2. Aman 3. Aman 4. Arman 5. Both 6. Arman

Multiple Choice Questions

Tick (✓) the correct choice :

- Ans. 1. a. selling price 2. a. cost price 3. b. Loss = C.P. – S.P.
4. b. 10 5. a. cost price

13 Average

Exercise 13

1. Find the average of the given sets.

$$\text{Average} = \frac{\text{Sum of Values}}{\text{number of values}}$$

- a. 11, 12, 13, 14

$$\text{Sum of numbers} = 11 + 12 + 13 + 14 = 50$$

$$\text{Number of numbers} = 4$$

$$\therefore \text{Average} = \frac{\text{Sum of Values}}{\text{number of values}} = \frac{50}{4} = 12.5$$

So, average is **12.5**

- b. 18, 21, 32, 19, 25

$$\text{Sum of numbers} = 18 + 21 + 32 + 19 + 25 = 115$$

$$\text{Number of numbers} = 5$$

$$\therefore \text{Average} = \frac{\text{Sum of Values}}{\text{number of values}} = \frac{115}{5} = 23$$

So, average is **23**

- c. 6, 8, 12, 16

$$\text{Sum of numbers} = 6 + 8 + 12 + 16 = 42$$

$$\text{Number of numbers} = 4$$

$$\therefore \text{Average} = \frac{\text{Sum of Values}}{\text{number of values}} = \frac{42}{4} = 10.5$$

So, average is **10.5**

- d. 12 kg, 15 kg, 18 kg

$$\text{Total weight} = 12 \text{ kg} + 15 \text{ kg} + 18 \text{ kg} = 45 \text{ kg}$$

$$\text{Number of weight} = 3$$

$$\therefore \text{Average} = \frac{45 \text{ kg}}{3} = 15 \text{ kg}$$

So, the average weight is **15 kg**.

- e. 5 cm, 10 cm, 15 cm, 20 cm

$$\text{Sum of lengths} = 5 \text{ cm} + 10 \text{ cm} + 15 \text{ cm} + 20 \text{ cm} = 50 \text{ cm}$$

$$\text{Number of lengths} = 4$$

$$\therefore \text{Average} = \frac{\text{Sum of lengths}}{\text{number of lengths}} = \frac{50\text{cm}}{4} = 12.5 \text{ cm}$$

So, the average of lengths is **12.5 cm**

- f. ₹ 23, ₹ 36, ₹ 19, ₹ 22, ₹ 10

$$\text{Sum of Rupees} = ₹ (23 + 36 + 19 + 22 + 10) = ₹ 110$$

$$\text{number of rupees} = 5$$

$$\therefore \text{Average of rupees} = \frac{\text{Sum of rupees}}{\text{number of rupees}} = ₹ \frac{110}{5} = ₹ 22$$

So, the average is **₹ 22**

2. Solve these problems.

- a. Sum of first 7 multiples of 8 = $8 + 16 + 24 + 32 + 40 + 48 + 56 = 224$

$$\text{number of multiples} = 7$$

$$\therefore \text{Average} = \frac{\text{Sum of number}}{\text{number of multiples}} = \frac{224}{7} = 32$$

So, the average is **32**

- b. Average of 6 numbers = 492

$$\therefore \text{Their total} = \text{average} \times \text{number} = 492 \times 6 = 2952$$

So, the total of 6 numbers is **2952**.

- c. Sum of goods worth = ₹ (6,000 + 4,500 + 3,500 + 3,000 + 4,000) = ₹ 21,000

$$\text{Number of goods} = 5$$

$$\therefore \text{Average sale} = \frac{\text{Sum of good worth}}{\text{number of goods}} = ₹ \frac{21,000}{5} = ₹ 4200$$

So, the average sale of the shopkeeper is **₹ 4200**

- d. Total of rainfall = $(2.2 + 3.4 + 0.6 + 1.8) \text{ cm} = 8.0 \text{ cm}$

$$\text{Number of days} = 4 \text{ days}$$

$$\text{Average of daily rainfall} = \frac{\text{Total of rainfall}}{\text{number of Days}} = \frac{8.0}{4} \text{ cm} = 2.0 \text{ cm}$$

Therefore, 2.0 cm was the daily rainfall.

- e. Total of all even numbers between 21 and 41

$$= 22 + 24 + 26 + 28 + 30 + 32 + 34 + 36 + 38 + 40 = 310$$

$$\text{Number of even numbers} = 10$$

$$\therefore \text{Average} = \frac{\text{Total of number}}{\text{number of numbers}} = \frac{310}{10} = 31$$

So, the average is 31 which is a odd number.

- f. Total marks = $12 + 18 + 9 + 11 + 7 + 14 + 6 = 77$

$$\text{Number of students} = 7$$

$$\therefore \text{Average marks} = \frac{\text{Total marks}}{\text{Number of students}} = \frac{77}{7} = 11$$

So, the average marks is 11

- g. In 1 hour the bus covers = 46 km
 In 7 hours the bus will cover = $46 \times 7 = 322$ km
 So, the bus will cover **322 km** distance in 7 hours.
- h. Total runs scored = Average \times number of matches.
 Average = 73 runs and number of matches = 5
 \therefore Total runs scored = $73 \times 5 = 365$ runs.
 So, Vineet scored **365** runs altogether.

Multiple Choice Questions

Tick (✓) the correct choice :

- Ans. 1. a. 5 2. a. 18 kg 3. c. 26
 4. c. average 5. a. 60 cm

14 Speed, Distance and Time

Exercise 14.1

1. Complete the table :

Distance (d)	Time taken (t)	Speed (s)
120 m	20 sec	6 m/sec
420 m	30 sec	14 m/sec
520 km	8 hours	65 km/hr
169 km	13 hours	13 km/hr
300 km	6 hours	50 km/hr
624 m	12 sec	52 m/sec

2. Find the speed in each case :

- a. Distance covered = 300 km
 Time taken = 4 hours
 $\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{300 \text{ km}}{4 \text{ hours}} = 75 \text{ km/hr}$
 So, speed of the train is **75 km/hr**
- b. A girl walks 8 km in 2 hours.
 Distance covered = 8 km
 Time taken = 2 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{8 \text{ km}}{2 \text{ hours}} = 4 \text{ km/hr}$$

So, speed of the girl is **4 km/hr**

- c. A car covers 54 km in 3 hours.

Distance covered = 54 km

Time taken = 3 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{54 \text{ km}}{3 \text{ hours}} = 18 \text{ km/hr}$$

So, speed of the car is 18 km/hr

- d. A cyclist covers 35 km in 5 hours.

Distance covered = 35 km

Time taken = 5 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{35 \text{ km}}{5 \text{ hours}} = 7 \text{ km/hr}$$

So, speed of the cyclist 7 km/hr

3. Find the distance covered in the following cases.

- a. A bus is travelling at a speed of 90 km/hr for 8 hours.

Speed = 90 km/hour

Time taken = 8 hours

$$\text{Distance covered} = \text{speed} \times \text{time} = 90 \times 8 = \mathbf{720 \text{ km}}$$

So, the distance covered by a bus is 720 km

- b. A man is driving at a speed of 35 km/hr for 7 hours.

Speed = 35 km

Time taken = 7 hours

$$\text{Distance covered} = \text{speed} \times \text{time} = 35 \times 7 = 245 \text{ km}$$

So, the distance covered by a vehicle is 245 km

4. If Plane covers 625 km in 7 hours, find its speed.

Distance covered = 625 km

Time taken = 7 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{625 \text{ km}}{7 \text{ hours}} = 89.28 \text{ km/hr}$$

So, speed of the plane is 89.28 km/hr

5. Distance covered = 383.5 km

Speed of a car = 86 km/hr

$$\therefore \text{Time taken} = \frac{\text{Distance}}{\text{Time}} = \frac{383.5}{86} = 4.45 \text{ hr}$$

So, the car will take 4.45 hr (approximate)

6. Speed = 630 km/hr

Time taken = 2.5 hr

$$\text{Distance covered} = \text{speed} \times \text{time} = 630 \times 2.5 = 1575 \text{ km}$$

$$\begin{array}{r} 4.45 \\ 86 \overline{)383.5} \\ \underline{-344} \\ 395 \\ \underline{-344} \\ 510 \\ \underline{-430} \\ 80 \end{array}$$

$$\begin{array}{r} 630 \\ \times 2.5 \\ \hline 3150 \\ 12600 \\ \hline 15750 \end{array}$$

- So, the aeroplane will cover 1575 km
7. Distance covered = 675 km
 Speed = 25 km/hr
 $\text{Time taken} = \frac{\text{Distance}}{\text{Speed}} = \frac{675}{25} = 27 \text{ hr}$
 So, the car will cover the journey in 27 hr
8. Distance covered by car = 156 km
 Time taken = 4 hr
 $\therefore \text{Speed of car} = \frac{\text{Distance}}{\text{Time}} = \frac{156}{4} = 39 \text{ km/hr}$
 Distance covered by bus = 140 km
 Time taken = 3 hours
 $\therefore \text{speed of bus} = \frac{\text{Distance}}{\text{Time}} = \frac{140}{3} = 46.66 \text{ km/hr}$
 So, bus is running faster than car.

Exercise 14.2

1. Express in m/sec :

- a. $60 \text{ km/hr} = \frac{10}{60} \times \frac{5}{18} \text{ m/sec} = \frac{50}{3} \text{ m/s} = 16 \frac{2}{3} \text{ m/sec}$
- b. $72 \text{ km/hr} = \frac{4}{72} \times \frac{5}{18} \text{ m/sec} = 20 \text{ m/sec}$
- c. $198 \text{ km/hr} = \frac{11}{198} \times \frac{5}{18} \text{ m/sec} = 55 \text{ m/sec}$
- d. $45 \text{ km/hr} = \frac{5}{45} \times \frac{5}{18} \text{ m/sec} = \frac{25}{2} \text{ m/sec} = 12 \frac{1}{2} \text{ m/sec}$
- e. $36 \text{ km/hr} = \frac{2}{36} \times \frac{5}{18} \text{ m/sec} = 10 \text{ m/sec}$

2. Convert in km/hr :

- a. $20 \text{ m/sec} = 20 \times \frac{18}{5} \text{ km/h} = 72 \text{ km/hr}$
- b. $85 \text{ m/sec} = 85 \times \frac{18}{5} \text{ km/hr} = 306 \text{ km/hr}$
- c. $120 \text{ m/sec} = 120 \times \frac{18}{5} \text{ km/hr} = 432 \text{ km/hr}$
- d. $45 \text{ m/sec} = 45 \times \frac{18}{5} \text{ km/hr} = 162 \text{ km/hr}$
- e. $25 \text{ m/sec} = 25 \times \frac{18}{5} \text{ km/hr} = 90 \text{ km/hr}$

3. A truck travelled from Amjer to Delhi covering a distance of 370 km in 5 hours. Find the speed of the truck in m/sec.

Distance covered = 370 km = 3,70,000 m

Time taken = 5 hours = 5×3600 seconds = 18,000 sec

So, speed of truck = $\frac{\text{Distance}}{\text{Time}} = \frac{3,70,000}{18,000} = \text{m/sec} = 20.55 \text{ m/sec}$

So, speed of truck is 20.55 m/sec

4. **Shekhar starts from his house at 7:45 am and cycles down to his school at 8:15 am. The distance of the house from school is 12 km. Find the speed of the cycle in m/sec.**

Distance covered = 12 km = 12000 m

Time taken = from 7 : 45 am to 8 : 15 am = 30 minutes

= 30×60 sec = 1800 sec

Speed = $\frac{\text{Distance}}{\text{Time}} = \frac{12000\text{m}}{1800 \text{ sec}} = 6.67 \text{ m/sec}$

So, the speed of cycle is 6.67 m/sec

5. **A bus travels at a speed of 36 km/hr. What is its speed in m/s?**

Speed of bus = 36 km/hour

= $\frac{36 \text{ km}}{1 \text{ hour}} = \frac{36000\text{m}}{3600 \text{ sec}} = 10 \text{ m/sec}$

So, speed of bus is 10 m/sec

6. **A bicycle travels with a speed of 54 km/hour. What is its speed in m/sec?**

Speed of a bicycle = 54 km/hr

= $\frac{54 \text{ km}}{1 \text{ hour}} = \frac{5400 \text{ m}}{3600 \text{ sec}} = \frac{540}{36} \text{ m/sec} = 15 \text{ m/sec}$

So, speed in m/sec is 15 m/sec

7. **An aeroplane travels 2,400 km in 3 hours 20 minutes. Find its speed in :**

Distance covered = 2400 km = 24,00,000 m

Time taken = 3 hours 20 minutes = 180 min + 20 min = 200 min

= $\frac{200}{60}$ hours = $\frac{10}{3}$ hours

= $200 \times 60 = 12,000$ seconds

a. Speed in km/hr = $\frac{\text{Distance}}{\text{Time}} = \frac{2400 \times 3}{10} \text{ km/hour}$

= 720 km/hr

b. Speed in m/min = $\frac{24,00,000 \text{ m}}{200 \text{ min}} = 12,000 \text{ m/minute}$

c. Speed in m/sec = $\frac{24,00,000 \text{ m}}{12,000} = 200 \text{ m/sec}$

8. Speed of a jet is 40 m/s. How much distance will it cover in 20 seconds?

Speed = 40 m/sec and time taken = 20 seconds

\therefore Distance = speed \times time = $40 \times 20 = 800$ m

So, a jet will cover **800 m** in 20 seconds

Multiple Choice Questions

Tick (✓) the correct choice :

Ans. 1. c. $\frac{1}{3600}$

2. b. 6 km/hr

3. a. $\frac{15}{8}$

15 Time and Temperature

Look Back

1.



Clock A



Clock B

30 minutes

2.



Clock A



Clock B

40 minutes

3.



Clock A



Clock B

One and half hours
or 90 minutes

4.



Clock A



Clock B

One hour fifty minutes
or 110 minutes

Exercise 15.1

1. Add.

a.

Min	Sec
①	①
18	33
+ 30	42
49	15

b.

Hr	Min
①	①
42	44
+ 23	26
66	10

c.

Hr	Min	Sec
①	①	①
7	40	37
+ 2	27	38
10	08	15

- d. Add 35 minutes 26 seconds and 42 minutes 52 seconds = 1 hr 18 min 18 sec

Hr	Min	Sec
①	①	①
0	35	26
+ 0	42	52
1	18	18

- e. Add 12 hours 54 minutes and 7 hours 43 minutes = 20 hr 37 min

Hr	Min
12	54
+ 7	43
20	37

- f. Add 12 years 6 months and 3 years 9 months = 16 years 3 months

Hr	Min
12	6
+ 3	9
16	3

2. Subtract

a.

Min	Sec
66	70
- 42	29
23	41

b.

Hr	Min
50	0
- 42	37
7	23

c.

Hr	Min
42	5
- 22	10
19	07

- d. Subtract 13 hours 28 minutes from 16 hours 12 minutes = 2 hours 44 min

Hr	Min
16	12
- 13	28
2	44

- e. Subtract 42 minutes 38 seconds from 50 minutes 17 seconds = 7 min 39 sec

min	sec
50	17
- 42	38
07	39

- f. Subtract 15 years 9 months from 18 years 5 months = 2 years 8 months

years	months
18	5
- 15	9
2	8

3. Find the duration of time.

- a. 8 : 10 a.m. to 1 : 40 p.m.

8 : 10 am = 0810 hours and 1 : 40 pm = 1340 hours

Duration of time from 8 : 10 am to 1 : 40 pm

= 1340 hours - 0810 hours = 0530 hours

= **5 hours 30 minutes**

- b. 9 : 10 a.m. to 4 : 50 p.m.

9 : 10 am = 0910 hours and 4 : 50 pm = 1650 hours

Duration of time from 9 : 10 am to 4 : 50 pm

= 1650 hours – 0910 hours = 0740 hours

= **7 hours 40 minutes**

- c. 8 : 45 p.m. to 12 : 00 noon d.

8 : 45 pm = 2045 hours and 12 : 0 noon = 1200 hours

midnight = 2400 hours or 0000 hours

Duration of time from 8 : 45 pm to midnight

= 2400 hours – 2045 hours

= 0315 hours = 3 hours 15 minutes

duration from midnight to 12 : 00 noon = 1200 hours 0000

hours = 12 hours

Duration from 8 : 45 pm to 12 noon = 03 hours 15 min 1200

hours 0 minutes

= 15 hours 15 minutes

- d. 4 : 25 p.m. to 1 : 10 a.m.

4 : 25 pm = 1625 hours and 1 : 10 am = 0110 hours

Duration from 4 : 25 pm to mid night

= 2400 hours – 1625 hours = 0735 hours

= **7 hours 35 minutes**

Duration from midnight to 1 : 10 am

= 0110 hours – 0000 hours = 0110 hours

= 1 hour 10 minutes

Duration from 4 : 25 pm to 1 : 10 am

= 7 hours 35 min + 1 hour 10 minutes

= **8 hours 45 minutes**

4. Solve the following story sums.

- a. Studied time in the morning = 2 hours 15 min

Studied time in the evening = + 1 hour 50 min

Total studied time = **4 hours 5 min**

So, Sakshi studied 4 hours 5 min in a day.

- b. Rajat studies for 2 hours 15 min.

Nishant studies for 1 hours 45 min.

2 hr 15 min > 1 hr 45 min

So Rajat studies longer period

Difference of time between both

= 2 hr 15 min – 1 hr 45 min = 30 minutes

So, Rajat studies 30 minutes longer than Nishant.

- c. Time taken by express train = 7 hours 25 minutes

min	sec
①	
2	15
– 1	50
4	05

hr	min
①	⑦⑤
2	15
– 1	45
0	30

Time taken by super fast train = 5 hours 45 minutes

Difference of time taken by both trains

= 7 hr 25 min – 5 hr 45 min = 1 hour 40 minutes

So, we save 1 hour 40 minutes if we travel by faster train.

min	sec
⑥	⑧⑤
7	25
– 5	45
1	40

- d. Pallavi is older 1 year 6 months than Satvik

Age of Satvik = 7 years 9 months

∴ Age of Pallavi = 7 years 9 months + 1 years 6 months

So, age of Pallavi is 9 years 3 months.

year	month
①	
7	9
+ 1	6
9	3

- e. Gautam lived in Bangalore for = 4 years 6 months

Gautam lived in Mumbai for = 5 years 10 months

Gautam lived in both city for = 4 years 6 months + 5 years 10 months = 10 years 4 months.

So, Gautam was away 10 years 4 months from his home town

year	month
①	
4	6
+ 5	10
10	4

Hots

One of them was born on 28th February and other was born on 1st march.

Exercise 15.2

- Total leave = 40 days from 12 January
Leave duration in January = $31 - 11 = 20$ days
Leave duration in February = 20 days
So, Mohit will join the office on **21st February**.
- John went on leave on 13 March upto 14 April
Leave duration in March = $31 - 12 = 19$ days
Leave duration in April = 14 days
Total leaves = $19 + 14 = 33$ days
- The school remained closed from 13th May to 23 rd June.
Summer vacation in May = 19 days
Summer vacation in June = 23 days
Total vacation = $19 + 23 = 42$ days
42 days the school remained closed
- Official tour was from 14th March to 27 May.
Days of tour in March = $31 - 13 = 18$ days
Days of tour in April = 30 days
Days of tour in may = 27
Total days of tour = $18 + 30 + 27 = 75$ days

Exercise 15.3

1. Convert the following into Fahrenheit scale.

$$^{\circ}\text{F} = \frac{9}{5} \times ^{\circ}\text{C} + 32^{\circ}$$

a. $\therefore 50^{\circ}\text{C}$

$$^{\circ}\text{F} = \frac{9 \times 50^{\circ}}{5} + 32^{\circ} = 90^{\circ} + 32^{\circ} = 122^{\circ}\text{F}$$

So, $50^{\circ}\text{C} = 122^{\circ}\text{F}$

b. 35°C

$$^{\circ}\text{F} = \frac{9 \times 35^{\circ}}{5} + 32^{\circ} = \frac{9 \times \overset{7^{\circ}}{35^{\circ}}}{5_1} + 32^{\circ} = 63^{\circ} + 32^{\circ} = 95^{\circ}$$

So, $35^{\circ}\text{C} = 95^{\circ}\text{F}$

c. 90.5°C

$$^{\circ}\text{F} = \frac{9 \times 90.5^{\circ}}{5} + 32^{\circ} = \frac{9 \times \overset{18.1}{90.5^{\circ}}}{5_1} + 32^{\circ} = 162.9^{\circ} + 32^{\circ} = 194.9^{\circ}\text{F}$$

So, $90.5^{\circ}\text{C} = 194.9^{\circ}\text{F}$

d. 37.5°C

$$^{\circ}\text{F} = \frac{9 \times 37.5^{\circ}}{5} + 32^{\circ} = \frac{9 \times \overset{7.5}{37.5^{\circ}}}{5_1} + 32^{\circ} = 67.5^{\circ} + 32^{\circ} = 99.5^{\circ}\text{F}$$

So, $37.5^{\circ}\text{C} = 99.5^{\circ}\text{F}$

e. 75°C

$$^{\circ}\text{F} = \frac{9 \times 75^{\circ}}{5} + 32^{\circ} = \frac{9 \times \overset{15^{\circ}}{75^{\circ}}}{5_1} + 32^{\circ} = 135^{\circ} + 32^{\circ} = 167^{\circ}\text{F}$$

$\therefore 75^{\circ}\text{C} = 167^{\circ}\text{F}$

f. 65°C

$$^{\circ}\text{F} = \frac{9 \times 65^{\circ}}{5} + 32^{\circ} = \frac{9 \times \overset{13^{\circ}}{65^{\circ}}}{5_1} + 32^{\circ} = 117^{\circ} + 32^{\circ} = 149^{\circ}$$

So, $65^{\circ}\text{C} = 149^{\circ}\text{F}$

g. 0°C

$$^{\circ}\text{F} = \frac{9 \times 0^{\circ}}{5} + 32^{\circ} = 0^{\circ} + 32^{\circ} = 32^{\circ}$$

So, $0^{\circ}\text{C} = 32^{\circ}\text{F}$

h. 95°C

$$^{\circ}\text{F} = \frac{9 \times 95^{\circ}}{5} + 32^{\circ} = \frac{9 \times \overset{19}{95^{\circ}}}{5} + 32^{\circ} = 171^{\circ} + 32^{\circ} = 203^{\circ}$$

So, $95^{\circ}\text{C} = 203^{\circ}\text{F}$

2. Convert the following into Celsius scale.

a. 50°F

$$^{\circ}\text{C} = \frac{5}{9} \times (50^{\circ} - 32^{\circ}) = \frac{5}{9} \times \frac{18}{1} = 10^{\circ}$$

So, $50^{\circ}\text{F} = 10^{\circ}\text{C}$

b. 131.9°F

$$^{\circ}\text{C} = \frac{5}{9} \times (131.9^{\circ} - 32^{\circ}) = \frac{5}{9} \times \frac{99.9^{\circ}}{1} = 55.5^{\circ}$$

So, $131.9^{\circ}\text{F} = 55.5^{\circ}\text{C}$

c. 122°F

$$^{\circ}\text{C} = \frac{5}{9} \times (122^{\circ} - 32^{\circ}) = \frac{5}{9} \times \frac{90^{\circ}}{1} = 50^{\circ}$$

So, $122^{\circ}\text{F} = 50^{\circ}\text{C}$

d. 203°F

$$^{\circ}\text{C} = \frac{5}{9} \times (203^{\circ} - 32^{\circ}) = \frac{5}{9} \times \frac{171^{\circ}}{1} = 95^{\circ}$$

So, $203^{\circ}\text{F} = 95^{\circ}\text{C}$

e. 104°F

$$^{\circ}\text{C} = \frac{5}{9} \times (104^{\circ} - 32^{\circ}) = \frac{5}{9} \times \frac{72^{\circ}}{1} = 40^{\circ}$$

So, $104^{\circ}\text{F} = 40^{\circ}\text{C}$

f. 194°F

$$^{\circ}\text{C} = \frac{5}{9} (194^{\circ} - 32^{\circ}) = \frac{5}{9} \times \frac{162^{\circ}}{1} = 90^{\circ}$$

So, $194^{\circ}\text{F} = 90^{\circ}\text{C}$

g. 86°F

$$^{\circ}\text{C} = \frac{5}{9} \times (86^{\circ} - 32^{\circ}) = \frac{5}{9} \times \frac{54^{\circ}}{1} = 30^{\circ}$$

$\therefore 86^{\circ}\text{F} = 30^{\circ}\text{C}$

h. 108.5°F

$$^{\circ}\text{C} = \frac{5}{9} \times (108.5^{\circ} - 32^{\circ}) = \frac{5}{9} \times \frac{76.5^{\circ}}{1} = 42.5^{\circ}$$

So, $108.5^{\circ}\text{F} = 42.5^{\circ}\text{C}$

3. Fill in the blanks.

a. Doctors use **clinical** thermometer.

b. Liquid used in thermometer is called **Mercury**.

c. The normal body temperature of a person is 37°C or 98.6°F .

d. When the temperature was 7°C , I had to wear **sweater** to protect myself.

e. Water boils at 100°C and freezes at 32°F .

4. Find :

a. Yes

b. 167°F

$$^{\circ}\text{C} = \frac{5}{9} \times (167^{\circ} - 32^{\circ}) = \frac{5}{9} \times 135^{\circ} = 75^{\circ}$$

$$\therefore 167^{\circ}\text{F} = 75^{\circ}\text{C}$$

So, the temperature of an object is 75°C

c. 25°C

$$^{\circ}\text{F} = \frac{9}{5} \times 25^{\circ} + 32^{\circ} = \frac{9}{5} \times 25^{\circ} + 32^{\circ} = 45^{\circ} + 32^{\circ} = 77^{\circ}$$

$$\therefore 25^{\circ}\text{C} = 77^{\circ}\text{F}$$

Temperature in the morning was $25^{\circ}\text{C} = 77^{\circ}\text{F}$

Temperature during day increased by 10°F

So, the temperature during day time = $77^{\circ}\text{F} + 10^{\circ}\text{F} = 87^{\circ}\text{F}$

Temperature during day time was 87°F

Multiple Choice Questions

Tick (✓) the correct choice :

Ans. 1. a. 2 hours 10 min

2. b. 29 minutes

3. b. 37°C

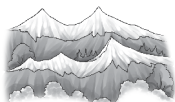
4. c. 185°F

Fun with Maths

Circle the temperature that is class to the situation described.

Ans.

a.



$35^{\circ}\text{C}/5^{\circ}\text{C}$

b.



$100^{\circ}\text{F}/212^{\circ}\text{F}$

c.



$98.5^{\circ}\text{C}/35.8^{\circ}\text{C}$

16

Lines And Angles

Look Back

1. Fill in the blanks :

a. A ray extends endlessly in **one** direction.

b. You cannot measure a ray and a **line**.

c. A part of a line that has two endpoints is a **line-segment**.

d. An angle and looks like the corner of a cupboard is a **right angle**.

2. Measure the given line statements :

Do it yourself.

Exercise 16.1

1. Complete the following table by writing properties of a line, a ray and a line segment.

	Line segment	Ray	Line
End points	Two	One	No
Width	No	No	No
Length	Yes	Indefinite	Indefinite

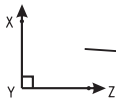
2. How many line can you draw through :
 a. unlimited b. only one
3. An figure, name the line segments which are
 a. $AB \parallel DC$ and $AD \parallel BC$
 b. Line DA, CA, BA; Line AB, DB, CB and line BC, DC, AC
4. State true (T) or false (F) :
 a. False b. False c. False d. True
 e. True


Hots

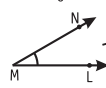
There are three angles $\angle AOC$, $\angle AOB$ and $\angle BOC$. Yes all angles have a common vertex which is point o.


Exercise 16.2


1. Match the following :

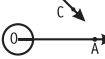
Ans. a. 

b. 

c. 

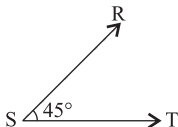
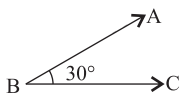
d. 

e. 

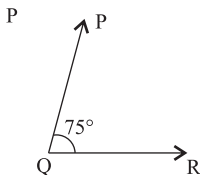
f. 

i. Reflex angle
 ii. Acute angle
 iii. Right angle
 iv. Straight angle
 v. Complete angle
 vi. Obtuse angle

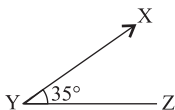
2. From the given figure, list the points which are :
- point S and point T
 - point Q and point P
 - point X and point Y
3. Measure the following angles using a protractor.
Do it yourself
4. Draw the following angles using a protractor. Name the angles correctly :
- $\angle ABC = 30^\circ$
 - $\angle RST = 45^\circ$



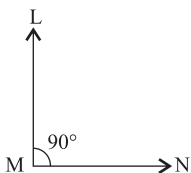
- c. $\angle PQR = 75^\circ$



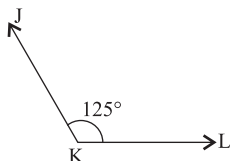
- d. $\angle XYZ = 35^\circ$



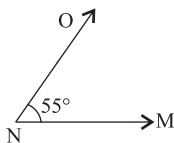
- e. $\angle LMN = 90^\circ$



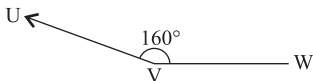
- f. $\angle JKL = 125^\circ$



- g. $\angle MNO = 55^\circ$



- h. $\angle UVW = 160^\circ$



Fun with Maths

Study the given below and write the measures of the angles listed.

- Ans. a. 50° b. 130° c. 20° d. 131°
e. 80° f. 101° g. 70° h. 150°
i. 30° j. 30°

Multiple Choice Questions

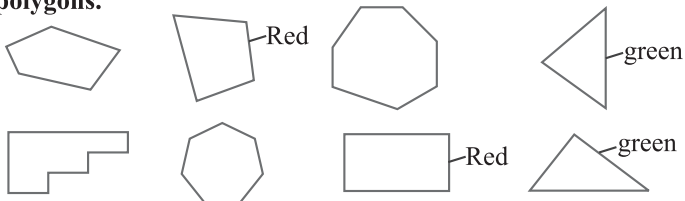
Tick (✓) the correct choice :

- Ans. 1. b. indefinite 2. b. 95° 3. b. reflex angle

17 Triangles, Quadrilaterals and Circles

Look Back

- When am I?
a. Square b. Circle c. Triangle d. Rectangle
- Colour the triangles green quadrilaterals red in the following polygons.



Hots

Name and classify the triangles.

- Ans. 1. Scalene Triangle 2. Right angled Triangle

Exercise 17.1

- Say 'Yes' or 'No' :
a. No b. Yes c. No d. No
e. No f. Yes
- In $\triangle ABC$, Name.
a. AB, BC, CA b. A, B, C c. $\angle A, \angle B, \angle C$
- Classify the triangles according to the measurement of their sides.
a. Equilateral triangle b. Scalene triangle
c. Right angled triangle d. Scalene triangle
e. Equilateral triangle f. Isosceles triangle
- Classify the triangles according to their angles.

- a. obtuse angled triangle b. acute angled triangle
- c. right angled triangle d. right angled triangle
- e. acute angled triangle f. obtuse angled triangle

5. Find the missing angle in each triangle.

- a. In $\angle LMN$, $\angle M = 110^\circ$ and $\angle N = 20^\circ$

$$\angle L + \angle M + \angle N = 180^\circ$$

$$\therefore \angle L = 180^\circ - (\angle M + \angle N) = 180^\circ - (110^\circ + 20^\circ) \\ = 180^\circ - 130^\circ = \mathbf{50^\circ}$$

So, missing angle $\angle L$ is 50°

- b. In $\angle ABC$, $\angle B = 90^\circ$ and $\angle C = 30^\circ$

$$\angle A + \angle B + \angle C = 180^\circ$$

$$\therefore \text{Missing } \angle A = 180^\circ - (\angle B + \angle C) = 180^\circ - (90^\circ + 30^\circ) \\ = 180^\circ - 120^\circ = \mathbf{60^\circ}$$

So, missing angle $\angle A$ is 60° .

- c. In $\triangle PQR$, $\angle P = 70^\circ$ and $\angle Q = 60^\circ$

$$\angle P + \angle Q + \angle R = 180^\circ$$

$$\therefore \text{Missing } \angle R = 180^\circ - (\angle P + \angle Q) \\ = 180^\circ - (70^\circ + 60^\circ) = 180^\circ - 130^\circ = 50^\circ$$

So, the missing $\angle R$ is 50°

6. Sum of which three angle is 180° those can make a triangle.

- a. Sum of 20° , 70° , $90^\circ = 20^\circ + 70^\circ + 90^\circ = 180^\circ$

So, $\angle 20^\circ$, $\angle 70^\circ$ and $\angle 90^\circ$ **can make a triangle.**

- b. Sum of 80° , 90° and $60^\circ = 80^\circ + 90^\circ + 60^\circ = 230^\circ > 180^\circ$

So, $\angle 80^\circ$, $\angle 90^\circ$ and $\angle 60^\circ$ **can not make a triangle.**

- c. Sum of 90° , 30° and $90^\circ = 90^\circ + 30^\circ + 90^\circ = 210^\circ > 180^\circ$

So, $\angle 90^\circ$, $\angle 30^\circ$ and $\angle 90^\circ$ **can not make a triangle.**

- d. Sum of 110° , 50° and $50^\circ = 110^\circ + 50^\circ + 50^\circ = 210^\circ > 180^\circ$

So, $\angle 110^\circ$, $\angle 50^\circ$ and $\angle 50^\circ$ **can not make a triangle.**

- e. Sum of 60° , 60° and $60^\circ = 60^\circ + 60^\circ + 60^\circ = 180^\circ$

So, $\angle 60^\circ$, $\angle 60^\circ$ and $\angle 60^\circ$ **can make a triangle.**

- f. Sum of 30° , 20° and $110^\circ = 30^\circ + 20^\circ + 110^\circ = 160^\circ < 180^\circ$

So, $\angle 30^\circ$, $\angle 20^\circ$ and $\angle 110^\circ$ **can not make a triangle.**

- 7.** In $\angle ABC$, $\angle A = 72^\circ$ and $\angle B = 68^\circ$

$$\therefore \angle C = 180^\circ - (\angle A + \angle B) = 180^\circ - (72^\circ + 68^\circ) = 180^\circ - 140^\circ \\ = \mathbf{40^\circ}$$

So, in $\angle ABC$, $\angle C$ is 40°

- 8.** Two angles of a D are 95° and 72° .

Sum of them $= 95^\circ + 72^\circ = 167^\circ$.

So, third angle = $180^\circ - (\text{sum of two angles}) = 180^\circ - 167^\circ = 13^\circ$

So, the third angle of the triangle is 13°

9. In a triangle, one angle is 90° and other angle is 42°

Sum of two angles = $90^\circ + 42^\circ = 132^\circ$

So, third angle = $180^\circ - (\text{sum of two angles}) = 180^\circ - 132^\circ = 48^\circ$

So, the other acute angle or third angle is 48°

10. In a triangle, third angle is 116° .

Sum of other two angles = $180^\circ - \text{third angle} = 180^\circ - 116^\circ$
 $= 64^\circ$

Other two angles are equal

So, each of the equal angles = $\frac{64^\circ}{2} = 32^\circ$

So, each equal angle is 32°

11. Fill in the blanks :

- A triangle has **three** vertices, **three** angles and **three** sides.
- Each angle of an equilateral triangle measures **60°** .
- If two sides of a triangle are equal to each other, then the triangle is called an **isosceles** triangle.
- A triangle is called acute angled triangle if all of its angles are **less than 90°** .
- A triangle is called right-angled if one of its angles is a **right** angle.

Exercise 17.2

1. Fill in the blanks :

- Opposite sides of a parallelogram are equal.
- A quadrilateral with only one pair of opposite sides parallel is called trapezium.
- A rhombus has all the sides equal.
- Only the opposite sides of a rectangle are equal.
- Each angle of a square is 90° .
- The sum of the four angles of a quadrilateral is 360° .

2. Find the missing angle for the given quadrilaterals :

- In quadrilateral ABCD $\angle A = 100^\circ$, $\angle B = 65^\circ$ and $\angle C = 80^\circ$
 $\angle A + \angle B + \angle C + \angle D = 360^\circ$
 $100^\circ + 65^\circ + 80^\circ + \angle D = 360^\circ$
 $245^\circ + \angle D = 360^\circ$
 $\therefore \angle D = 360^\circ - 245^\circ = 115^\circ$
So, missing angle D is **115°** .
- In quadrilateral PQRS $\angle P = 75^\circ$, $\angle Q = 135^\circ$ and $\angle R = 50^\circ$
 $\angle P + \angle Q + \angle R + \angle S = 360^\circ$

$$75^\circ + 135^\circ + 50^\circ + \angle S = 360^\circ$$

$$260^\circ + \angle S = 360^\circ$$

$$\therefore \angle S = 360^\circ - 260^\circ = 100^\circ$$

So, missing angle S is **100°**

- c. In quadrilateral WXYZ $\angle W = 64^\circ$, $\angle X = 138^\circ$ and $\angle Y = 110^\circ$

$$\angle W + \angle X + \angle Y + \angle Z = 360^\circ$$

$$64^\circ + 138^\circ + 110^\circ + \angle Z = 360^\circ$$

$$312^\circ + \angle Z = 360^\circ$$

$$\therefore \angle Z = 360^\circ - 312^\circ = 48^\circ$$

So, missing angle Z is **48°**

- d. In quadrilateral LMNO $\angle L = 45^\circ$, $\angle M = 90^\circ$ and $\angle N = 130^\circ$

$$\angle L + \angle M + \angle N + \angle O = 360^\circ$$

$$45^\circ + 90^\circ + 130^\circ + \angle O = 360^\circ$$

$$265^\circ + \angle O = 360^\circ$$

$$\therefore \angle O = 360^\circ - 265^\circ = 95^\circ$$

- e. In quadrilateral PQRS $\angle P = 65^\circ$, $\angle Q = 40^\circ$ and $\angle R = 90^\circ$

$$\angle P + \angle Q + \angle R + \angle S = 360^\circ$$

$$65^\circ + 40^\circ + 90^\circ + \angle S = 360^\circ$$

$$195^\circ + \angle S = 360^\circ$$

$$\therefore \angle S = 360^\circ - 195^\circ = 165^\circ$$

So, missing angle is **165°**

Exercise 17.3

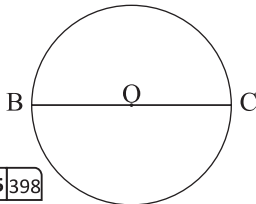
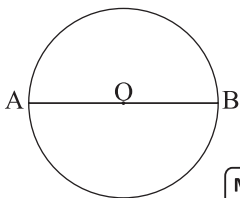
1. A circle is given in the adjoining figure. Fill in the blanks by observing the figure.

- The centre of the circle is **C**.
- The diameter of the circle are **AB, EF**.
- Radii of the circle are **CE, CB, CK, CF, CA**.
- The line segment between two points G and H is a **GH**.
- Chords of the circle are **EB, AB, EF, AF**.

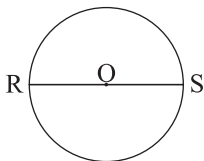
2. Draw circles with the following radii using a compass.

- a. Point O is centre
Radic AO = OB = 5 cm

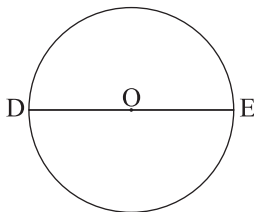
- b. Point O is centre
Radic OB = OC = 6 cm



- c. Point O is centre
Radii RO = OS = 2.5 cm



- d. Point O is centre
Radii DO = EO = 7.6 cm



3. Find the radius of the circles with the following diameter.

- a. 7 cm

Diameter $d = 7$ cm

$$\therefore \text{Radius } r = \frac{d}{2} = \frac{7}{2} = 3.5 \text{ cm}$$

So radius of circle is 3.5 cm

- b. 8 cm

Diameter $d = 8$ cm

$$\therefore \text{Radius } r = \frac{d}{2} = \frac{8}{2} = 4 \text{ cm}$$

So radius of circle is 4 cm

- c. 4.8 cm

Diameter $d = 4.8$ cm

$$\therefore \text{Radius } r = \frac{d}{2} = \frac{4.8}{2} = 2.4 \text{ cm}$$

So radius of circle is 2.4 cm

- d. 7.2 cm

Diameter $d = 7.2$ cm

$$\therefore \text{Radius } r = \frac{d}{2} = \frac{7.2}{2} = 3.6 \text{ cm}$$

So radius of circle is 3.6 cm

4. Find the diameter of the circles with the following radii.

- a. Radius of the circle = 6 cm

$$\therefore \text{Diameter of the circle} = 2 \times \text{radius} = 2 \times 6 = 12 \text{ cm}$$

So, the diameter of the circle is 12 cm.

- b. Radius of the circle = 4.5 cm

$$\therefore \text{Diameter of the circle} = 2 \times \text{radius} = 2 \times 4.5 = 9.0 \text{ cm}$$

So, the diameter of the circle is 9 cm.

- c. Radius of the circle = 3.8 cm

\therefore Diameter of the circle = $2 \times \text{radius} = 2 \times 3.8 = 7.6$ cm

So, the diameter of the circle is 7.6 cm.

- d. Radius of the circle = 11.7 cm

\therefore Diameter of the circle = $2 \times \text{radius} = 2 \times 11.7 = 23.4$ cm

So, the diameter of the circle is 23.4 cm.

Fun with Maths

- A. Measure the diameter of the given objects and complete the table.**

Ans. Do it yourself.

- B. Fill in the blanks.**

- | | | |
|-----------------------|----------------|--------------------|
| 1. Isosceles triangle | 2. 180° | 3. equal, parallel |
| 4. centre | 5. 90° | 6. parallelogram |
| 7. equal | | |

Multiple Choice Questions

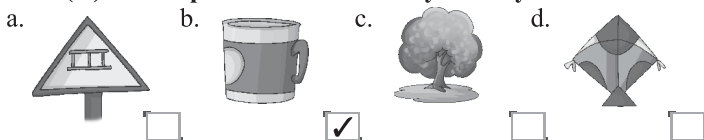
Tick (✓) the correct choice :

- Ans.** 1. a. 180° 2. a. square 3. a. diameter
4. c. 3.25 cm 5. c. 360°

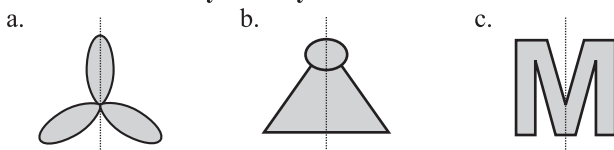
18 Symmetry and Patterns

Look Back

1. Tick (✓) the shape that do not have symmetry :



2. Draw the line of symmetry :

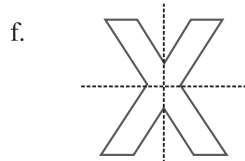
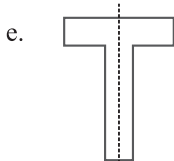
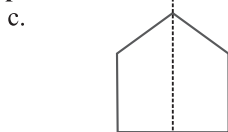
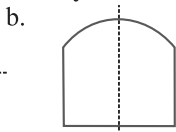
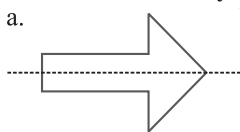


3. By using this code, decode the following messages :

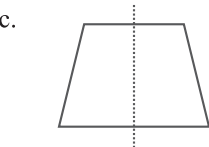
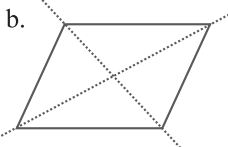
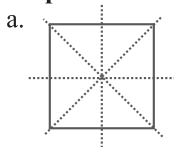
- a. Plant More Saplings b. I Love Reading

Exercise 18.1

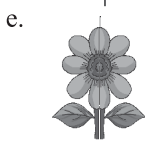
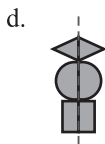
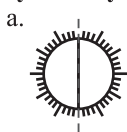
1. Draw the lines of symmetry for these shapes.



2. Find the number of lines of symmetry in each of the following shapes.



3. Complete the figures treating the dotted line as the line of symmetry.

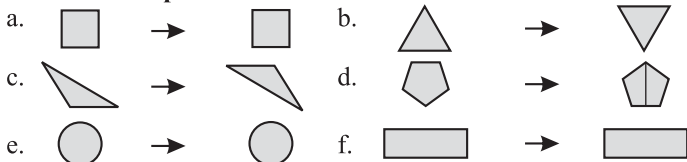


Turns

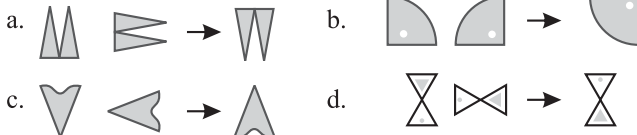
- 1 right angle makes a $\frac{1}{4}$ of a turn.
- 2 right angles make a $\frac{1}{2}$ of a turn.
- 4 right angles make a **complete** of a turn.

Exercise 18.2

1. Give each shape half a turn.



2. What will comes next?



3. Give each shape quarter turn to complete the pattern.

SHAPE	$\frac{1}{2}$ Turn	$\frac{1}{4}$ Turn
a.		
b.		
c.		
d.		

Exercise 18.3

1. Put a \triangle around a triangular number and a \square around a square number.

\square 1	2	\square 3	\square 4	5	\square 6	7	8	\square 9	\square 10
11	12	13	14	\square 15	\square 16	17	18	19	20
\square 21	22	23	24	\square 25	26	27	\square 28	29	30
31	32	33	34	35	\square 36	37	38	39	40
41	42	43	44	\square 45	46	47	48	49	50
51	52	53	54	\square 55	56	57	58	59	60
61	62	63	\square 64	65	\square 66	67	68	69	70
71	72	73	74	75	76	77	\square 78	79	80
\square 81	82	83	84	85	86	87	88	89	90
\square 91	92	93	94	95	96	97	98	99	\square 100

a. 10

b. 12

c. 1

2. Look at the pattern and fill in the blanks.

a. $1 + 3 + 5 + 7 + 9 = 25$

b. $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 = 64$

c. $1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 = 100$

3. Complete the following patterns.

a. $3 + 6 = 9 = 3 \times 3$

b. $\frac{1 \times 2}{2} = 1 = 1$

$6 + 10 = 16 = 4 \times 4$

$\frac{2 \times 3}{2} = 3 = 1 + 2$

$10 + 15 = 25 = 5 \times 5$

$\frac{3 \times 4}{2} = 6 = 1 + 2 + 3$

$15 + 21 = 36 = 6 \times 6$

$\frac{4 \times 5}{2} = 10 = 1 + 2 + 3 + 4$

$21 + 28 = 49 = 7 \times 7$

$\frac{5 \times 6}{2} = 15 = 1 + 2 + 3 + 4 + 5$

Fun with Maths

Decide whether the given pictures have vertical, horizontal or no line symmetry :

Ans. a. Vertical symmetry ✓

b. No symmetry ✓

c. No symmetry ✓

d. No symmetry ✓

Multiple Choice Questions

Tick (✓) the correct choice :

Ans. 1. b. ☐

2. a. 9

3. a. 60

19

Perimeter, Area and Volume

Exercise 19.1

1. Find the perimeter of following figures.

a. Parameter = $30 \text{ cm} + 23 \text{ cm} + 25 \text{ cm} = 78 \text{ cm}$

b. Parameter = $7 \text{ cm} + 8 \text{ cm} + 10 \text{ cm} + 12 \text{ cm} = 37 \text{ cm}$

c. Parameter = $2(8 + 3.5) \text{ cm} = 2 \times 11.5 \text{ cm} = 23 \text{ cm}$

d. Parameter = $4 \times 6.5 \text{ cm} = 26 \text{ cm}$

e. Parameter = $4 \times 2.5 \text{ cm} = 10 \text{ cm}$

f. Parameter = $6 \text{ cm} + 4 \text{ cm} + 4.5 \text{ cm} + 2 \text{ cm} = 16.5 \text{ cm}$

2. Find the missing entry of the rectangle for each of the following :

Length	18 cm	50 cm	50 cm	24 cm	48 m
Breadth	12 cm	46 cm	30 cm	18 cm	22 m
Perimeter	60 cm	192 cm	160 cm	84 m	140 m

3. Find the missing entry of the square for each of the following :

Side	8.5 cm	12 cm	6.75 cm	18.4 m	81 cm
Perimeter	34 cm	48 cm	27 cm	73.6 m	324 cm

4. Solve the following word problems.

- a. Length of rectangular park $l = 30$ m.

Breadth of rectangular $b = 22$ m.

$$\text{Parameter of park} = 2(l + b) = 2 \times (30 \text{ m} + 22 \text{ m}) = 2 \times 52 \text{ m} = 104 \text{ m}$$

Distance covered in one round = **104 m**

\therefore Distance covered in 4 rounds = $4 \times 104 \text{ m} = 416 \text{ m}$

So, Mohan cover red **416 m** in 4 rounds of the park.

- b. Side of the square field = 120 m

\therefore Parameter of the field = $4 \times s = 4 \times 120 \text{ m} = 480 \text{ m}$

The cost of fencing of 480 m = ₹ $480 \times 15 = ₹ 7200$

So, the cost of fencing around f the park is ₹ 7200

- c. Para meter of the square $p = 84$ m

$$\therefore \text{Length of its side} = \frac{p}{4} = \frac{84}{4} = 21 \text{ m}$$

So, the side of the square is 21 m

- d. Length of the rectangular park $l = 20$ m

Breadth of the rectangular park $b = 15$ m

$$\text{Parameter of the park } p = 2(l + b) = 2(20 \text{ m} + 15 \text{ m}) = 2 \times 35 \text{ m} = 70 \text{ m}$$

Distance covered in one round = 70 m

Distance covered in three round = $3 \times 70 = 210 \text{ m}$

So, Amrish jogs 210 m daily.

Mental Maths

Tick (✓) the unit of area you will use to find the area of the following.

	sq. cm	sq. m	sq. km
Ans. 1. A port card	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Hockeyfield	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3. Country	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. The label on your exercise book	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Exercise 19.2

1. Measure the length and breadth then find the area.

a. $l = 3 \text{ cm}, b = 3 \text{ cm}$

$A = 9 \text{ sq.cm}$

b. $l = 4 \text{ cm}, b = 3 \text{ cm}$

$A = 12 \text{ sq.cm}$

c. $l = 4 \text{ cm}, b = 2$

$A = 8 \text{ sq.cm}$

2. Find the area of the following.

a. Side of the squares = 5 cm

$\therefore \text{Area of the square} = s \times s = 5 \text{ cm} \times 5 \text{ cm} = 25 \text{ sq. cm}$

b. Length of rectangle $l = 9 \text{ cm}$

Breadth of rectangle $b = 7.5 \text{ cm}$

Area of rectangle = $l \times b = 9 \text{ cm} \times 7.5 \text{ cm} = 67.5 \text{ sq. cm.}$

c. Length of rectangle = 9 cm

Breadth of rectangle = 3 cm

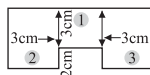
Area of rectangle = $9 \text{ cm} \times 3 \text{ cm} = 27 \text{ sq. cm}$

Length of rectangle 1 and 3 = 3 cm

Bread of rectangles 2 and 3 or 2 cm

Area of rectangles 2 and 3 = $2 \times 3 \text{ cm} \times 2 \text{ cm} = 12 \text{ q. cm}$

Total area of the figure = $27 \text{ sq cm} + 12 \text{ sq cm} = 39 \text{ sq. cm}$



3. Find the area of the rectangle with

a. Length of the rectangle $l = 12 \text{ cm}$

Breadth of the rectangle $b = 8 \text{ cm}$

Area of the rectangle = $l \times b = 12 \text{ cm} \times 8 \text{ cm} = 96 \text{ sq cm}$

b. Length of the rectangle $l = 8 \text{ cm}$

Breadth of the rectangle $b = 6 \text{ m}$

Area of the rectangle = $l \times b = 8 \text{ cm} \times 6 \text{ cm} = 48 \text{ sq cm}$

c. Length of the rectangle $l = 16 \text{ cm}$

Breadth of the rectangle $b = 9 \text{ cm}$

Area of the rectangle = $l \times b = 16 \text{ cm} \times 9 \text{ cm} = 144 \text{ sq cm}$

d. Length of the rectangle $l = 8 \text{ m}$

Breadth of the rectangle $b = 6.5 \text{ m}$

Area of the rectangle = $l \times b = 8 \text{ m} \times 6.5 \text{ m} = 52 \text{ sq m}$

4. Find the area of the square with the side :

a. Side of the square $s = 6 \text{ cm}$

$\therefore \text{Area of the square} = s \times s = 6 \text{ cm} \times 6 \text{ cm} = 36 \text{ sq cm}$

b. Side of the square $s = 9 \text{ cm}$

$\therefore \text{Area of the square} = s \times s = 9 \text{ m} \times 9 \text{ m} = 81 \text{ sq m}$

c. Side of the square $s = 11.5 \text{ cm}$

$\therefore \text{Area of the square} = s \times s = 11.5 \text{ cm} \times 11.5 \text{ cm} = 132.25 \text{ sq cm}$

- d. Side of the square $s = 18$ cm
 \therefore Area of the square $= s \times s = 18 \text{ cm} \times 18 \text{ cm} = \mathbf{324 \text{ sq cm}}$
- e. Side of the square $s = 16$ cm
 \therefore Area of the square $= s \times s = 16 \text{ cm} \times 16 \text{ cm} = \mathbf{256 \text{ sq cm}}$
- f. Side of the square $s = 8.5$ cm
 \therefore Area of the square $= s \times s = 8.5 \text{ cm} \times 8.5 \text{ cm} = \mathbf{72.25 \text{ sq cm}}$

5. Solve the following.

- a. Parameter of the square field $= 520$ m
 \therefore Side of the square $= \frac{520}{4} = m = 130$ m
 Area of the square field $= s \times s = 130 \text{ m} \times 130 = 16900 \text{ sq m}$
 So, length of the side of square field is **130 m** and
 Area of the field is **16900 sq m**
- b. Length of the plat form $l = 8$ m $= 800$ cm
 Breadth of the plat form $b = 6$ m $= 600$ cm
 Area of the plat form $= l \times b = 800 \text{ cm} \times 600 \text{ cm}$
 $= 480000 \text{ sq cm}$
 Length of the cement slab $= 4$ cm
 Breadth of the cement slab $= 3$ cm
 Area of each cement lab $= 4 \text{ cm} \times 3 \text{ cm} = 12 \text{ sq cm}$
 Number of slabs required $= \frac{\text{Area of platform}}{\text{Area of slab}} = \frac{480000}{12}$
 $= 40,000$ cement slabs
 So, 40,000 cement slab are required.
- c. Length of the ground $l = 100$ m
 Breadth of the ground $b = 60$ m
 \therefore Area of the ground $= l \times b = 100 \text{ m} \times 60 \text{ m} = 6000 \text{ sq m}$
 The cost of leveling ground for 1 sq m $= ₹ 2$
 The cost of leveling ground for 6000 sq m $= ₹ 2 \times 6000$
 $= ₹ 12000$
 So, ₹ 12000 is the cost of leveling a ground
- d. The height (length) of the wall $= 2.88$ m $= 288$ cm
 The width of the wall $= 50$ cm
 Area of the wall $= \text{height (length)} \times \text{width} = 288 \text{ cm} \times 50 \text{ cm}$
 $= 14400 \text{ sq cm}$
 Length of the brick $= 12$ cm
 Breadth of the brick $= 10$ cm
 \therefore Area of the brick $= 12 \text{ cm} \times 10 \text{ cm} = 120 \text{ sq cm}$

$$\text{Number of bricks} = \frac{\text{Area of the wall}}{\text{Area of the brick}} = \frac{1440}{120} = 120$$

So, 120 bricks are required for per layer.

Mental Maths

- | | |
|-----------------------|------------------------------------------------|
| 1. parameter | 2. $2 \times (\text{Length} + \text{breadth})$ |
| 3. side \times side | 4. $4 \times \text{side}$ |
| 5. sq.cm | 6. 14 |

Hots

144 cu cm

Exercise 19.3

1. Find the volume of the following solids in terms of unit-cubes.

- There are 3 unit-cubes.
So, the volume of the solid = **3 cubic unit**
- There are 4 unit-cubes.
So, the volume of the solid = **4 cubic unit**
- There are 6 unit-cubes.
So, the volume of the solid = **6 cubic unit**
- There are 7 unit-cubes.
So, the volume of the solid = **7 cubic unit**
- There are 6 unit-cubes.
So, the volume of the solid = **6 cubic unit**
- There are 12 unit-cubes.
So, the volume of the solid = **12 cubic unit**
- There are 9 unit cubes.
So, the volume of the solid = **9 cubic unit**
- There are 32 unit cubes.
So, the volume of the solid = **3 cubic unit**

2. Count the number of cubes and find the volume in cu cm.

- There are 10 cubes
So, volume = **10 cu cm**
- There are 14 cubes
So, volume = **14 cu cm**
- There are 36 cubes
So, volume = **36 cu cm**
- There are 32 cubes
So, volume = **32 cu cm**

Mental Maths

Find the volume of the following:

- 216
- 1620

Exercise 19.4

1. Fill in the blanks :

- a. The volume of a cuboid = **length \times breadth \times height**
- b. The volume of a cube = **side \times side \times side**
- c. If each side of a cube is 1 m, its volume is = **1 cu m**

2. Find the volume of these objects.

- a. Length of object (cuboid) $l = 12$ cm
Breadth of object (cuboid) $b = 8$ cm
Thickness of object (cuboid) $h = 3$ cm
Volume of a cuboid $= l \times b \times h = 12 \text{ cm} \times 8 \text{ cm} \times 3 \text{ cm}$
 $= 288 \text{ cu cm}$
- b. Length of object (cuboid) $l = 5$ cm
Breadth of object (cuboid) $b = 2$ cm
Thickness of object (cuboid) $h = 1$ cm
Volume of a cuboid $= l \times b \times h = 5 \text{ cm} \times 2 \text{ cm} \times 1 \text{ cm}$
 $= 10 \text{ cu cm}$
- c. Length of object (cuboid) $l = 10$ cm
Breadth of object (cuboid) $b = 6$ cm
Thickness of object (cuboid) $h = 2$ cm
Volume of a cuboid $= l \times b \times h = 10 \text{ cm} \times 6 \text{ cm} \times 2 \text{ cm}$
 $= 120 \text{ cu cm}$
- d. Length of object (cuboid) $= 15$ cm
Breadth of object (cuboid) $= 3$ cm
Thickness of object (cuboid) $= 2$ cm
Volume of a cuboid $= 15 \text{ cm} \times 3 \text{ cm} \times 2 \text{ cm} = 90 \text{ cu cm}$
- e. Length of object (cuboid) $= 10$ cm
Breadth of object (cuboid) $= 5$ cm
Thickness of object (cuboid) $= 2$ cm
Volume of a cuboid $= 10 \text{ cm} \times 5 \text{ cm} \times 2 \text{ cm} = 100 \text{ cu cm}$
- f. Length of object (cuboid) $= 6$ cm
Breadth of object (cuboid) $= 5$ cm
Thickness of object (cuboid) $= 4$ cm
Volume of a cuboid $= 6 \text{ cm} \times 5 \text{ cm} \times 4 \text{ cm} = 120 \text{ cu cm}$

3. Find the volume of each of the following.

- a. 24 cu mm
- b. 1000 cu cm
- c. 432 cu m
- d. 781.2 cu m
- e. 21112 cu cm

4. Solve these story problems.

- a. Length of ice-cream brick $= 22$ cm
Breadth of ice-cream brick $= 10$ cm
Height of ice-cream brick $= 8$ cm

So, the volume of an ice cream is 1760 cu cm

- So, John's refrigerator's volume is 288000 cu cm

- $$\therefore \text{Volume of the room} = 10 \text{ m} \times 8 \text{ m} \times 12 \text{ m} = 960 \text{ cu m}$$

So, the volume of air is 960 cu m

- So 45000 cu cm water has been filled in the aquarium.

- $$\therefore \text{Number of match boxes} = \frac{\text{Volume of carton}}{\text{volume of Match box}} = \frac{672}{12} = 56$$

So, 56 match boxes can be placed in a carton

Find the perimeter and area of the shaded portion.

- Ans.** a. $p = 17.2 \text{ cm}$
 $A = 15 \text{ sq.cm}$
- b. $p = 22.8 \text{ cm}$
 $A = 17 \text{ sqcm}$

Given below is a model of a school compound. find the area covered by different parts in it. express your answer in cm^2 :

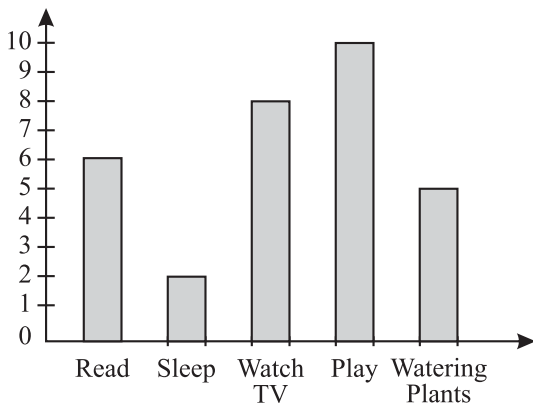
- Ans.** a. 30cm^2 b. 20cm^2 c. 65cm^2 d. 8cm^2
e. 4cm^2 f. 4cm^2 g. 8cm^2

Tick (✓) the correct choice :

- Ans.** 1. b. 196 sq. cm 2. c. 10000 sq. cm
3. b. side \times side \times side 4. c. 320 cu. m

Look Back

1. The given table shows the number of students of a class who lie different activities
Draw the bar graph for the given information.



2. Fill in the blanks.

- a. graph b. x-axis c. pictograph
d. 25 e. 30 men f. y-axis
g. values h. does not i. horizontal, vertical


































Exercise 20.1

1. We can represent the given information in tabular form as below :

Liked Tourist Place	Tally Marks	Number of students
Mussorie		9
Nainital		6
Shimla		7
Darjelling		6
Kullumannali		2
























































- a. Mussorie is liked most by 9 students.
b. Kullumanali is liked least by 2 students.
c. 5 more students like Shimla than Kullumanali.
d. 6 students like Naintal.

2. We can represent the given date as below.

Days →	Number of books →  = 8 books  = 4 books
Monday	   
Tuesday	     
Wednesday	    
Thursday	    
Friday	      
Saturday	   

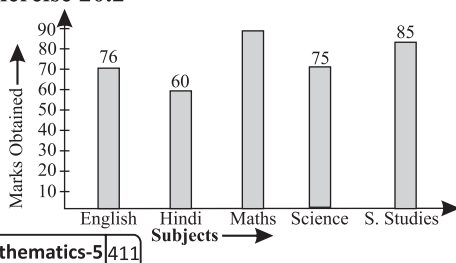
- On Wednesday and Thursday, the same number of books (40) are sold.
- There are 31 pictures of book so the total number of books sold in the week is $31 \frac{1}{2} \times 8 = 252$.

3. We can draw a pictograph to represent the given data.

Subject →	Marks obtained by Akshay →  = 10 and marks  = 5 marks
Maths	         
English	        
Science	       
EVS	        
Hindi	       
Computer	        

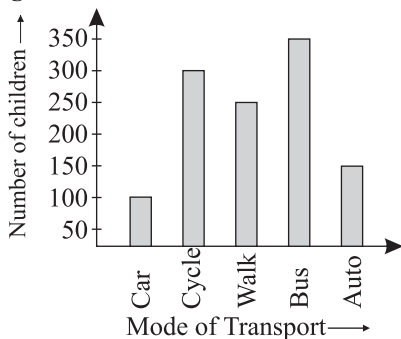
Exercise 20.2

1. The marks obtained by Rashmi in the annual exams is shown using a bar graph. Read the graph carefully and answer the following questions.



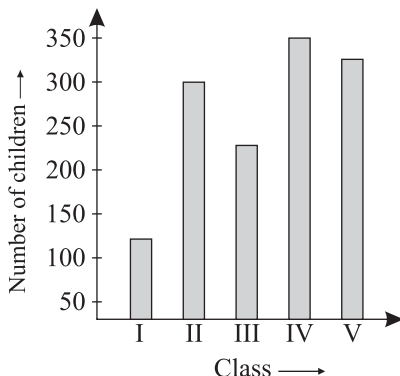
- a. Rashmi scored the highest in Mathematics.
- b. She scored equally in English and Science.
- c. She scored 85 marks in S.St.
- d. She scored $(70 + 60 + 90 + 70 + 85 = 375)$ 375 marks in all

2. The following bar graph shows the mode of transport used by children go to school.



3. The following bar graph shows the number of students in class I to V in a school.

Scale 1 cm = 50 students on y-axis

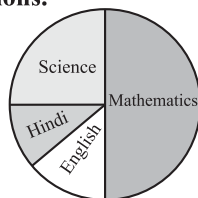


Exercise 20.3

1. The students of class V voted for their favourite subject. The data has been represented as a pie-chart given below. Study the pie-chart and answer the following questions.

- Hindi is least popular.
- Mathematics is most popular.
- Science is more popular than English.
- Subject are in ascending order of their popularity as below.

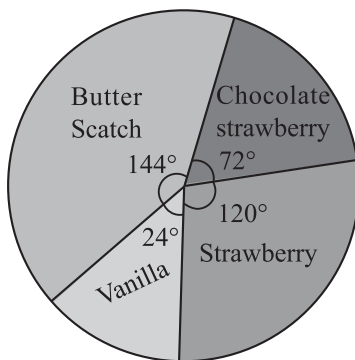
Hindi < English < Science < Mathematics



2. Draw pie-chart for the following data.

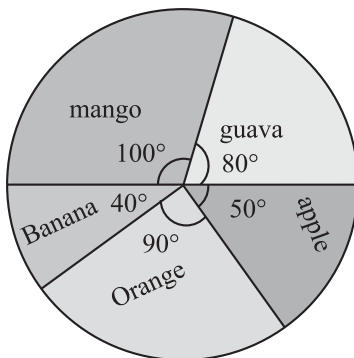
- A pie-chart for favourite flavor of Ice-creams of children is below.

Favourite Ice	Number of Children	Angle Covered
Chocolate	60	$\frac{60}{300} \times 360^\circ = 72^\circ$
Butter scotch	120	$\frac{120}{300} \times 360^\circ = 144^\circ$
Vanilla	100	$\frac{100}{300} \times 360^\circ = 120^\circ$
Straberry	20	$\frac{20}{300} \times 360^\circ = 24^\circ$
Total = 300		= 360°



b.

Types of tree	Number of Trees	Angle Covered
Mango	10	$\frac{10}{36} \times 360^\circ = 100^\circ$
Guava	8	$\frac{8}{36} \times 360^\circ = 80^\circ$
Apple	5	$\frac{5}{36} \times 360^\circ = 50^\circ$
Orange	9	$\frac{9}{36} \times 360^\circ = 90^\circ$
Banana	4	$\frac{4}{36} \times 360^\circ = 40^\circ$
	Total = 300	= 360°



[illegible]

[illegible]