

Exercise-1.1

1. Prepare an Indian place-value chart.

Ans.

Period	Crores		Lakhs		Thousands		Ones		
Place Value	TC	C	TL	L	T-Th	Th	H	T	O
One Lakh				1	0	0	0	0	0
Two Lakh			1	0	0	0	0	0	0
One Crore		1	0	0	0	0	0	0	0
Two Crore	1	0	0	0	0	0	0	0	0

2. Write the number names for the following numerals according to the Indian place-value chart :

- Ans. a. 16,25,18,431 : Sixteen crore twenty-five lakh eighteen thousand four hundred thirty-one.
 b. 24,78,48,418 : Twenty-four crore seventy-eight lakh forty-eight thousand four hundred eighteen.
 c. 6,53,45,024 : Six crore fifty-three lakh forty-five thousand and twenty-four.
 d. 84,60,808 : Eighty-four lakh sixty thousand eight hundred eight.
 e. 62,00,40,830 : Sixty-two crore forty thousand eight hundred thirty.
 f. 3,25,79,430 : Three crore twenty-five lakh seventy-nine thousand four hundred thirty.

3. Write the numerals for each of the following number names :

- Ans. a. Twenty-nine lakh ninety-nine thousand nine hundred seventy-nine : 29,99,979
 b. Thirty-one crore seventy-five lakh fifty : 31,75,00,050
 c. Eighty-nine crore six hundred thirty-nine : 89,00,00,639
 d. Five crore sixty-two thousand two : 5,00,62,002
 e. Two crore one lakh one thousand one hundred four : 2,01,01,104
 f. Forty-five crore nine lakh three thousand : 45,09,03,000

4. Write the numerals for the following :

- Ans. a. The greatest seven-digit number = 99,99,999
 b. The smallest six-digit number = 1,00,000
 c. The greatest eight-digit number = 9,99,99,999
 d. The smallest nine-digit number = 10,00,00,000

5. Make a number that has :

- Ans. a. 7 crore, 80 lakhs, 90 thousands, 0 hundreds, 4 tens, 5 ones : 7,80,90,045
 b. 23 crore, 9 lakhs, 63 thousands, 4 hundreds, no tens, no ones : 23,09,63,400

Exercise-1.2

1. Place the digits of the following numerals in the International place value chart and also write the number names for the numerals :

Ans.

	Period	Billions			Millions			Thousands			Ones		
	Place Value	HT	TB	B	HT	TM	M	H-Th	T-Th	Th	H	T	O
(a)	28,100,207					2	8	1	0	0	2	0	7
(b)	2,608,150						2	6	0	8	1	5	0
(c)	20,224,302,755		2	0	2	2	4	3	0	2	7	5	5
(d)	3,220,265,333			3	2	2	0	2	6	5	3	3	3
(e)	156,253,231				1	5	6	2	5	3	2	3	1
(f)	143,885,998				1	4	3	8	8	5	9	9	8

Number Names :

- Twenty-eight million one hundred thousand two hundred seven
 - Two million six hundred eight thousand one hundred fifty.
 - Twenty billion two hundred twenty-four million three hundred two thousand seven hundred fifty-five.
 - Three billion two hundred twenty million two hundred sixty-five thousand three hundred thirty-three.
 - One hundred fifty-six million two hundred fifty-three thousand two hundred thirty-one.
 - One hundred forty-three million eight hundred eighty-five thousand nine hundred ninety-eight.
2. Using the International place-value chart, write the numeral for each of the following number names :

- Ans.
- Forty-nine million three hundred five : 49,000,305
 - Two hundred fifty-six million one hundred five thousand twenty-nine : 256,105,029
 - Two billion two million three thousands four : 2,02,03,004
 - Seventy-three million thirty-four thousand one hundred twenty-five : 73,034,125
 - Ninety-six million : 96,000,000
 - Eight hundred thousand : 800,000
 - Seven million four thousand sixty-two : 7,004,062
 - Three billion seven hundred : 3,000,000,700

3. Fill in the blanks :

- Ans.
- | | |
|----------------------------------|--------------------------------------|
| a. 1 lakh = 100 thousands | b. 1 crore = 100 lakhs |
| c. 1 crore = 10 millions | d. 1 million = 1000 thousands |
| e. 1 million = 10 lakhs | f. 1 billion = 1000 millions |

Exercise-1.3

1. Find the place value of :

- Ans.
- Place value of 3 in 8,43,682 is 3000.
 - Place value of 4 in 34,98,600 is 4,00,000.

- c. Place value of 6 in 6,38,32,175 is 6,00,00,000.
 d. Place value of 0 in 4, 05,935 is 0.
 e. Place value of 7 in 20,07,05,004 is 7,00,000.
 f. Place value of 5 in 70,62,53,220 is 50,000.

2. Write the following numbers in expanded form :

- Ans.** a. $8,30,560 = 8,00,000 + 30,000 + 500 + 60$
 b. $4,80,700 = 4,00,000 + 80,000 + 700$
 c. $39,65,55,444 = 30,00,00,000 + 9,00,000,000 + 60,00,000 + 5,00,000$
 $+ 50,000 + 5,000 + 400 + 40 + 4$
 d. $4,00,00,007 = 4,00,00,000 + 7$
 e. $12,01,20,120 = 10,00,00,000 + 2,00,00,000 + 1,00,000 + 20,000$
 $+ 100 + 20$
 f. $90,08,00,800 = 90,00,00,000 + 8,00,000 + 80$

3. Write the following in standard form :

- Ans.** a. $4,00,000 + 60,000 + 800 + 50 + 9 = 4,60,859$
 b. 50 lakhs + 7 lakhs + 4 ten thousands + 1 thousand + 5 tens + 4 ones
 $= 57,41,054$
 c. $6,00,00,000 + 50,000 + 2,000 + 300 + 10 = 6,00,52,310$

4. Fill in the blanks :

- Ans.** a. 37,29,586 = **3** ten lakhs + **7** lakhs + **2** ten thousands + **9** thousands
 $+ 5$ hundreds + **8** tens + **6** ones.
 b. 8,05,430 = **8** lakhs + **0** ten thousands + **5** thousands + **4** hundreds
 $+ 3$ tens + **0** ones.
 c. 4,31,02,009 = **4** crores + **3** ten lakhs + **1** lakhs + **0** ten thousands
 $+ 2$ thousands + **0** hundreds + **0** tens + **9** ones.

5. Write the predecessor and successor of the following :

- Ans.** a. **59,998** 59,999 **60,000**
 b. **1,23,45,499** 1,23,45,500 **1,23,45,501**
 c. **2,306,797** 2,306,798 **2,306,799**
 d. **5,091,999** 5,092,000 **5,092,001**

Exercise-1.4

1. Put correct sign of <, > or = in the following boxes :

- Ans.** a. 4,74,32,189 4,74,02,928
 b. 1,67,76,523 1,67,76,219
 c. 33,00,00,000 40,00,00,000
 d. 14,79,00,060 Fourteen crore seventy-nine lakh sixty

2. Write the smallest and greatest numbers in the following :

- Ans.** a. Smallest number = 32,45,639; Greatest number = 2,65,65,935
 b. Smallest number = 8,92,53,738; Greatest number = 89,20,57,399
 c. Smallest number = 22,22,222; Greatest number = 9,99,98,704
 d. Smallest number = 42,31,53,421; Greatest number = 43,52,13,412

3. Arrange the following numbers in ascending order :

- Ans.** a. $22,15,006 < 22,15,900 < 22,51,006 < 22,51,500$
 b. $5,084,543 < 5,304,536 < 5,304,635 < 5,804,635$
 c. $11,12,13,145 < 11,12,13,154 < 11,12,31,245 < 12,11,13,145$
 d. $89,345,120 < 89,435,120 < 98,345,120 < 98,543,120$

4. Arrange the following numbers in descending order :

- Ans.** a. $43,800,789 > 43,600,875 > 43,080,987 > 43,008,987$
b. $7,431,865 > 7,413,865 > 7,314,865 > 7,134,865$
c. $13,28,53,989 > 13,28,35,989 > 12,28,35,989 > 11,82,35,989$
d. $61,82,14,911 > 61,82,14,712 > 61,82,14,217 > 61,82,14,119$

Exercise-1.5

1. Form the greatest and the smallest 7-digit numbers using each of the following digits only once :

Ans. The number formed by the digits :

- a. 3, 2, 7, 8, 4, 6, 0
The smallest 7-digit number = 20,34,678
And, the greatest 7-digit number = 87,64,320
- b. 2, 1, 4, 3, 6, 9, 5
The smallest 7-digit number = 12,34,569
And, the greatest 7-digit number = 96,54,321

2. Write greatest and smallest 8-digit numbers (you may repeat a digit) using the following digits:

Ans. The number formed by the digits :

- a. 4, 3, 0, 5, 9, 8, 7
The smallest 8-digit number = 3,00,45,789
And, the greatest 8-digit number = 9,98,75,430
- b. 2, 6, 7, 1, 3, 8, 4
The smallest 8-digit number = 1,12,34,678
And, the greatest 8-digit number = 8,87,64,321
- c. The smallest 8-digit number using digits 9, 3, 7, 1, 0, 2 and 4 is 1,00,23,479.
And, the greatest 8-digit number using digits 9, 3, 7, 1, 0, 2 and 4 is 9,97,43,210.

Exercise-1.6

1. Round off the following numbers to the nearest hundreds :

- Ans.** a. 942 is rounded off to the nearest hundreds as 900.
b. 585 is rounded off to the nearest hundreds as 600.
c. 264 is rounded off to the nearest hundreds as 300.
d. 4582 is rounded off to the nearest hundreds as 4600.
e. 3412 is rounded off to the nearest hundreds as 3400.
f. 1750 is rounded off to the nearest hundreds as 1800.
g. 1535 is rounded off to the nearest hundreds as 1500.
h. 450 is rounded off to the nearest hundreds as 500.

2. Round off the following numbers to the nearest thousands :

- Ans.** a. 38429 is rounded off to the nearest thousands as 38000.
b. 11689 is rounded off to the nearest thousands as 12000.
c. 4895 is rounded off to the nearest thousands as 5000.
d. 7499 is rounded off to the nearest thousands as 7000.
e. 6503 is rounded off to the nearest thousands as 7000.
f. 24164 is rounded off to the nearest thousands as 24000.
g. 38500 is rounded off to the nearest thousands as 39000.
h. 1200 is rounded off to the nearest thousands as 1000.

3. Round off the following numbers to the nearest ten thousands :

- Ans. a. 55945 is rounded off to the nearest ten thousands as 60,000.
 b. 73248 is rounded off to the nearest ten thousands as 70,000.
 c. 14388 is rounded off to the nearest ten thousands as 10,000.
 d. 927014 is rounded off to the nearest ten thousands as 9,30,000.
 e. 650021 is rounded off to the nearest ten thousands as 6,50,000.
 f. 771436 is rounded off to the nearest ten thousands as 7,70,000.
 g. 45000 is rounded off to the nearest ten thousands as 50,000.
 h. 224680 is rounded off to the nearest ten thousands as 2,20,000.

MCQs

1. a 2. b 3. b 4. b 5. a

NEP : Adaptive Education

Ans. The required number is 9,687,534.



Four Fundamental Operations

Exercise-2.1

1. Find the sum of the following :

Ans. a. 32,94,147 and 56,20,008

$$\begin{array}{r} 1 1 \\ 3294147 \\ + 5620008 \\ \hline 8914155 \end{array}$$

b. 25,87,284 and 9,27,884

$$\begin{array}{r} 1 1 1 1 \\ 2587284 \\ + 927884 \\ \hline 3515168 \end{array}$$

c. 4,87,87,555; 20,28,111
and 34,83,905

$$\begin{array}{r} 1 1 1 1 1 1 \\ 48787555 \\ 2028111 \\ + 3483905 \\ \hline 54299571 \end{array}$$

d. 6,814,878; 900; 3,256,875
and 896, 856

$$\begin{array}{r} 1 1 1 3 2 1 \\ 6814878 \\ 900 \\ + 3256875 \\ + 896856 \\ \hline 10969509 \end{array}$$

e. 4,878,947; 856,278,556
and 97,845

$$\begin{array}{r} 1 1 2 2 2 1 1 \\ 4878947 \\ 856278556 \\ 97845 \\ \hline 861255348 \end{array}$$

f. 64,73,892; 6,60,612
and 8,66,238

$$\begin{array}{r} 2 2 1 1 1 1 \\ 6473892 \\ 660612 \\ + 866238 \\ \hline 8000742 \end{array}$$

2. Fill the missing numbers in the boxes :

Ans. a.

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

b.

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

3. Number of fish in first ship = 37,565
 Number of fish in second ship = 6,57,903
 And, number of fish in third ship = 3,64,808
 \therefore Total number of fish in three ship
 = 37,565 + 6,57,903 + 3,64,808
 = 10,60,276

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

Hence, 10,60,276 fish caught by the three ships in total.

4. First candidate got votes = 1,75,912 votes
 And second candidate got votes = 2,65,313 votes
 \therefore Total number of votes polled in the election
 = 1,75,912 + 2,65,313
 = 4,41,225

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

Hence, 4,41,225 votes were polled in the election in all.

5. Chocolates produced in January = 12,35,450
 Chocolates produced in February = 20,25,800
 And, chocolates produced in March = 15,20,875
 \therefore Total number of chocolates produced in three months
 = 12,35,450 + 20,25,800 + 15,20,875
 = 47,82,125

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

Hence, 47,82,125 chocolates were produced in three months.

6. The population of country A = 1,35,80,607
 The population of country B = 8,01,67,145
 And, population of country C = 6,25,65,680
 \therefore Total population of these three country
 = 1,35,80,607 + 8,01,67,145
 + 6,25,65,680
 = 15,63,13,432

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

Hence, the total population of these three country is 15,63,13,432.

Exercise-2.2

1. Subtract :

Ans. a. $27,97,650 - 26,17,970$

8	16	15	15		
2	7	9	7	6	5
-	2	6	1	7	9
0	1	7	9	6	8

b. $17,04,26,184 - 12,05,21,345$

6	9	14	5	11	7	14
1	7	0	4	2	6	1
-	1	2	0	5	2	1
0	4	9	9	0	4	8

c. $69,75,967 - 68,77,570$

8	16	15	8	16
6	9	7	5	9
-	6	8	7	7
0	0	9	8	3

d. $22,10,85,648 - 20,10,44,626$

2	2	1	0	8	5	6	4	8
-	2	0	1	0	4	4	6	2
0	2	0	0	4	1	0	2	2

3. Fill in the missing digits :

Ans. a.

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

b.

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

4. Population of city in year 2001 = 87,75,988

And, the population of city in year 2011
= 2,75,70,903

∴ Population increases in year 2011
= 2,75,70,903 - 87,75,988
= 1,87,94,915

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

Hence, the population of the city was increased by 1,87,94,915 people from year 2001 to 2011.

5. Potatoes was stored in the cold storage
= 35,36,78,512 kgs

And, the farmer take off the potatoes
= 3,51,23,602 kgs

∴ Remaining potatoes left in the cold storage
= 35,36,78,512 kgs - 3,51,23,602 kgs
= 31,85,54,910 kgs

Hence, 31,85,54,910 kgs of potatoes were left in the cold storage.

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

6. The smallest eight-digit number
= 1,00,00,000

And, the greatest nine-digit number
= 99,99,99,999

∴ Now, their difference = 99,99,99,999 - 1,00,00,000
= 98,99,99,999

7. Rihaan borrowed from Aamir = ₹ 18,88,972

And, he repaid to Aamir during the same
year = ₹ 15,75,612

∴ Not paid amount
= ₹ 18,88,972 - ₹ 15,75,612
= ₹ 3,13,360

Hence, Rihaan has to be paid yet ₹ 3,13,360.

	TC	C	TL	L	TTh	Th	H	T	O
	9	9	9	9	9	9	9	9	9
-	1	0	0	0	0	0	0	0	0
	9	8	9	9	9	9	9	9	9

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

Exercise-2.3

1. Find the product :

Ans. a. 26732×215

b. 13647×124

c. 33762×967

2	6	7	3	2
× 215				
1	3	3	6	6
2	6	7	3	2
5	3	4	6	4
5	7	4	7	3

1	3	6	4	7
× 124				
5	4	5	8	8
2	7	2	9	4
1	3	6	4	7
1	6	9	2	2

3	3	7	6	2
× 967				
2	3	6	3	3
2	0	2	5	7
3	0	3	8	5
3	2	6	4	7

d. 7693×2315

$$\begin{array}{r} 7693 \\ \times 2315 \\ \hline 38465 \\ 76930 \\ 2307900 \\ 15386000 \\ 17809295 \end{array}$$

e. 1672×1569

$$\begin{array}{r} 1672 \\ \times 1569 \\ \hline 15048 \\ 100320 \\ 836000 \\ 1672000 \\ 2623368 \end{array}$$

f. 1932×1000

$$\begin{array}{r} 1932 \\ \times 1000 \\ \hline 1932000 \end{array}$$

g. 12000×5000

$$\begin{array}{r} 12000 \\ \times 5000 \\ \hline 60000000 \end{array}$$

h. 26732×1000

$$\begin{array}{r} 26732 \\ \times 1000 \\ \hline 26732000 \end{array}$$

i. 32537×3782

$$\begin{array}{r} 32537 \\ \times 3782 \\ \hline 65074 \\ 2602960 \\ 22775900 \\ 97611000 \\ 123054934 \end{array}$$

j. 6075×6132

$$\begin{array}{r} 6075 \\ \times 6132 \\ \hline 12150 \\ 182250 \\ 607500 \\ 36450000 \\ 37251900 \end{array}$$

k. 1643×2300

$$\begin{array}{r} 1643 \\ \times 2300 \\ \hline 492900 \\ 3286000 \\ 3778900 \end{array}$$

l. 2000×5983

$$\begin{array}{r} 5983 \\ \times 2000 \\ \hline 11966000 \end{array}$$

2. Fill in the circles :

Ans.

a.

$$\begin{array}{r} 618 \\ \times 325 \\ \hline \textcircled{3}090 \\ \textcircled{1}23\textcircled{6}0 \\ + 18\textcircled{5}400 \\ \hline \textcircled{2}00\textcircled{8}50 \end{array}$$

b.

$$\begin{array}{r} 3450 \\ \times 324 \\ \hline \textcircled{1}3800 \\ 6\textcircled{9}000 \\ + 10\textcircled{3}5000 \\ \hline \textcircled{1}117\textcircled{8}00 \end{array}$$

c.

$$\begin{array}{r} 615950 \\ \times 435 \\ \hline 3079750 \\ \textcircled{1}8\textcircled{4}78\textcircled{5}00 \\ + 2\textcircled{4}638\textcircled{0}000 \\ \hline \textcircled{2}67\textcircled{9}38\textcircled{2}50 \end{array}$$

3. Number of tyres produced by company in each day = 1394

\therefore Number of tyres produced by company in 365 days = 1395×365
= 508810

Hence, the company will produce 5,08,810 tyres in a year if there is no holiday.

$$\begin{array}{r} 1394 \\ \times 365 \\ \hline 6970 \\ 83640 \\ + 418200 \\ \hline 508810 \end{array}$$

4. Number of books containing in a box = 168

∴ Number of books containing in 3842

such boxes = 3842×168

$$= 6,45,456$$

Hence, there are 6,45,456 books containing in 3842 such boxes.

$$\begin{array}{r} 3842 \\ \times 168 \\ \hline 30736 \\ 230520 \\ + 384200 \\ \hline 645456 \end{array}$$

5. Number of apple trees in an orchard = 225

And, the number of branches on each tree = 80

∴ Total number of branches in the orchard

$$= 225 \times 80$$

$$= 18,000$$

And, the number of apples on each branch = 25

∴ Total number of apples in the orchard = 18000×25

$$= 4,50,000$$

Hence, there are 4,50,000 apples in the orchard.

$$\begin{array}{r} 225 \\ \times 80 \\ \hline 18000 \\ \times 25 \\ \hline 90000 \\ 360000 \\ \hline 450000 \end{array}$$

6. Number of days in a leap year = 366

And, number of hours in a day = 24

∴ Total number of hours in a lap year = 366×24

$$= 8784 \text{ hours}$$

And, number of minutes in an hour = 60

∴ Total number of minutes in a leap year

$$= 8784 \times 60$$

$$= 5,27,040 \text{ minutes}$$

And, number of seconds in a minute = 60

∴ Total number of seconds in a leap year

$$= 5,27,040 \times 60 = 3,16,22,400$$

Hence, there are 3,16,22,400 seconds in a leap year.

$$\begin{array}{r} 366 \\ \times 24 \\ \hline 1464 \\ + 7320 \\ \hline 8784 \\ \times 60 \\ \hline 527040 \\ \times 60 \\ \hline 31622400 \end{array}$$

Exercise-2.4

1. Divide the following :

Ans. a. $385000 \div 100$

$$\begin{array}{r} 3850 \\ 100 \overline{) 385000} \\ \underline{-300} \\ 850 \\ \underline{800} \\ 500 \\ \underline{-500} \\ \hline \times \end{array}$$

So, Quotient = 3850

And, Remainder = 0

b. $4769300 \div 100$

$$\begin{array}{r} 47693 \\ 100 \overline{) 4769300} \\ \underline{-400} \\ 769 \\ \underline{-700} \\ 693 \\ \underline{-600} \\ 930 \\ \underline{-900} \\ 300 \\ \underline{-300} \\ \hline \times \end{array}$$

So, Quotient

$$= 47693$$

And, Remainder = 0

c. $376500 \div 200$

$$\begin{array}{r} 1882 \\ 200 \overline{) 376500} \\ \underline{-200} \\ 1765 \\ \underline{-1600} \\ 1650 \\ \underline{-1600} \\ 500 \\ \underline{-400} \\ 100 \end{array}$$

So, Quotient = 1882

And, Remainder = 100

d. $80892 \div 126$

$$\begin{array}{r} 642 \\ 126 \overline{) 80892} \\ \underline{-756} \\ 529 \\ \underline{-504} \\ 252 \\ \underline{-252} \\ \hline x \end{array}$$

So, Quotient = 642
And, Remainder = 0

e. $96212 \div 268$

$$\begin{array}{r} 359 \\ 268 \overline{) 96212} \\ \underline{-804} \\ 1581 \\ \underline{-1340} \\ 2412 \\ \underline{-2412} \\ \hline x \end{array}$$

So, Quotient = 359
And, Remainder = 0

f. $328286 \div 358$

$$\begin{array}{r} 917 \\ 358 \overline{) 328286} \\ \underline{-3222} \\ 608 \\ \underline{-358} \\ 2506 \\ \underline{-2506} \\ \hline x \end{array}$$

So, Quotient = 917
And, Remainder = 0

g. $2157948 \div 351$

$$\begin{array}{r} 6148 \\ 351 \overline{) 2157948} \\ \underline{-2106} \\ 519 \\ \underline{-351} \\ 1684 \\ \underline{-1404} \\ 2808 \\ \underline{-2808} \\ \hline x \end{array}$$

So, Quotient = 6148
And, Remainder = 0

h. $387486 \div 618$

$$\begin{array}{r} 627 \\ 618 \overline{) 387486} \\ \underline{-3708} \\ 1668 \\ \underline{-1236} \\ 4326 \\ \underline{-4326} \\ \hline x \end{array}$$

So, Quotient = 627
And, Remainder = 0

i. $3039498 \div 561$

$$\begin{array}{r} 5418 \\ 561 \overline{) 3039498} \\ \underline{-2805} \\ 2344 \\ \underline{-2244} \\ 1009 \\ \underline{-561} \\ 4488 \\ \underline{-4488} \\ \hline x \end{array}$$

So, Quotient = 5418
And, Remainder = 0

2. Find the quotient and the remainder, if any.

Ans. a. $671294 \div 4821$

$$\begin{array}{r} 139 \\ 4821 \overline{) 671294} \\ \underline{-4821} \\ 18919 \\ \underline{-14463} \\ 44564 \\ \underline{-43389} \\ 1175 \\ \hline \end{array}$$

So, Quotient = 139
And, Remainder = 1175

b. $619302 \div 4800$

$$\begin{array}{r} 129 \\ 4800 \overline{) 619302} \\ \underline{-4800} \\ 13930 \\ \underline{-9600} \\ 43302 \\ \underline{-43200} \\ 102 \\ \hline \end{array}$$

So, Quotient = 129
And, Remainder = 102

c. $1751286 \div 5173$

$$\begin{array}{r} 338 \\ 5173 \overline{) 1751286} \\ \underline{-15519} \\ 19938 \\ \underline{-15519} \\ 44196 \\ \underline{-41384} \\ 2812 \\ \hline \end{array}$$

So, Quotient = 338
And, Remainder = 2812

d. $3891748 \div 359$

$$\begin{array}{r} 10840 \\ 359 \overline{) 3891748} \\ \underline{-359} \\ 3017 \\ \underline{-2872} \\ 1454 \\ \underline{-1436} \\ 188 \end{array}$$

So, Quotient = 10840
And, Remainder = 188

e. $7126028 \div 302$

$$\begin{array}{r} 23596 \\ 302 \overline{) 7126028} \\ \underline{-604} \\ 1086 \\ \underline{-906} \\ 1800 \\ \underline{-1510} \\ 2902 \\ \underline{-2718} \\ 1848 \\ \underline{-1812} \\ 36 \end{array}$$

So, Quotient = 23596
And, Remainder = 36

f. $8426179 \div 1270$

$$\begin{array}{r} 6634 \\ 1270 \overline{) 8426179} \\ \underline{-7620} \\ 8061 \\ \underline{-7620} \\ 4417 \\ \underline{-3810} \\ 6079 \\ \underline{-5080} \\ 999 \end{array}$$

So, Quotient = 6634
And, Remainder = 999

g. $1609452 \div 1970$

$$\begin{array}{r} 816 \\ 1970 \overline{) 1609452} \\ \underline{-15760} \\ 3345 \\ \underline{-1970} \\ 13752 \\ \underline{-11820} \\ 1932 \end{array}$$

So, Quotient = 816
And, Remainder = 1932

h. $908677 \div 2482$

$$\begin{array}{r} 366 \\ 2482 \overline{) 908677} \\ \underline{-7446} \\ 16407 \\ \underline{-14892} \\ 15157 \\ \underline{-14892} \\ 265 \end{array}$$

So, Quotient = 366
And, Remainder = 265

i. $4523816 \div 2348$

$$\begin{array}{r} 1926 \\ 2348 \overline{) 4523816} \\ \underline{-2348} \\ 21758 \\ \underline{-21132} \\ 6261 \\ \underline{-4696} \\ 15656 \\ \underline{-14088} \\ 1568 \end{array}$$

So, Quotient = 1926
And, Remainder = 1568

3. The product of two numbers = 18,13,500
And, one of the number = 4875
Thus, other number = $1813500 \div 4875 = 372$
Hence, the other number is 372.

4. Given, Dividend = 88860
Quotient = 3554

And, Remainder = 10

\therefore Dividend = Divisor

\times Quotient + Remainder

$\therefore 88860 = D \times 3554 + 10$

$88860 - 10 = D \times 3554$

$D = 88850 \div 3554 = 25$

Hence, the divisor is 25.

$$\begin{array}{r} 372 \\ 4875 \overline{) 1813500} \\ \underline{-14625} \\ 35100 \\ \underline{-34125} \\ 9750 \\ \underline{-9750} \\ \times \end{array}$$

$$\begin{array}{r} 25 \\ 3554 \overline{) 88850} \\ \underline{-7108} \\ 17770 \\ \underline{-17770} \\ \times \end{array}$$

5. Number of tyres produced in the factory in a year
= 17,75,000

And, number of tyres are packed in a box = 225

$$\therefore \text{Required number of boxes} = 1775000 \div 225 = 7888$$

And, remaining tyres without packing = 200

Hence, there are 7888 boxes required to pack all the tyres and 200 tyres will be left over without packing.

$$\begin{array}{r} 7888 \\ 225 \overline{) 1775000} \\ \underline{-1575} \\ 2000 \\ \underline{-1800} \\ 2000 \\ \underline{-1800} \\ 2000 \\ \underline{-1800} \\ 200 \end{array}$$

MCQs

1. a 2. c 3. a 4. a

NEP : Cross-Cultural Learning (CCL)

12	8	24
÷	÷	=
32	4	8
÷	=	=
Example	x	=
6	2	3
÷	=	=

10	x	2	=	20
x	x	=	=	
9	x	4	=	36
x	=	=	=	
5	x	8	=	40

20	27	36		
÷	÷	=		
5	x	9	=	45
=	x	=	=	
4	x	3	=	12

10	÷	2	=	5
x	x	x	=	
4	x	8	=	32
=	÷	=	=	
40	16	80		



Factors and Multiples

Exercise-3.1

1. Complete the table :

Ans.

Given Number	Divisible by									
	2	3	4	5	6	7	8	9	10	
6208	✓		✓				✓			
12150	✓	✓		✓	✓			✓	✓	
364392	✓	✓	✓		✓	✓	✓	✓		
5920	✓		✓	✓			✓		✓	
3437						✓				
49077		✓				✓		✓		

So, (i) 5535, (ii) 43425, (iii) 36045 and (iv) 10620 are divisible by 5 and 9 both.

Hence, (i) 5535, (ii) 43425, (iii) 36045 and (iv) 10620 are divisible by 45.

d. Divisibility by 30 : If a number is divisible by 3 and 10 both. Thus, it is also divisible by 30.

\therefore 4650, 7530, 8790 and 623460 have 0 as unit digit.

\therefore 4650, 7530, 8790 and 623460 all numbers are divisible by 10.

If the sum of digits of a number is divisible by 3. Thus, the number is also divisible by 3.

Now, (i) $4650 : 4 + 6 + 5 + 0 = 15$ (divisible by 3)

(ii) $7530 : 7 + 5 + 3 + 0 = 15$ (divisible by 3)

(iii) $8790 : 8 + 7 + 9 + 0 = 24$ (divisible by 3)

(iv) $623460 : 6 + 2 + 3 + 4 + 6 + 0 = 21$ (divisible by 3)

\therefore All these numbers are divisible by 3.

So, (i) 4650, (ii) 7530, (iii) 8790 and (iv) 623460 are divisible by 3 and 10 both.

Hence, (i) 4650, (ii) 7530, (iii) 8790 and (iv) 623460 are divisible by 30.

e. Divisibility by 20 : If a number is divisible by 4 and 5 both. Thus, it is also divisible by 20.

\therefore 20, 60 and 60 are divisible by 4 and 5 both. But, 30 is not divisible by 4.

\therefore (i) 962420, (ii) 4960 and (iv) 76360 are divisible by 4 and 5 both.

Hence, (i) 96240, (ii) 4960 and (iv) 76360 are divisible by 20.

f. Divisibility by 11 : If the difference between the sum of digits at odd places and of digits at even places is either a multiple of 11 or 0.

Thus, the number is divisible by 11.

Now, (i) $2211 : (1 + 2) - (1 + 2) = 3 - 3 = 0$ (divisible by 11)

(ii) $1595 : (5 + 5) - (9 + 1) = 10 - 10 = 0$ (divisible by 11)

(iii) $11594 : (4 + 5 + 1) - (9 + 1) = 10 - 10 = 0$ (divisible by 11)

(iv) $35827 : (7 + 8 + 3) - (5 + 2) = 18 - 7 = 11$ (divisible by 11)

\therefore All these numbers are divisible by 11.

Hence, (i) 2211, (ii) 1595, (iii) 11594 and (iv) 35827 are divisible by 11.

g. Divisibility by 21 : If a number is divisible by 3 and 7 both. Thus, it is also divisible by 21.

\therefore If sum of digits of a number is divisible by 3. Thus, the number is also divisible by 3.

Now, (i) $9471 : 9 + 4 + 7 + 1 = 21$ (divisible by 3)

(ii) $8652 : 8 + 6 + 5 + 2 = 21$ (divisible by 3)

(iii) $6846 : 6 + 8 + 4 + 6 = 24$ (divisible by 3)

(iv) $42231 : 4 + 2 + 2 + 3 + 1 = 12$ (divisible by 3)

\therefore All these numbers are divisible by 3.

If the difference between twice of unit digit of a number and the number formed by remaining digits is either a multiple of 7 or 0.

Thus, the number is divisible by 7.

Now, (i) $9471 : 947 - 2 = 945 : 94 - 10 = 84$ (divisible by 7)

(ii) $8652 : 865 - 4 = 861 : 86 - 2 = 84$ (divisible by 7)

(iii) $6846 : 684 - 12 = 672 : 67 - 4 = 63$ (divisible by 7)

$$(iv) 42231 : 4223 - 2 = 4221 : 422 - 2 = 420 \text{ (divisible by 7)}$$

\therefore All these numbers are divisible by 7.

So, (i) 9471, (ii) 8652, (iii) 6846 and (iv) 42231 are divisible by 3 and 7 both.

Hence, (i) 9471, (ii) 8652, (iii) 6846 and (iv) 42231 are divisible by 21.

Exercise-3.2

1. Fill in the blanks :

Ans. a. One is a **factor** of every number.

b. '2' is a **even** prime number.

c. **Prime** numbers have exactly **two** factors.

d. **One** is neither prime nor composite.

e. Composite numbers have **more than two** factors.

f. The largest 2-digit prime number is **97**.

g. 17 and 19 is a pair of **twin** primes.

h. 7 and 13 are known as **co-primes**.

2. Write first three common multiples of :

Ans. a. 3 and 5

Multiples of 3 : 3, 6, 9, 4, (15), 18, 21, 24, 27, (30), 33, 36, 39, 42, (45), 48,

Multiples of 5 : 5, 10, (15), 20, 25, (30), 35, 40, (45), 50, 55, (60),

Hence, first three common multiples of 3 and 5 are 15, 30 and 45.

b. 7 and 14

Multiples of 7 : 7, (14), 21, (28), 35, (42), 49, (56), 63, (70),

Multiples of 14 : (14), (28), (42), (56), (70), 84, 98,

Hence, first three common multiples of 7 and 14 are 14, 28 and 42.

c. 3 and 9

Multiples of 3 : 3, 6, (9), 12, 15, (18), 21, 24, (27), 30, 33, (36), 39,

Multiples of 9 : (9), (18), (27), (36), 45, 54, 63, 72,

Hence, first three common multiples of 3 and 9 are 9, 18 and 27.

d. 16 and 20

Multiples of 16 : 16, 32, 48, 64, (80), 96, 112, 128, 144, (160), 176, 192, 208, 224, (240), 256, 272,

Multiples of 20 : 20, 40, 60, (80), 100, 120, 140, (160), 180, 200, 220, (240), 260, 280, 300,

Hence, first three common multiples of 16 and 20 are 80, 160 and 240.

3. Find all the common factors of :

Ans. a. 36 and 40

Factors of 36 : (1), (2), 3, (4), 6, 9, 12, 18 and 36.

Factors of 40 : (1), (2), (4), 5, 8, 10, 20 and 40.

Hence, common factors of 36 and 40 are 1, 2 and 4.

b. 25, 45 and 60

Factors of 25 : (1), (5), and 25.

Factors of 45 : (1), 3, (5), 9, 15 and 45.

Factors of 60 : (1), 2, 3, 4, (5), 6, 10, 12, 15, 20, 30 and 60.

Hence, common factors of 25, 45 and 60 are 1 and 5.

c. 18 and 63

Factors of 18 : (1), 2, (3), 6, (9), and 18.

Factors of 63 : (1), (3), 7, (9), 21 and 63.

Hence, common factors of 18 and 63 are 1, 3 and 9.

d. 75, 80 and 120

Factors of 75 : (1), 3, (5), 15, 25 and 75.

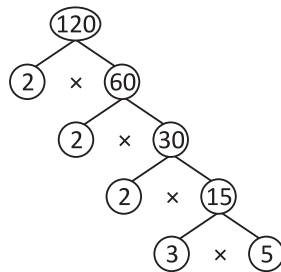
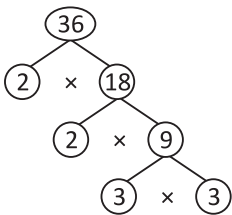
Factors of 80 : (1), 2, 4, (5), 8, 10, 16, 20, 40 and 80.

Factors of 120 : (1), 2, 3, 4, (5), 6, 8, 10, 12, 15, 20, 24, 30, 40, 60 and 120.

Hence, common factors of 75, 80 and 120 are 1 and 5.

4. Using factor—tree factorise 36 and 120.

Ans.



So, $36 = 2 \times 2 \times 3 \times 3$

So, $120 = 2 \times 2 \times 2 \times 3 \times 5$

5. Express the following as the product of primes :

Ans. a. 210

Prime factorisation of 210 :

2	210
3	105
5	35
7	7
	1

Hence, $210 = 2 \times 3 \times 5 \times 7$;

c. 180

Prime factorisation of 180 :

2	180
2	90
3	45
3	15
5	5
	1

Hence, $180 = 2 \times 2 \times 3 \times 3 \times 5$;

b. 145

Prime factorisation of 145 :

Hence, $145 = 5 \times 29$;

d. 72

Prime factorisation of 72 :

2	72
2	36
2	18
3	9
3	3
	1

Hence, $72 = 2 \times 2 \times 2 \times 3 \times 3$;

6. In a given figure, cat is trying to run away from dog. Cat is initially at 3rd step and dog is at first step. Answer the following :

- Ans. a. After every 3 steps, cat will pass through **6, 9, 12, 15,**
 b. After every 2 steps, dog will pass through **2, 4, 6, 8,**
 c. At what steps, both cat and dog will pass through **6, 12, 18, 24,**
 d. Will the cat run away **No**

Exercise-3.3

1. Find the HCF by horizontal method :

Ans. a. 92, 138

Prime factorisation of 92 and 138 :

$$92 = \boxed{2} \times 2 \times \boxed{23}$$

$$138 = \boxed{2} \times 3 \times \boxed{23}$$

Hence, HCF of 92 and 138 is $(2 \times 23) = 46$.

2	92	2	138
2	46	3	69
23	23	23	23
	1		1

b. 320, 440

Prime factorisation of 320 and 440 :

$$320 = \boxed{2} \times \boxed{2} \times \boxed{2} \times 2 \times 2 \times 2 \times \boxed{5}$$

$$440 = \boxed{2} \times \boxed{2} \times \boxed{2} \times \boxed{5} \times 11$$

Hence, HCF of 320 and 440 is $(2 \times 2 \times 2 \times 5) = 40$.

2	320	2	440
2	160	2	220
2	80	2	110
2	40	5	55
2	20	11	11
2	10		1
5	5		
	1		

c. 440, 385

Prime factorisation of 440 and 385 :

$$440 = 2 \times 2 \times 2 \times \boxed{5} \times \boxed{11}$$

$$385 = \boxed{5} \times 7 \times \boxed{11}$$

Hence, HCF of 440 and 385 is $(5 \times 11) = 55$.

2	440	5	385
2	220	7	77
2	110	11	11
5	55		1
11	11		
	1		

2. Find HCF by vertical method :

Ans. a. 28, 36

2	28, 36
2	14, 18
	7, 9

So, HCF of 28 and 36
 $= 2 \times 2$
 $= 4$.

b. 230, 322

2	230, 322
23	115, 161
	5, 7

So, HCF of 230 and 322
 $= 2 \times 23$
 $= 46$.

- c. 504, 672
 So, HCF of 504 and 672
 $= 2 \times 2 \times 2 \times 3 \times 7$
 $= 168.$

2	504, 672
2	252, 336
2	126, 168
3	63, 84
7	21, 28
	3, 4

3. Find HCF by long division method :

- Ans. a. 385, 440, 495

$$\begin{array}{r} 385 \overline{)440(1} \\ - 385 \\ \hline 55 \overline{)385(7} \\ - 385 \\ \hline \times \end{array} \qquad \begin{array}{r} 55 \overline{)495(9} \\ - 495 \\ \hline \times \end{array}$$

Hence, HCF of 385, 440 and 495 is 55.

- b. 216, 468, 828

$$\begin{array}{r} 216 \overline{)468(2} \\ - 432 \\ \hline 36 \overline{)216(6} \\ - 216 \\ \hline \times \end{array} \qquad \begin{array}{r} 36 \overline{)828(23} \\ - 72 \\ \hline 108 \\ - 108 \\ \hline \times \end{array}$$

Hence, HCF of 216, 468 and 828 is 36.

- c. 15, 36, 40

$$\begin{array}{r} 15 \overline{)36(2} \\ - 30 \\ \hline 6 \overline{)15(2} \\ - 12 \\ \hline 3 \overline{)6(2} \\ - 6 \\ \hline \times \end{array} \qquad \begin{array}{r} 3 \overline{)40(13} \\ - 3 \\ \hline 10 \\ - 9 \\ \hline 1 \overline{)3(3} \\ - 3 \\ \hline \times \end{array}$$

Hence, HCF of 15, 36 and 40 is 1.

4. Find LCM by prime factorization method :

- Ans. a. 180, 200, 240

Prime factorisation of
 180, 200 and 240 :

$$180 = 2 \times 2 \times 3 \times 3 \times 5$$

$$200 = 2 \times 2 \times 2 \times 5 \times 5$$

$$240 = 2 \times 2 \times 2 \times 2 \times 3 \times 5$$

$$\therefore \text{LCM} = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5 = 3600$$

Hence, the LCM of 180, 200 and
 240 is 3600.

2	180	2	200	2	240
2	90	2	100	2	120
3	45	2	50	2	60
3	15	5	25	2	30
5	5	5	5	3	15
	1		1	5	5
					1

b. 15, 20, 25, 30

Prime factorisation of 15, 20, 25 and 30 :

3	15
5	5
	1

2	20
2	10
5	5
	1

5	25
5	5
	1

2	30
3	15
5	5
	1

$15 = 3 \times 5$; $20 = 2 \times 2 \times 5$; $25 = 5 \times 5$; and $30 = 2 \times 3 \times 5$

$\therefore \text{LCM} = 2 \times 2 \times 3 \times 5 \times 5 = 300$

Hence, the LCM of 15, 20, 25 and 30 is 300.

c. 18, 24, 72

Prime factorisation of 18, 24 and 72 :

$18 = 2 \times 3 \times 3$;

$24 = 2 \times 2 \times 2 \times 3$;

And, $72 = 2 \times 2 \times 2 \times 3 \times 3$;

$\therefore \text{LCM} = 2 \times 2 \times 2 \times 3 \times 3 = 72$

Hence, the LCM of 18, 24 and 72 is 72.

2	18
3	9
3	3
	1

2	24
2	12
2	6
3	3
	1

2	72
2	36
2	18
3	9
3	3
	1

5. Find LCM by using division method :

Ans. a. 96, 256, 288

b. 40, 480, 560

2	96, 256, 288
2	48, 128, 144
2	24, 64, 72
2	12, 32, 36
2	6, 16, 18
3	3, 8, 9
	1, 8, 3

10	40, 480, 560
2	4, 48, 56
2	2, 24, 28
2	1, 12, 14
	1, 6, 7

$\therefore \text{LCM} = 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 8 = 2304$

Hence, the LCM of 96, 256 and 288 is 2304.

$\therefore \text{LCM} = 10 \times 2 \times 2 \times 2 \times 6 \times 7 = 3360$

Hence, the LCM of 40, 480 and 560 is 3360.

c. 140, 210, 350

10	140, 210, 350
7	14, 21, 35
	2, 3, 5

$\therefore \text{LCM} = 10 \times 7 \times 2 \times 3 \times 5 = 2100$

Hence, the LCM of 140, 210 and 350 is 2100.

6. First we find the HCF of 105 and 180.
 \therefore HCF of 105 and 180 is 15.

$$\begin{array}{r}
 105 \overline{)180} 1 \\
 \underline{-105} \\
 75 \overline{)105} 1 \\
 \underline{-75} \\
 30 \overline{)75} 2 \\
 \underline{-60} \\
 15 \overline{)30} 2 \\
 \underline{-30} \\
 \times
 \end{array}$$

Hence, the greatest number which divided 105 and 180 without leaving any remainder is 15.

7. \therefore Dividing 157, 178 and 218 leaving remainders 5, 7 and 9 respectively.
 \therefore We find the HCF of $(157-5)$, $(178-7)$ and $(218-9)$ i.e. 152, 171 and 209.

$$\begin{array}{r}
 152 \overline{)171} 1 \\
 \underline{-152} \\
 19 \overline{)152} 8 \\
 \underline{-152} \\
 \times
 \end{array}
 \qquad
 \begin{array}{r}
 19 \overline{)209} 11 \\
 \underline{-19} \\
 19 \\
 \underline{-19} \\
 \times
 \end{array}$$

\therefore HCF of 171, 152 and 209 is 19.
Hence the required greatest number is 19.

8. First we find the LCM of 20, 25 and 50.
LCM of 20, 25 and 50 = $2 \times 2 \times 5 \times 5$
= 100

\therefore Remainder leaving in each case = 9
Hence, the required smallest number = $100 + 9$
= 109.

$$\begin{array}{r|l}
 2 & 20, 25, 50 \\
 2 & 10, 25, 25 \\
 5 & 5, 25, 25 \\
 5 & 1, 5, 5 \\
 \hline
 & 1, 1, 1 \\
 \hline
 4 \overline{)288} 72 \\
 \underline{-28} \\
 08 \\
 \underline{-8} \\
 \times
 \end{array}$$

9. The product of two numbers = 288
And, their HCF = 4
 \therefore HCF \times LCM = Products of two numbers
 $\therefore 4 \times \text{LCM} = 288$
 $\text{LCM} = \frac{288}{4} = 72$

Hence, the LCM of the numbers is 72.

10. Given, numbers = 45 and 60
 \therefore HCF of 45 and 60 = $3 \times 5 = 15$
And, LCM of 45 and 60 = $3 \times 5 \times 3 \times 4 = 180$
Now, Product of the numbers = $45 \times 60 = 2700$
And, LCM \times HCF = $180 \times 15 = 2700$
Hence, [Product of two number = HCF \times LCM]

$$\begin{array}{r|l}
 3 & 45, 60 \\
 5 & 15, 20 \\
 \hline
 & 3, 4
 \end{array}$$

11. By Division Method :
 \therefore LCM = $2 \times 2 \times 3 \times 3 \times 3 \times 7 \times 5 \times 2$
= 108×70
= 7560

Hence, the LCM of 84, 108, 180 and 216 is 7560.

$$\begin{array}{r|l}
 2 & 84, 108, 180, 216 \\
 2 & 42, 54, 90, 108 \\
 3 & 21, 27, 45, 54 \\
 \hline
 3 & 7, 9, 15, 18 \\
 3 & 7, 3, 5, 6 \\
 \hline
 & 7, 1, 5, 2
 \end{array}$$

Proved.

12. By Division Method :

$$\begin{aligned} \therefore \text{LCM} &= 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 \\ &= 32 \times 27 \\ &= 864 \end{aligned}$$

Hence, the LCM of 32, 36, 48 and 54 is 864.

2	32, 36, 48, 54
2	16, 18, 24, 27
2	8, 9, 12, 27
2	4, 9, 6, 27
3	2, 9, 3, 27
3	2, 3, 1, 9
	2, 1, 1, 3

13. By Common multiple method :

Multiples of 2 are 2, 4, (6), 8, 10, (12), 14, 16, (18), 20,

Multiples of 3 are 3, (6), 9, (12), 15, (18), 21, (24), 27,

Multiples of 6 are (6), (12), (18), (24), (30), 36,

\therefore Common multiples of 2, 3 and 6 are 6, 12, 18, 24, 30, 36, 42,

Hence, the LCM of 2, 3 and 6 is 6.

MCQs

1. c

2. b

3. c

4. c

5. c



Fractions

Exercise-4.1

1. Write four fractions equivalent to each of the following :

Ans. a. $\frac{3}{8}$

$$\therefore \frac{3}{8} = \frac{3 \times 2}{8 \times 2} = \frac{6}{16}, \frac{3}{8} = \frac{3 \times 3}{8 \times 3} = \frac{9}{24}, \frac{3}{8} = \frac{3 \times 4}{8 \times 4} = \frac{12}{32}, \frac{3}{8} = \frac{3 \times 5}{8 \times 5} = \frac{15}{40}$$

Hence, $\frac{6}{16}, \frac{9}{24}, \frac{12}{32}$ and $\frac{15}{40}$ are four fractions equivalent to $\frac{3}{8}$.

b. $\frac{7}{10}$

$$\therefore \frac{7}{10} = \frac{7 \times 2}{10 \times 2} = \frac{14}{20}, \frac{7}{10} = \frac{7 \times 3}{10 \times 3} = \frac{21}{30}, \frac{7}{10} = \frac{7 \times 4}{10 \times 4} = \frac{28}{40}, \frac{7}{10} = \frac{7 \times 5}{10 \times 5} = \frac{35}{50}$$

Hence, $\frac{14}{20}, \frac{21}{30}, \frac{28}{40}$ and $\frac{35}{50}$ are four fractions equivalent to $\frac{7}{10}$.

c. $\frac{2}{5}$

$$\therefore \frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10}, \frac{2}{5} = \frac{2 \times 3}{5 \times 3} = \frac{6}{15}, \frac{2}{5} = \frac{2 \times 4}{5 \times 4} = \frac{8}{20}, \frac{2}{5} = \frac{2 \times 5}{5 \times 5} = \frac{10}{25}$$

Hence, $\frac{4}{10}, \frac{6}{15}, \frac{8}{20}$ and $\frac{10}{25}$ are four fractions equivalent to $\frac{2}{5}$.

d. $\frac{6}{13}$
 $\therefore \frac{6}{13} = \frac{6 \times 2}{13 \times 2} = \frac{12}{26}, \frac{6}{13} = \frac{6 \times 3}{13 \times 3} = \frac{18}{39}, \frac{6}{13} = \frac{6 \times 4}{13 \times 4} = \frac{24}{52}, \frac{6}{13} = \frac{6 \times 5}{13 \times 5} = \frac{30}{65}$

Hence, $\frac{12}{26}, \frac{18}{39}, \frac{24}{52}$ and $\frac{30}{65}$ are four fractions equivalent to $\frac{6}{13}$.

e. $\frac{5}{12}$
 $\therefore \frac{5}{12} = \frac{5 \times 2}{12 \times 2} = \frac{10}{24}, \frac{5}{12} = \frac{5 \times 3}{12 \times 3} = \frac{15}{36}, \frac{5}{12} = \frac{5 \times 4}{12 \times 4} = \frac{20}{48}, \frac{5}{12} = \frac{5 \times 5}{12 \times 5} = \frac{25}{60}$

Hence, $\frac{10}{24}, \frac{15}{36}, \frac{20}{48}$ and $\frac{25}{60}$ are four fractions equivalent to $\frac{5}{12}$.

f. $\frac{6}{13}$
 $\therefore \frac{6}{13} = \frac{6 \times 2}{13 \times 2} = \frac{12}{26}, \frac{6}{13} = \frac{6 \times 3}{13 \times 3} = \frac{18}{39}, \frac{6}{13} = \frac{6 \times 4}{13 \times 4} = \frac{24}{52}, \frac{6}{13} = \frac{6 \times 5}{13 \times 5} = \frac{30}{65}$

Hence, $\frac{12}{26}, \frac{18}{39}, \frac{24}{52}$ and $\frac{30}{65}$ are four fractions equivalent to $\frac{6}{13}$.

2. Fill in the boxes :

Ans. a. $\frac{1}{5} = \frac{\boxed{4}}{20}$

b. $\frac{3}{4} = \frac{\boxed{18}}{24}$

c. $\frac{2}{3} = \frac{\boxed{16}}{24}$

d. $\frac{\boxed{2}}{14} = \frac{1}{7}$

e. $\frac{4}{8} = \frac{\boxed{1}}{2}$

f. $\frac{\boxed{6}}{7} = \frac{24}{28}$

g. $\frac{5}{8} = \frac{15}{\boxed{24}}$

h. $\frac{18}{\boxed{54}} = \frac{9}{27}$

3. Reduce the following fractions to their lowest forms :

Ans. a. $\frac{8}{30}$

b. $\frac{27}{45}$

\therefore HCF of 8 and 30 = 2

\therefore HCF of 27 and 45 = 9

$\therefore \frac{8}{30} = \frac{8 \div 2}{30 \div 2} = \frac{4}{15}$

$\therefore \frac{27}{45} = \frac{27 \div 9}{45 \div 9} = \frac{3}{5}$

c. $\frac{68}{136}$

d. $\frac{102}{119}$

\therefore HCF of 68 and 136 = 68

\therefore HCF of 102 and 119 = 17

$\therefore \frac{68}{136} = \frac{68 \div 68}{136 \div 68} = \frac{1}{2}$

$\therefore \frac{102}{119} = \frac{102 \div 17}{119 \div 17} = \frac{6}{7}$

e. $\frac{153}{204}$

f. $\frac{13}{65}$

\therefore HCF of 153 and 204 = 51

\therefore HCF of 13 and 65 = 13

$\therefore \frac{153}{204} = \frac{153 \div 51}{204 \div 51} = \frac{3}{4}$

$\therefore \frac{13}{65} = \frac{13 \div 13}{65 \div 13} = \frac{1}{5}$

$$\begin{aligned} \text{g. } & \frac{49}{63} \\ \therefore & \text{HCF of 49 and 63} = 7 \\ \therefore & \frac{49}{63} = \frac{49 \div 7}{63 \div 7} = \frac{7}{9} \end{aligned}$$

$$\begin{aligned} \text{i. } & \frac{96}{156} \\ \therefore & \text{HCF of 96 and 156} = 12 \\ \therefore & \frac{96}{156} = \frac{96 \div 12}{156 \div 12} = \frac{8}{13} \end{aligned}$$

$$\begin{aligned} \text{h. } & \frac{129}{243} \\ \therefore & \text{HCF of 129 and 243} = 3 \\ \therefore & \frac{129}{243} = \frac{129 \div 3}{243 \div 3} = \frac{43}{81} \end{aligned}$$

$$\begin{aligned} \text{j. } & \frac{154}{238} \\ \therefore & \text{HCF of 154 and 238} = 14 \\ \therefore & \frac{154}{238} = \frac{154 \div 14}{238 \div 14} = \frac{11}{17} \end{aligned}$$

Exercise-4.2

1. Convert the following mixed fractions into improper fractions :

$$\text{Ans. a. } 9\frac{2}{7} = \frac{63+2}{7} = \frac{65}{7}$$

$$\text{b. } 11\frac{3}{8} = \frac{88+3}{8} = \frac{91}{8}$$

$$\text{c. } 15\frac{5}{16} = \frac{240+5}{16} = \frac{245}{16}$$

$$\text{d. } 23\frac{7}{11} = \frac{253+7}{11} = \frac{260}{11}$$

$$\text{e. } 39\frac{13}{19} = \frac{741+13}{19} = \frac{754}{19}$$

$$\text{f. } 5\frac{10}{13} = \frac{65+10}{13} = \frac{75}{13}$$

2. Convert the following improper fractions into mixed fractions :

$$\text{Ans. a. } \frac{100}{9} = \frac{99+1}{9} = 11\frac{1}{9}$$

$$\text{b. } \frac{130}{11} = \frac{121+9}{11} = 11\frac{9}{11}$$

$$\text{c. } \frac{90}{17} = \frac{85+5}{17} = 5\frac{5}{17}$$

$$\text{d. } \frac{254}{19} = \frac{247+7}{19} = 13\frac{7}{19}$$

$$\text{e. } \frac{380}{25} = \frac{375+5}{25} = 15\frac{1}{5}$$

$$\text{f. } \frac{45}{13} = \frac{39+6}{13} = 3\frac{6}{13}$$

3. Convert the following unlike fractions into like fractions :

$$\text{Ans. a. } \frac{1}{32}, \frac{3}{8}$$

$$\text{b. } \frac{9}{15}, \frac{6}{18}$$

\therefore LCM of 32 and 8 is 32.

\therefore LCM of 15 and 18 is 90.

$$\therefore \frac{1}{32} = \frac{1}{32} \text{ and } \frac{3}{8} = \frac{3 \times 4}{8 \times 4} = \frac{12}{32}$$

$$\therefore \frac{9}{15} = \frac{9 \times 6}{15 \times 6} = \frac{54}{90}$$

Hence, $\frac{1}{32}$ and $\frac{12}{32}$ are like fractions.

$$\text{and } \frac{6}{18} = \frac{6 \times 5}{18 \times 5} = \frac{30}{90}$$

Hence, $\frac{54}{90}$ and $\frac{30}{90}$ are like fractions.

$$\text{c. } \frac{8}{12}, \frac{7}{5}$$

$$\text{d. } \frac{1}{10}, \frac{3}{15}$$

\therefore LCM of 12 and 5 is 60.

\therefore LCM of 10 and 15 is 30.

$$\therefore \frac{8}{12} = \frac{8 \times 5}{12 \times 5} = \frac{40}{60}$$

$$\therefore \frac{1}{10} = \frac{1 \times 3}{10 \times 3} = \frac{3}{30}$$

$$\text{and } \frac{7}{5} = \frac{7 \times 12}{5 \times 12} = \frac{84}{60}$$

$$\text{and } \frac{3}{15} = \frac{3 \times 2}{15 \times 2} = \frac{6}{30}$$

Hence, $\frac{40}{60}$ and $\frac{84}{60}$ are like fractions.

Hence, $\frac{3}{30}$ and $\frac{6}{30}$ are like fractions.

e. $\frac{5}{24}, \frac{3}{60}$

∴ LCM of 24 and 60 is 120.

∴ $\frac{5}{24} = \frac{5 \times 5}{24 \times 5} = \frac{25}{120}$

and $\frac{3}{60} = \frac{3 \times 2}{60 \times 2} = \frac{6}{120}$

Hence, $\frac{25}{120}$ and $\frac{6}{120}$ are

like fractions.

f. $\frac{13}{48}, \frac{3}{12}$

∴ LCM of 48 and 12 is 48.

∴ $\frac{13}{48} = \frac{13}{48}$

and $\frac{3}{12} = \frac{3 \times 4}{12 \times 4} = \frac{12}{48}$

Hence, $\frac{13}{48}$ and $\frac{12}{48}$ are like

fractions.

Exercise-4.3

1. Fill in the blanks using '>' or '<' to make correct statements :

Ans. a. $\frac{3}{5} > \frac{3}{8}$ b. $\frac{5}{14} < \frac{5}{8}$ c. $\frac{11}{16} < \frac{11}{12}$

d. $\frac{14}{17} < \frac{14}{15}$ e. $\frac{15}{19} > \frac{15}{23}$ f. $\frac{3}{5} < \frac{4}{5}$

2. Encircle the greater fraction in each of the following :

Ans. a. $\frac{5}{18}, \frac{5}{9}$ b. $\frac{15}{18}, \frac{15}{16}$ c. $\frac{6}{8}, \frac{6}{12}$ d. $\frac{1}{12}, \frac{2}{12}$

e. $\frac{3}{36}, \frac{4}{36}$ f. $\frac{3}{6}, \frac{7}{3}$ g. $\frac{11}{18}, \frac{15}{14}$ h. $\frac{7}{11}, \frac{3}{14}$

3. Encircle the greater fractions :

Ans. a. $3\frac{4}{12}, \frac{13}{9}$ b. $2\frac{6}{15}, \frac{18}{10}$ c. $4\frac{1}{7}, \frac{13}{8}$ d. $1\frac{1}{6}, \frac{15}{9}$

e. $5\frac{3}{8}, \frac{13}{6}$ f. $5\frac{2}{6}, \frac{21}{7}$ g. $3\frac{2}{10}, \frac{11}{15}$ h. $5\frac{2}{4}, \frac{16}{7}$

4. Encircle the greater fractions :

Ans. a. $\frac{14}{18}, \frac{12}{25}$ b. $\frac{4}{16}, \frac{6}{7}$ c. $\frac{12}{35}, \frac{18}{36}$ d. $\frac{19}{48}, \frac{16}{36}$

e. $\frac{11}{15}, \frac{8}{9}$ f. $\frac{12}{16}, \frac{14}{23}$ g. $\frac{3}{18}, \frac{5}{11}$ h. $\frac{5}{12}, \frac{16}{15}$

5. Arrange the following fractions in ascending order :

Ans. a. $\frac{3}{6}, \frac{1}{3}, \frac{17}{30}, \frac{4}{15}$

∴ LCM of 6, 3, 30 and 15 is $(2 \times 3 \times 5) = 30$.

∴ $\frac{3}{6} = \frac{3 \times 5}{6 \times 5} = \frac{15}{30}$ $\frac{1}{3} = \frac{1 \times 10}{3 \times 10} = \frac{10}{30}$

$\frac{17}{30} = \frac{17}{30}$ and $\frac{4}{15} = \frac{4 \times 2}{15 \times 2} = \frac{8}{30}$

Now, $\frac{8}{30} < \frac{10}{30} < \frac{15}{30} < \frac{17}{30}$

2	6, 3, 30, 15
3	3, 3, 15, 15
5	1, 1, 5, 5
	1, 1, 1, 1

Hence, the ascending order is $\left(\frac{4}{15} < \frac{1}{3} < \frac{3}{6} < \frac{17}{30}\right)$.

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

\therefore LCM of 6, 8, 4, 9 and 3 is $(2 \times 2 \times 2 \times 3 \times 3) = 72$.

$$\therefore \frac{5}{6} = \frac{5 \times 12}{6 \times 12} = \frac{60}{72}, \quad \frac{7}{8} = \frac{7 \times 9}{8 \times 9} = \frac{63}{72}, \quad \begin{array}{|l} 2 \\ 2 \\ 3 \end{array} \begin{array}{|l} 6, 8, 4, 9, 3 \\ 3, 4, 2, 9, 3 \\ 3, 2, 1, 9, 3 \end{array}$$

$$\frac{3}{4} = \frac{3 \times 18}{4 \times 18} = \frac{54}{72}, \quad \frac{4}{9} = \frac{4 \times 8}{9 \times 8} = \frac{32}{72}$$

and $\frac{1}{3} = \frac{1 \times 24}{3 \times 24} = \frac{24}{72}$

Now, $\frac{24}{72} < \frac{32}{72} < \frac{54}{72} < \frac{60}{72} < \frac{63}{72}$

Hence, the ascending order is $\left(\frac{1}{3} < \frac{4}{9} < \frac{3}{4} < \frac{5}{6} < \frac{7}{8}\right)$.

c. $\frac{3}{8}, \frac{1}{4}, \frac{5}{16}, \frac{3}{6}, \frac{10}{15}$

\therefore LCM of 8, 4, 16, 6 and 15 is $(2 \times 2 \times 2 \times 2 \times 3 \times 5) = 240$.

$$\therefore \frac{3}{8} = \frac{3 \times 30}{8 \times 30} = \frac{90}{240}, \quad \frac{1}{4} = \frac{1 \times 60}{4 \times 60} = \frac{60}{240}, \quad \begin{array}{|l} 2 \\ 2 \\ 2 \\ 3 \end{array} \begin{array}{|l} 8, 4, 16, 6, 15 \\ 4, 2, 8, 3, 15 \\ 2, 1, 4, 3, 15 \\ 1, 1, 2, 3, 15 \end{array}$$

$$\frac{5}{16} = \frac{5 \times 15}{16 \times 15} = \frac{75}{240}, \quad \frac{3}{6} = \frac{3 \times 40}{6 \times 40} = \frac{120}{240}$$

and $\frac{10}{15} = \frac{10 \times 16}{15 \times 16} = \frac{160}{240}$

Now $\frac{60}{240} < \frac{75}{240} < \frac{90}{240} < \frac{120}{240} < \frac{160}{240}$

Hence, the ascending order is $\left(\frac{1}{4} < \frac{5}{16} < \frac{3}{8} < \frac{3}{6} < \frac{10}{15}\right)$.

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

\therefore LCM of 9, 3, 8, 7 and 5 is $(2 \times 4 \times 3 \times 3 \times 7 \times 5) = 2520$.

$$\therefore \frac{2}{9} = \frac{2 \times 280}{9 \times 280} = \frac{560}{2520}, \quad \frac{4}{3} = \frac{4 \times 840}{3 \times 840} = \frac{3360}{2520}, \quad \begin{array}{|l} 2 \\ 4 \\ 3 \end{array} \begin{array}{|l} 9, 3, 8, 7, 5 \\ 9, 3, 4, 7, 5 \\ 9, 3, 1, 7, 5 \end{array}$$

$$\frac{6}{8} = \frac{6 \times 315}{8 \times 315} = \frac{1890}{2520}, \quad \frac{5}{7} = \frac{5 \times 360}{7 \times 360} = \frac{1800}{2520}$$

and $\frac{3}{5} = \frac{3 \times 504}{5 \times 504} = \frac{1512}{2520}$

Now $\frac{560}{2520} < \frac{1512}{2520} < \frac{1800}{2520} < \frac{1890}{2520} < \frac{3360}{2520}$

Hence, the ascending order is $\left(\frac{2}{9} < \frac{3}{5} < \frac{5}{7} < \frac{6}{8} < \frac{4}{3}\right)$.

$$e. \quad \frac{7}{12}, \frac{3}{6}, \frac{3}{4}, \frac{1}{3}, \frac{2}{5}$$

\therefore LCM of 12, 6, 4, 3 and 5 is $(2 \times 2 \times 3 \times 5) = 60$.

$$\therefore \frac{7}{12} = \frac{7 \times 5}{12 \times 5} = \frac{35}{60}, \quad \frac{3}{6} = \frac{3 \times 10}{6 \times 10} = \frac{30}{60},$$

$$\frac{3}{4} = \frac{3 \times 15}{4 \times 15} = \frac{45}{60}, \quad \frac{1}{3} = \frac{1 \times 20}{3 \times 20} = \frac{20}{60}$$

and $\frac{2}{5} = \frac{2 \times 12}{5 \times 12} = \frac{24}{60}$

Now $\frac{20}{60} < \frac{24}{60} < \frac{30}{60} < \frac{35}{60} < \frac{45}{60}$

Hence, the ascending order is $\left(\frac{1}{3} < \frac{2}{5} < \frac{3}{6} < \frac{7}{12} < \frac{3}{4}\right)$.

2	12, 6, 4, 3, 5
2	6, 3, 2, 3, 5
3	3, 3, 1, 3, 5
	1, 1, 1, 1, 5

$$f. \quad \frac{3}{8}, \frac{5}{12}, \frac{17}{24}, \frac{9}{18}, \frac{23}{24}$$

\therefore LCM of 8, 12, 24 and 18 is $(2 \times 2 \times 2 \times 3 \times 3) = 72$.

$$\therefore \frac{3}{8} = \frac{3 \times 9}{8 \times 9} = \frac{27}{72}, \quad \frac{5}{12} = \frac{5 \times 6}{12 \times 6} = \frac{30}{72},$$

$$\frac{17}{24} = \frac{17 \times 3}{24 \times 3} = \frac{51}{72}, \quad \frac{9}{18} = \frac{9 \times 4}{18 \times 4} = \frac{36}{72}$$

and $\frac{23}{24} = \frac{23 \times 3}{24 \times 3} = \frac{69}{72}$

Now $\frac{27}{72} < \frac{30}{72} < \frac{36}{72} < \frac{51}{72} < \frac{69}{72}$

Hence, the ascending order is $\left(\frac{3}{8} < \frac{5}{12} < \frac{9}{18} < \frac{17}{24} < \frac{23}{24}\right)$.

2	8, 12, 24, 18, 24
2	4, 6, 12, 9, 12
2	2, 3, 6, 9, 6
3	1, 3, 3, 9, 3
	1, 1, 1, 3, 1

6. Arrange the following in descending order :

Ans. a. $\frac{5}{6}, \frac{4}{7}, \frac{3}{8}, \frac{7}{6}, \frac{1}{3}$

\therefore LCM of 6, 7, 8, 6 and 3 is $(2 \times 4 \times 3 \times 7) = 168$.

$$\therefore \frac{5}{6} = \frac{5 \times 28}{6 \times 28} = \frac{140}{168}, \quad \frac{4}{7} = \frac{4 \times 24}{7 \times 24} = \frac{96}{168},$$

$$\frac{3}{8} = \frac{3 \times 21}{8 \times 21} = \frac{63}{168}, \quad \frac{7}{6} = \frac{7 \times 28}{6 \times 28} = \frac{196}{168}$$

and $\frac{1}{3} = \frac{1 \times 56}{3 \times 56} = \frac{56}{168}$

Now $\frac{196}{168} > \frac{140}{168} > \frac{96}{168} > \frac{63}{168} > \frac{56}{168}$

Hence, the descending order is $\left(\frac{7}{6} > \frac{5}{6} > \frac{4}{7} > \frac{3}{8} > \frac{1}{3}\right)$.

2	6, 7, 8, 6, 3
4	3, 7, 4, 3, 3
3	3, 7, 1, 3, 3
	1, 7, 1, 1, 1

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

∴ LCM of 8, 3, 5, 6 and 9 is $(2 \times 3 \times 4 \times 5 \times 3) = 360$.

∴ $\frac{2}{8} = \frac{2 \times 45}{8 \times 45} = \frac{90}{360}$, $\frac{1}{3} = \frac{1 \times 120}{3 \times 120} = \frac{120}{360}$,
 $\frac{4}{5} = \frac{4 \times 72}{5 \times 72} = \frac{288}{360}$, $\frac{3}{6} = \frac{3 \times 60}{6 \times 60} = \frac{180}{360}$

and $\frac{2}{9} = \frac{2 \times 40}{9 \times 40} = \frac{80}{360}$

Now $\frac{288}{360} > \frac{180}{360} > \frac{120}{360} > \frac{90}{360} > \frac{80}{360}$

Hence, the descending order is $\left(\frac{4}{5} > \frac{3}{6} > \frac{1}{3} > \frac{2}{8} > \frac{2}{9}\right)$.

2	8, 3, 5, 6, 9
3	4, 3, 5, 3, 9
	4, 1, 5, 1, 3

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

∴ LCM of 8, 3, 4, 6 and 5 is $(2 \times 2 \times 2 \times 3 \times 5) = 120$.

∴ $\frac{5}{8} = \frac{5 \times 15}{8 \times 15} = \frac{75}{120}$, $\frac{2}{3} = \frac{2 \times 40}{3 \times 40} = \frac{80}{120}$,
 $\frac{1}{4} = \frac{1 \times 30}{4 \times 30} = \frac{30}{120}$, $\frac{5}{6} = \frac{5 \times 20}{6 \times 20} = \frac{100}{120}$

and $\frac{3}{5} = \frac{3 \times 24}{5 \times 24} = \frac{72}{120}$

Now $\frac{100}{120} > \frac{80}{120} > \frac{75}{120} > \frac{72}{120} > \frac{30}{120}$

Hence, the descending order is $\left(\frac{5}{6} < \frac{2}{3} < \frac{5}{8} < \frac{3}{5} < \frac{1}{4}\right)$.

2	8, 3, 4, 6, 5
2	4, 3, 2, 3, 5
2	2, 3, 1, 3, 5
3	1, 3, 1, 3, 5
	1, 1, 1, 1, 5

d. $\frac{17}{18}, \frac{4}{9}, \frac{31}{36}, \frac{2}{3}, \frac{25}{27}$

∴ LCM of 18, 9, 36, 3 and 27 is $(2 \times 2 \times 3 \times 3 \times 3) = 108$.

∴ $\frac{17}{18} = \frac{17 \times 6}{18 \times 6} = \frac{102}{108}$, $\frac{4}{9} = \frac{4 \times 12}{9 \times 12} = \frac{48}{108}$,
 $\frac{31}{36} = \frac{31 \times 3}{36 \times 3} = \frac{93}{108}$, $\frac{2}{3} = \frac{2 \times 36}{3 \times 36} = \frac{72}{108}$

and $\frac{25}{27} = \frac{25 \times 4}{27 \times 4} = \frac{100}{108}$

Now $\frac{102}{108} > \frac{100}{108} > \frac{93}{108} > \frac{72}{108} > \frac{48}{108}$

Hence, the descending order is $\left(\frac{17}{18} > \frac{25}{27} > \frac{31}{36} > \frac{2}{3} > \frac{4}{9}\right)$.

2	18, 9, 36, 3, 27
2	9, 9, 18, 3, 27
3	9, 9, 9, 3, 27
3	3, 3, 3, 1, 9
	1, 1, 1, 1, 3

e. $\frac{15}{18}, \frac{16}{17}, \frac{3}{6}, \frac{4}{9}, \frac{5}{7}$

∴ LCM of 18, 17, 6, 9 and 7 is $(2 \times 3 \times 3 \times 7 \times 17) = 2142$.

$$\therefore \frac{15}{18} = \frac{15 \times 119}{18 \times 119} = \frac{1785}{2142}, \quad \frac{16}{17} = \frac{16 \times 126}{17 \times 126} = \frac{2016}{2142}, \quad \begin{array}{l|l} 2 & 18, 17, 6, 9, 7 \\ 3 & 9, 17, 3, 9, 7 \\ 3 & 3, 17, 1, 3, 7 \\ & 1, 17, 1, 1, 7 \end{array}$$

$$\frac{3}{6} = \frac{3 \times 357}{6 \times 357} = \frac{1071}{2142}, \quad \frac{4}{9} = \frac{4 \times 238}{9 \times 238} = \frac{952}{2142}$$

and $\frac{5}{7} = \frac{5 \times 306}{7 \times 306} = \frac{1530}{2142}$

Now $\frac{2016}{2142} > \frac{1785}{2142} > \frac{1530}{2142} > \frac{1071}{2142} > \frac{952}{2142}$

Hence, the descending order is $\left(\frac{16}{17} > \frac{15}{18} > \frac{5}{7} > \frac{3}{6} > \frac{4}{9}\right)$.

f. $\frac{7}{28}, \frac{5}{42}, \frac{3}{14}, \frac{4}{7}, \frac{13}{56}$

\therefore LCM of 28, 42, 14, 7 and 56 is $(2 \times 2 \times 2 \times 7 \times 3) = 168$.

$$\therefore \frac{7}{28} = \frac{7 \times 6}{28 \times 6} = \frac{42}{168}, \quad \frac{5}{42} = \frac{5 \times 4}{42 \times 4} = \frac{20}{168}, \quad \begin{array}{l|l} 2 & 28, 42, 14, 7, 56 \\ 2 & 14, 21, 7, 7, 28 \\ 2 & 7, 21, 7, 7, 14 \\ 7 & 7, 21, 7, 7, 7 \\ & 1, 3, 1, 1, 1 \end{array}$$

$$\frac{3}{14} = \frac{3 \times 12}{14 \times 12} = \frac{36}{168}, \quad \frac{4}{7} = \frac{4 \times 24}{7 \times 24} = \frac{96}{168}$$

and $\frac{15}{56} = \frac{15 \times 3}{56 \times 3} = \frac{45}{168}$

Now $\frac{96}{168} > \frac{45}{168} > \frac{42}{168} > \frac{36}{168} > \frac{20}{168}$

Hence, the descending order is $\left(\frac{4}{7} > \frac{15}{56} > \frac{7}{28} > \frac{3}{14} > \frac{5}{42}\right)$.

Exercise-4.4

1. Fill in the boxes:

Ans. a. $\frac{2}{3} + \frac{4}{12}$

$$= \frac{2}{3} + \frac{1}{3}$$

$$= \frac{2+1}{3} = \frac{3}{3} = \boxed{1}$$

b. $\frac{1}{3} + \frac{2}{9} + \frac{7}{18}$

$$= \frac{6+4+7}{18}$$

$$= \frac{\boxed{17}}{\boxed{18}}$$

c. $2\frac{1}{9} + \frac{5}{8}$

$$= \frac{19}{9} + \frac{5}{8}$$

$$= \frac{152+45}{72}$$

$$= \frac{197}{72}$$

$$= \boxed{2\frac{53}{72}}$$

d. $2\frac{1}{6} + 3\frac{1}{2} + 5\frac{3}{2}$

$$= \frac{13}{6} + \frac{7}{2} + \frac{13}{2}$$

$$= \frac{13+21+39}{6}$$

$$= \frac{73}{6}$$

$$= \boxed{12\frac{1}{6}}$$

2. Add the following unlike fractions :

Ans. a. $\frac{9}{16} + \frac{3}{8}$
 $= \frac{9+6}{16}$
 $= \frac{15}{16}$

b. $\frac{6}{16} + \frac{5}{8}$
 $= \frac{6+10}{16}$
 $= \frac{16}{16} = 1$

c. $\frac{1}{2} + \frac{3}{4} + \frac{5}{8}$
 $= \frac{4+6+5}{8}$
 $= \frac{15}{8} = 1\frac{7}{8}$

d. $\frac{1}{3} + \frac{2}{9} + \frac{7}{18}$
 $= \frac{6+4+7}{18}$
 $= \frac{17}{18}$

e. $\frac{9}{35} + \frac{6}{7} + \frac{8}{25}$
 $= \frac{45+150+56}{175}$
 $= \frac{251}{175} = 1\frac{76}{175}$

f. $128 + \frac{3}{14} + \frac{5}{7}$
 $= 128 + \frac{3+10}{14}$
 $= 128 + \frac{13}{14} = 128\frac{13}{14}$

3. Add the following mixed fractions :

Ans. a. $4\frac{1}{5} + 3\frac{1}{10}$
 $= \frac{21}{5} + \frac{31}{10}$
 $= \frac{42+31}{10}$
 $= \frac{73}{10} = 7\frac{3}{10}$

b. $3\frac{1}{10} + 11\frac{1}{5} + 16\frac{2}{5}$
 $= \frac{31}{10} + \frac{56}{5} + \frac{82}{5}$
 $= \frac{31+112+164}{10}$
 $= \frac{307}{10} = 30\frac{7}{10}$

c. $5\frac{4}{9} + 4\frac{2}{3} + 1\frac{1}{6}$
 $= \frac{49}{9} + \frac{14}{3} + \frac{7}{6}$
 $= \frac{98+84+21}{18}$
 $= \frac{203}{18} = 11\frac{5}{18}$

d. $10\frac{1}{3} + \frac{2}{3} + 5\frac{3}{6}$
 $= \frac{31}{3} + \frac{2}{3} + \frac{33}{6}$
 $= \frac{62+4+33}{6}$
 $= \frac{99}{6} = \frac{33}{2} = 16\frac{1}{2}$

e. $2\frac{1}{12} + 5\frac{1}{4} + 14\frac{2}{3}$
 $= \frac{25}{12} + \frac{21}{4} + \frac{44}{3}$

f. $6\frac{1}{12} + 1\frac{2}{6} + 14\frac{2}{4}$
 $= \frac{73}{12} + \frac{8}{6} + \frac{58}{4}$

$$\begin{aligned}
 &= \frac{25+63+176}{12} \\
 &= \frac{264}{12} = \boxed{22}
 \end{aligned}$$

$$\begin{aligned}
 &= \frac{73+16+174}{12} \\
 &= \frac{263}{12} = \boxed{21\frac{11}{12}}
 \end{aligned}$$

4. Find the sum of mixed and proper fractions :

Ans. a. $3\frac{4}{7} + \frac{6}{8}$

$$\begin{aligned}
 &= \frac{25}{7} + \frac{6}{8} \\
 &= \frac{200+42}{28} \\
 &= \frac{242}{28} \\
 &= \frac{56}{28} \\
 &= \frac{121}{28} = 4\frac{9}{28}
 \end{aligned}$$

b. $3\frac{1}{18} + \frac{2}{6}$

$$\begin{aligned}
 &= \frac{55}{18} + \frac{2}{6} \\
 &= \frac{55+6}{18} \\
 &= \frac{61}{18} \\
 &= \frac{18}{18} \\
 &= 3\frac{7}{18}
 \end{aligned}$$

c. $3 + 1\frac{1}{5}$

$$\begin{aligned}
 &= 3 + \frac{6}{5} \\
 &= \frac{15+6}{5} \\
 &= \frac{21}{5} \\
 &= \frac{5}{5} \\
 &= 4\frac{1}{5}
 \end{aligned}$$

d. $6\frac{1}{3} + \frac{3}{10}$

$$\begin{aligned}
 &= \frac{19}{3} + \frac{3}{10} \\
 &= \frac{190+9}{30} \\
 &= \frac{199}{30} = 6\frac{19}{30}
 \end{aligned}$$

e. $2\frac{1}{6} + \frac{2}{3}$

$$\begin{aligned}
 &= \frac{13}{6} + \frac{2}{3} \\
 &= \frac{13+4}{6} \\
 &= \frac{17}{6} = 2\frac{5}{6}
 \end{aligned}$$

f. $5\frac{3}{8} + \frac{4}{12} + \frac{20}{6}$

$$\begin{aligned}
 &= \frac{43}{8} + \frac{4}{12} + \frac{20}{6} \\
 &= \frac{129+8+80}{24} \\
 &= \frac{217}{24} = 9\frac{1}{4}
 \end{aligned}$$

Exercise-4.5

1. Fill in the boxes :

Ans. a. $2\frac{3}{5} - \frac{13}{15}$

$$\begin{aligned}
 &= \frac{13}{15} - \frac{13}{15} \\
 &= \frac{5}{39-13} \\
 &= \frac{26}{15} = \boxed{1\frac{11}{15}}
 \end{aligned}$$

b. $\frac{6}{20} - \frac{4}{30}$

$$\begin{aligned}
 &= \frac{18-8}{60} \\
 &= \frac{10}{60} = \boxed{\frac{1}{6}}
 \end{aligned}$$

c. $12\frac{1}{5} - \frac{1}{5}$

$$\begin{aligned}
 &= \frac{61}{5} - \frac{1}{5} \\
 &= \frac{61-1}{5} \\
 &= \frac{60}{5} = \boxed{12}
 \end{aligned}$$

d. $\frac{4}{5} - \frac{3}{8}$

$$\begin{aligned}
 &= \frac{32-15}{40} \\
 &= \boxed{\frac{17}{40}}
 \end{aligned}$$

2. Subtract the following unlike fractions :

Ans. a.
$$\frac{5}{12} - \frac{5}{16}$$

$$\frac{20-15}{48}$$

$$= \frac{5}{48}$$

b.
$$\frac{8}{17} - \frac{5}{34}$$

$$\frac{16-5}{34}$$

$$= \frac{11}{34}$$

c.
$$\frac{5}{6} - \frac{7}{9}$$

$$\frac{15-14}{18}$$

$$= \frac{1}{18}$$

d.
$$\frac{5}{11} - \frac{4}{12}$$

$$\frac{60-44}{132}$$

$$= \frac{16}{132} = \frac{4}{33}$$

e.
$$\frac{7}{15} - \frac{3}{10}$$

$$\frac{14-9}{30}$$

$$= \frac{5}{30} = \frac{1}{6}$$

f.
$$\frac{23}{24} - \frac{15}{16}$$

$$\frac{46-45}{48}$$

$$= \frac{1}{48}$$

3. Subtract the following mixed fractions :

Ans. a.
$$15\frac{2}{3} - 7\frac{1}{2}$$

$$\frac{47}{6} - \frac{15}{6}$$

$$\frac{32}{6}$$

$$= \frac{49}{6} = 8\frac{1}{6}$$

b.
$$13\frac{1}{2} - 5\frac{3}{4}$$

$$\frac{27}{4} - \frac{23}{4}$$

$$\frac{4}{4}$$

$$= \frac{31}{4} = 7\frac{3}{4}$$

c.
$$3\frac{5}{7} - 2\frac{3}{8}$$

$$\frac{26}{56} - \frac{19}{56}$$

$$\frac{7}{56}$$

$$\frac{208-133}{56}$$

$$= \frac{75}{56} = 1\frac{19}{56}$$

d.
$$7\frac{5}{20} - 2\frac{3}{8}$$

$$\frac{145}{40} - \frac{90}{40}$$

$$\frac{55}{40}$$

$$\frac{290-95}{40}$$

$$\frac{195}{40}$$

$$= \frac{39}{8}$$

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

e.
$$5\frac{7}{8} - 1\frac{3}{8}$$

$$\frac{47}{8} - \frac{11}{8}$$

$$\frac{36}{8}$$

$$= \frac{9}{2}$$

$$= 4\frac{1}{2}$$

f.
$$15\frac{1}{3} - 8\frac{2}{6}$$

$$\frac{46}{6} - \frac{50}{6}$$

$$\frac{3}{6}$$

$$\frac{46-25}{6}$$

$$\frac{21}{6}$$

$$= \frac{7}{2}$$

Exercise-4.6

1. The sum of two fractions = 8

One of the number = $2\frac{3}{5}$

Thus, other number = $8 - 2\frac{3}{5}$

$$= 8 - \frac{13}{5} = \frac{40-13}{5} = \frac{27}{5} = 5\frac{2}{5}$$

Hence, the other fraction is $5\frac{2}{5}$.

2. The height of a pole = $5\frac{3}{8}$ m

And, a lizard climbed on pole = $1\frac{3}{8}$ m

$$\begin{aligned}\therefore \text{Remaining distance on pole} &= 5\frac{3}{8} - 1\frac{3}{8} \text{ m} \\ &= \frac{43}{8} \text{ m} - \frac{11}{8} \text{ m} \\ &= \left(\frac{43-11}{8}\right) \text{ m} = \frac{32}{8} \text{ m} \\ &= 4 \text{ m}\end{aligned}$$

Hence, 4 metre of height have to climb by the lizard to reach the top of pole.

3. Height of an electric pole = $3\frac{5}{8}$ m

And, length of pole below the ground = $1\frac{1}{8}$ m

$$\begin{aligned}\therefore \text{Remaining length of pole} &= 3\frac{5}{8} \text{ m} - 1\frac{1}{8} \text{ m} \\ &= \frac{29}{8} \text{ m} - \frac{9}{8} \text{ m} = \frac{29-9}{8} \text{ m} \\ &= \frac{20}{8} = \frac{5}{2} = 2\frac{1}{2} \text{ m}\end{aligned}$$

Hence, $2\frac{1}{2}$ metre long pole above the ground.

4. Milk sold by Sunder in morning = $6\frac{1}{10}$ l

Milk sold by Sunder in afternoon = $7\frac{1}{5}$ l

$$\begin{aligned}\therefore \text{Total milk sold by Sunder} &= 6\frac{1}{10} \text{ l} + \frac{36}{5} \text{ l} \\ &= \frac{61}{10} \text{ l} + \frac{36}{5} \text{ l} \\ &= \left(\frac{61+72}{10}\right) \text{ l} \\ &= \frac{133}{10} \text{ l} = 13\frac{3}{10} \text{ l}\end{aligned}$$

Hence, Sunder sold $13\frac{3}{10}$ l of milk in the entire day.

5. Anamika's weight = $62\frac{2}{5}$ kg

And, the weight of Anamika's mother = $89\frac{3}{5}$ kg

$$\begin{aligned} \therefore \text{Difference of their weights} &= 89\frac{3}{5} \text{ kg} - 62\frac{2}{5} \text{ kg} \\ &= \frac{448}{5} \text{ kg} - \frac{312}{5} \text{ kg} \\ &= \left(\frac{448-312}{5} \right) \text{ kg} = \frac{136}{5} \text{ g} = 27\frac{1}{5} \text{ kg} \end{aligned}$$

Hence, the weight of Anamika's mother is $27\frac{1}{5}$ kg more than the weight of Anamika.

6. The distance of Rashmi's house from school = $2\frac{3}{5}$ km

And, the distance of Manoj's house from school = $1\frac{1}{5}$ km

$$\begin{aligned} \therefore \text{More distance of Rashmi's house} &= 2\frac{3}{5} \text{ km} - 1\frac{1}{5} \text{ km} \\ &= \frac{13}{5} \text{ km} - \frac{6}{5} \text{ km} = \left(\frac{13-6}{5} \right) \text{ km} \\ &= \frac{7}{5} \text{ km} = 1\frac{2}{5} \text{ km} \end{aligned}$$

Hence, Rashmi's house is $1\frac{2}{5}$ km more than Manoj's house far from their school.

7. Sagar has sugar in the stock = $135\frac{3}{5}$ kg

Sagar sells sugar everyday = $25\frac{1}{5}$ kg

$$\begin{aligned} \therefore \text{He sold sugar in two days} &= 2 \times 25\frac{1}{5} \text{ kg} = 2 \times \frac{126}{5} \text{ kg} \\ &= \frac{252}{5} \text{ kg} = 50\frac{2}{5} \text{ kg} \end{aligned}$$

$$\begin{aligned} \text{Now, remaining sugar in his stock} &= 135\frac{3}{5} \text{ kg} - 50\frac{2}{5} \text{ kg} \\ &= \frac{678}{5} \text{ kg} - \frac{252}{5} \text{ kg} \\ &= \left(\frac{678-252}{5} \right) \text{ kg} = \frac{426}{5} \text{ kg} = 85\frac{1}{5} \text{ kg} \end{aligned}$$

Hence, $85\frac{1}{5}$ kg of sugar left in the stock of sagar after two days.

8. Money spend by Sunita in a picnic = ₹ $50\frac{1}{6}$

And, money spend on her way to picnic = ₹ $3\frac{1}{3}$

Sunita had money in beginning = ₹ $115\frac{3}{5}$

$$\begin{aligned}\therefore \text{Total money spend by Sunita} &= ₹ 50\frac{1}{6} + ₹ 3\frac{1}{3} \\ &= ₹ \frac{301}{6} + ₹ \frac{10}{3} = ₹ \frac{301+20}{6} \\ &= ₹ \frac{321}{6} = ₹ \frac{107}{2} = ₹ 53\frac{1}{2}\end{aligned}$$

$$\begin{aligned}\text{Now, money left with Sunita} &= ₹ 115\frac{3}{5} - ₹ 53\frac{1}{2} \\ &= ₹ \frac{578}{5} - ₹ \frac{107}{2} = ₹ \left(\frac{1156-535}{10} \right) \\ &= ₹ \frac{621}{10} = ₹ 62\frac{1}{10}\end{aligned}$$

Hence, ₹ $62\frac{1}{10}$ was left with Sunita.

Exercise-4.7

1. Fill in the boxes :

Ans. a. $\frac{1}{6} \times 4 = \frac{2}{3}$

b. $\frac{7}{18} \times 36 = 14$

c. $7 \times \frac{1}{21} = \frac{1}{3}$

d. $\frac{5}{6} \times \frac{12}{30} = \frac{1}{3}$

2. Multiply :

Ans. a. $\frac{9}{10}$ by $\frac{8}{15}$
 $= \frac{9}{10} \times \frac{8}{15}$
 $= \frac{3 \times 4}{5 \times 5} = \frac{12}{25}$

b. $\frac{3}{7}$ by $\frac{4}{5}$
 $= \frac{3}{7} \times \frac{4}{5}$
 $= \frac{12}{35}$

c. $\frac{2}{3}$ by $\frac{1}{3}$
 $= \frac{2}{3} \times \frac{1}{3}$
 $= \frac{2}{9}$

d. $\frac{1}{5}$ by $\frac{1}{6}$
 $= \frac{1}{5} \times \frac{1}{6}$
 $= \frac{1}{30}$

e. 8 by $\frac{7}{2}$
 $= 8 \times \frac{7}{2}$
 $= 4 \times 7 = 28$

f. 7 by $\frac{2}{14}$
 $= 7 \times \frac{2}{14}$
 $= \frac{14}{14} = 1$

3. Find :

Ans. a. $\frac{4}{9}$ of $\frac{2}{3}$
 $= \frac{4}{9} \times \frac{2}{3}$
 $= \frac{8}{27}$

b. $\frac{1}{3}$ of $\frac{1}{6}$
 $= \frac{1}{3} \times \frac{1}{6}$
 $= \frac{1}{18}$

c. $7\frac{1}{2}$ of $\frac{1}{8}$
 $= \frac{15}{2} \times \frac{1}{8}$
 $= \frac{15}{16}$

$$\begin{aligned} \text{d. } \frac{1}{4} \text{ of } \frac{24}{13} \\ &= \frac{1}{4} \times \frac{24}{13} \\ &= \frac{1 \times 6}{13} = \boxed{\frac{6}{13}} \end{aligned}$$

$$\begin{aligned} \text{e. } \frac{3}{8} \text{ of } \frac{1}{2} \\ &= \frac{3}{8} \times \frac{1}{2} \\ &= \boxed{\frac{3}{16}} \end{aligned}$$

$$\begin{aligned} \text{f. } \frac{1}{3} \text{ of } 3\frac{3}{5} \\ &= \frac{1}{3} \times \frac{18}{5} \\ &= \frac{1 \times 6}{5} = \boxed{\frac{6}{5}} \end{aligned}$$

4. Find the product :

$$\begin{aligned} \text{Ans. a. } \frac{1}{3} \times \frac{2}{5} \times \frac{3}{4} \\ &= \frac{1 \times 2 \times 3}{3 \times 5 \times 4} \\ &= \frac{1 \times 1 \times 1}{1 \times 5 \times 2} = \boxed{\frac{1}{10}} \end{aligned}$$

$$\begin{aligned} \text{b. } 1\frac{1}{4} \times 1\frac{1}{3} \times 1\frac{2}{3} \\ &= \frac{5}{4} \times \frac{4}{3} \times \frac{5}{3} \\ &= \frac{5 \times 5}{3 \times 3} = \boxed{\frac{25}{9}} \end{aligned}$$

$$\begin{aligned} \text{c. } 15 \times \frac{3}{5} \\ &= 3 \times 3 \\ &= \boxed{9} \end{aligned}$$

$$\begin{aligned} \text{d. } \frac{3}{4} \times \frac{8}{4} \times \frac{1}{9} \\ &= \frac{1}{4} \times 2 \times \frac{1}{3} \\ &= \frac{1}{2} \times \frac{1}{3} = \boxed{\frac{1}{6}} \end{aligned}$$

$$\begin{aligned} \text{e. } 5 \times \frac{3}{20} \times \frac{2}{15} \\ &= \frac{3}{4} \times \frac{2}{15} \\ &= \frac{1}{2} \times \frac{1}{5} = \boxed{\frac{1}{10}} \end{aligned}$$

$$\begin{aligned} \text{f. } 4\frac{1}{2} \times \frac{6}{1} \times 3\frac{3}{9} \\ &= \frac{9}{2} \times 6 \times \frac{30}{9} \\ &= 3 \times 30 = \boxed{90} \end{aligned}$$

Exercise-4.8

1. Time spend by Pinky for morning exercise every = $\frac{2}{3}$ hours

$$\begin{aligned} \therefore \text{ Time spend by Pinky for morning exercise in a month or 30 days} \\ &= \left(\frac{2}{3} \times 30\right) \text{ hours} = 20 \text{ hours.} \end{aligned}$$

Hence, Pinky devotes 20 hours for morning exercise in a month.

2. Manisha had cake = $\frac{4}{5}$ part

$$\begin{aligned} \text{And, she ate the cake} &= \frac{1}{2} \text{ of } \frac{4}{5} \text{ part of cake} \\ &= \frac{1}{2} \times \frac{4}{5} = \frac{2}{5} \text{ part} \end{aligned}$$

Hence, Manisha ate $\frac{2}{5}$ part of the whole cake.

3. A train covers distance in an hour = 320 km

$$\begin{aligned} \therefore \text{ Distance covers by train in } 1\frac{1}{4} \text{ hours} &= 1\frac{1}{4} \times 320 \text{ km} \\ &= \frac{5}{4} \times 320 \text{ km} \\ &= (5 \times 80) = 400 \text{ km} \end{aligned}$$

Hence, the train will cover 400 km of distance in $1\frac{1}{4}$ hours.

4. Ravina takes time to paint a table = $\frac{1}{4}$ hours

\therefore She will take time to paint 24 such tables = $\frac{1}{4} \times 24$ hours
= 6 hours

Hence, Ravina will take 6 hours to paint 24 such tables.

5. Rohit received money from his mother = ₹ 180

And, he spend in purchasing a dress = $\frac{2}{9}$ of ₹ 180 = ₹ $180 \times \frac{2}{9}$
= ₹ 20×2 = ₹ 40

\therefore Money left with him = ₹ 180 - ₹ 40 = ₹ 140

Hence, ₹ 140 are left with Rohit.

Exercise-4.9

1. Fill in the blanks :

Ans. a. Reciprocal of $2\frac{3}{5}$ is $\frac{5}{13}$

b. Reciprocal of $\frac{7}{19}$ is $\frac{19}{7}$ or $2\frac{5}{7}$

c. $\frac{100}{3}$ divided by 10 = $\frac{10}{3}$

d. $\frac{7}{15} \div 5 = \frac{7}{75}$

2. Find :

Ans. a. $4\frac{9}{10} \div \frac{1}{2}$
= $\frac{49}{10} \times \frac{2}{1}$
= $\frac{49}{5} = 9\frac{4}{5}$

b. $\frac{3}{19} \div \frac{19}{3}$
= $\frac{3}{19} \times \frac{3}{19}$
= $\frac{9}{361}$

c. $1\frac{2}{5} \div 1\frac{1}{5}$
= $\frac{7}{5} \div \frac{6}{5}$
= $\frac{7}{5} \times \frac{5}{6}$
= $\frac{7}{6} = 1\frac{1}{6}$

d. $27 \div \frac{9}{10}$
= $27 \times \frac{10}{9}$
= 3×10
= 30

e. $35 \div 1\frac{1}{4}$
= $35 \div \frac{5}{4}$
= $35 \times \frac{4}{5}$
= $7 \times 4 = 28$

f. $65 \div \frac{1}{5}$
= $65 \times \frac{5}{1}$
= 325

3. Divide :

Ans. a. 4 by $\frac{2}{5}$
= $4 \div \frac{2}{5}$
= $4 \times \frac{5}{2}$
= $2 \times 5 = 10$

b. 32 by $\frac{4}{5}$
= $32 \div \frac{4}{5}$
= $32 \times \frac{5}{4}$
= $8 \times 5 = 40$

c. $2\frac{7}{9}$ by $\frac{5}{3}$
= $2\frac{7}{9} \div \frac{5}{3}$
= $\frac{25}{9} \times \frac{3}{5}$
= $\frac{5}{3} = 1\frac{2}{3}$

$$\begin{aligned}
 \text{d. } 3\frac{2}{5} \text{ by } \frac{34}{25} \\
 &= \frac{17}{5} \div \frac{25}{34} \\
 &= \frac{17}{5} \times \frac{34}{25} \\
 &= \frac{5}{2} \\
 &= \boxed{2\frac{1}{2}}
 \end{aligned}$$

$$\begin{aligned}
 \text{e. } 64 \text{ by } \frac{4}{3} \\
 &= 64 \div \frac{3}{4} \\
 &= 64 \times \frac{4}{3} \\
 &= 16 \times 3 \\
 &= \boxed{48}
 \end{aligned}$$

$$\begin{aligned}
 \text{f. } \frac{7}{8} \text{ by } 4\frac{1}{2} \\
 &= \frac{7}{8} \div \frac{9}{2} \\
 &= \frac{7}{8} \times \frac{2}{9} \\
 &= \frac{7 \times 1}{4 \times 9} \\
 &= \boxed{\frac{7}{36}}
 \end{aligned}$$

Exercise-4.10

1. An aeroplane fly in $2\frac{1}{5}$ hours = 1568 km

$$\begin{aligned}
 \therefore \text{Aeroplane flies in one hour} &= \left(1568 \div 2\frac{1}{5}\right) \text{ km} \\
 &= 1568 \div \frac{11}{5} \text{ km} = \left(1568 \times \frac{5}{11}\right) \text{ km} \\
 &= \frac{7840}{11} \text{ km} = 712\frac{8}{11} \text{ km}
 \end{aligned}$$

Hence, the aeroplane flies $712\frac{8}{11}$ km in one hour.

2. The product of two numbers = 48

And, one of the number = $4\frac{5}{9}$

$$\begin{aligned}
 \text{Thus, the other number} &= 48 \div 4\frac{5}{9} = 48 \div \frac{41}{9} \\
 &= 48 \times \frac{9}{41} = \frac{432}{41} = 10\frac{22}{41}
 \end{aligned}$$

Hence, the other number is $10\frac{22}{41}$.

3. Total length of the piece of wire = $8\frac{3}{5}$ m

$$\begin{aligned}
 &= 8\frac{3}{5} \times 100 \text{ cm} \quad [\because 1 \text{ m} = 100 \text{ cm}] \\
 &= \frac{43}{5} \times 100 \text{ cm} \\
 &= (43 \times 20) \text{ cm} = 860 \text{ cm}
 \end{aligned}$$

\therefore This wire is cut into 15 equal parts.

$$\begin{aligned}
 \therefore \text{Length of each cutting part of wire} &= (860 \div 15) \text{ cm} \\
 &= \frac{860}{15} \text{ cm} = \frac{172}{3} = 57\frac{1}{3} \text{ cm}
 \end{aligned}$$

Hence, the length of each cutting piece of wire is $57\frac{1}{3}$ cm.

4. An express train covers distance in $5\frac{1}{2}$ hours = 916 km

$$\begin{aligned}\therefore \text{Distance covered by train in one hour} &= \left(916 \div 5\frac{1}{2}\right) \text{ km} \\ &= \left(916 \div \frac{11}{2}\right) \text{ km} \\ &= 916 \times \frac{2}{11} \text{ km} \\ &= \frac{1832}{11} \text{ km} = 166\frac{6}{11} \text{ km}\end{aligned}$$

Hence, the express train covers $166\frac{6}{11}$ km of distance in one hour.

5. Price of 10 mangoes = ₹ $2\frac{4}{7}$

$$\begin{aligned}\therefore \text{Price of one mango} &= ₹ 2\frac{4}{7} \div 10 \\ &= ₹ \frac{18}{7} \times \frac{1}{10} = ₹ \frac{18}{70}\end{aligned}$$

$$\text{So, the price of 14 mangoes} = ₹ \frac{18}{70} \times 14 = ₹ \frac{18}{5} = ₹ 3\frac{3}{5}$$

6. The price of two blankets = ₹ 450

$$\therefore \text{The price of one blanket} = ₹ 450 \div 2 = ₹ \frac{450}{2}$$

$$\begin{aligned}\text{Hence, the price of 5 such blankets} &= ₹ \frac{450}{2} \times 5 \\ &= ₹ 225 \times 5 = ₹ 1125.\end{aligned}$$

7. Total length of a piece of wire = $\frac{8}{9}$ metre

And, the length of each piece after cutting by Mahes = $\frac{1}{9}$ metre

$$\therefore \text{Total number of pieces} = \frac{8}{9} \div \frac{1}{9} = \frac{8}{9} \times \frac{9}{1} = 8$$

Hence, Mahesh will get 8 pieces of wire.

8. Kusum spend her salary on buying dresses and shoes for her

$$= \frac{5}{7} \text{ part of her salary}$$

And, Kusum's salary = ₹ 5250

$$\begin{aligned}\therefore \text{She spend her salary} &= \frac{5}{7} \text{ of ₹ } 5250 = \frac{5}{7} \times ₹ 5250 \\ &= ₹ (5 \times 750) = ₹ 3750\end{aligned}$$

Hence, Kusum spent ₹ 3750 on buying dresses and shoes for her.

MCQs

1. b 2. c 3. a 4. c 5. b 6. c 7. c

Exercise-5.2

1. Change the following common fractions into the decimal fractions :

Ans. a. $\frac{5}{10} = 0.5$ b. $\frac{2}{1000} = 0.002$ c. $\frac{6}{100} = 0.06$
d. $\frac{30}{1000} = 0.030$ e. $\frac{37}{100} = 0.37$ f. $\frac{196}{1000} = 0.196$
g. $\frac{769}{100} = 7.69$ h. $1\frac{1}{10} = 1.1$

2. Change the following decimal fractions into common fractions :

Ans. a. $0.5 = \frac{5}{10}$ b. $0.7 = \frac{7}{10}$ c. $0.07 = \frac{7}{100}$
d. $0.17 = \frac{17}{100}$ e. $0.009 = \frac{9}{1000}$ f. $0.072 = \frac{72}{1000}$
g. $0.719 = \frac{719}{1000}$ h. $0.178 = \frac{178}{1000}$ i. $0.172 = \frac{172}{1000}$
j. $2.75 = \frac{275}{100}$ or $2\frac{75}{100}$ k. $47.39 = \frac{4739}{100}$ or $47\frac{39}{100}$
l. $472.961 = \frac{472961}{1000}$ or $472\frac{961}{1000}$

Exercise-5.3

1. Write the following in short forms in decimal fraction :

Ans. a. $800 + 60 + 5 + \frac{2}{10} + \frac{7}{100} + \frac{6}{1000} = 865.276$
b. $900 + 60 + 5 + \frac{3}{10} + \frac{7}{100} + \frac{9}{1000} = 965.379$
c. $200 + 30 + 6 + 0.1 + 0.05 + 0.006 = 236.156$
d. $900 + 60 + 5 + 0.7 + 0.06 + 0.007 = 965.767$

2. Write these decimals in expanded form :

Ans. a. $1.67 = 1 + \frac{6}{10} + \frac{7}{100}$ b. $7.776 = 7 + \frac{7}{10} + \frac{7}{100} + \frac{6}{1000}$
c. $3.86 = 3 + \frac{8}{10} + \frac{6}{100}$ d. $3.334 = 3 + \frac{3}{10} + \frac{3}{100} + \frac{4}{1000}$
e. $8.008 = 8 + \frac{8}{1000}$ f. $88.45 = 80 + 8 + \frac{4}{10} + \frac{5}{100}$

Exercise-5.4

1. Fill in the blanks with equivalent decimals :

Ans. a. $0.8 = 0.80 = 0.800$ b. $37.5 = 37.50 = 37.500$
c. $1.8 = 1.80 = 1.800$ d. $3.9 = 3.90 = 3.900$
e. $62.7 = 62.70 = 62.700$ f. $42.7 = 42.70 = 42.700$

2. Choose whether the following groups of decimal fractions are like or unlike :

Ans. a. 61.390, 5.153, 6.153
∴ These numbers have equal number of decimal places.
Hence, these numbers are like decimal fractions.

- b. 1.33, 4.37, 5.75
 \therefore These numbers have equal number of decimal places.
Hence, these numbers are like fractions.
- c. 6.195, 7.92, 71.31
 \therefore These numbers have not equal number of decimal places.
Hence, these numbers are unlike fractions.
- d. 71.18, 1.983, 37.91
 \therefore These numbers have not equal number of decimal places.
Hence, these numbers are unlike fractions.
- e. 13.193, 17.153, 18.192
 \therefore These numbers have equal number of decimal places.
Hence, these numbers are like fractions.
- f. 1.73, 1.359, 2.73
 \therefore These numbers have not equal number of decimal places.
Hence, these numbers are unlike fractions.

3. Convert each group of unlike decimal fractions to like decimal fractions :

- Ans.** a. 9.1, 3.75, 1.992 b. 5.3, 6.79, 1.739
 \therefore 9.1 = 9.100 \therefore 5.3 = 5.300
3.75 = 3.750 6.79 = 6.790
1.992 = 1.992 1.739 = 1.739
So, 9.100, 3.750 and 1.992 So, 5.300, 6.790 and 1.739
are like fractions. are like fractions.
- c. 7.3, 3.967, 6.07 d. 139.156, 13.97, 14.2
 \therefore 7.3 = 7.300 \therefore 139.156 = 139.156
3.967 = 3.967 13.97 = 13.970
6.07 = 6.070 14.2 = 14.200
So, 7.300, 3.967 and 6.070 So, 139.156, 13.970 and 14.200
are like fractions. are like fractions.
- e. 4.5, 16.5, 17.967 f. 7.05, 8.57, 6.197
 \therefore 4.5 = 4.500 \therefore 7.05 = 7.050
16.5 = 16.500 8.57 = 8.570
17.967 = 17.967 6.197 = 6.197
So, 4.500, 16.500 and 17.967 So, 7.050, 8.570 and 6.197
are like fractions. are like fractions.

Exercise-5.5

1. Fill in the blanks (using the symbols '>' or '<') :

- Ans.** a. 59.753 \square 60.753 b. 33.523 \square 33.522
c. 182.550 \square 181.550 d. 60.035 \square 60.125

2. Compare the following decimals :

- Ans.** a. 23.058 \square 15.635 b. 121.650 \square 12.650
c. 195.650 \square 195.780 d. 51.354 \square 120.380

3. Arrange the following in ascending order :

- Ans.** a. 14.739 < 19.135 < 73.197 < 74.65
b. 20.150 < 61.932 < 615.132 < 732.156
c. 16.29 < 41.114 < 78.03 < 219.045
d. 110.16 < 110.261 < 211.28 < 218.63

4. Arrange the following in descending order :

- Ans. a. $805.732 > 769.371 > 615.872 > 196.132$
b. $865.175 > 719.675 > 197.862 > 182.391$
c. $429.62 > 354.216 > 169.234 > 148.799$
d. $610.110 > 544.029 > 411.105 > 316.119$

Exercise-5.6

1. Arrange the following in columns and add in your exercise book :

- Ans. a. $463.73 + 24.921 + 1.007$ b. $36 + 4.89 + 215.105 + 0.479$

$$\begin{array}{r} 463.730 \\ 24.921 \\ +1.007 \\ \hline 489.658 \end{array}$$

$$\begin{array}{r} 36.000 \\ 4.890 \\ 215.105 \\ +0.479 \\ \hline 256.474 \end{array}$$

c. $32.215 + 4.869 + 72.19$

$$\begin{array}{r} 32.215 \\ 4.869 \\ +72.190 \\ \hline 109.274 \end{array}$$

d. $43.968 + 9.698 + 4.198$

$$\begin{array}{r} 43.968 \\ 9.698 \\ +4.198 \\ \hline 57.864 \end{array}$$

e. $72.925 + 83.927 + 65.218$

$$\begin{array}{r} 72.925 \\ 83.927 \\ +65.218 \\ \hline 222.070 \end{array}$$

f. $35.149 + 346.078 + 105.019$

$$\begin{array}{r} 35.149 \\ 346.078 \\ +105.019 \\ \hline 486.246 \end{array}$$

2. Arrange the following in columns and subtract in your exercise book :

- Ans. a. $145.146 - 129.982$ b. $109.659 - 83.756$

$$\begin{array}{r} 145.146 \\ -129.982 \\ \hline 015.164 \end{array}$$

$$\begin{array}{r} 109.659 \\ -83.756 \\ \hline 25.903 \end{array}$$

c. $83.7 - 25.929$

$$\begin{array}{r} 83.700 \\ -25.929 \\ \hline 57.771 \end{array}$$

d. $25.168 - 24.953$

$$\begin{array}{r} 25.168 \\ -24.953 \\ \hline 00.215 \end{array}$$

e. $396.005 - 155.197$

$$\begin{array}{r} 396.005 \\ -155.197 \\ \hline 240.808 \end{array}$$

f. $42.445 - 39.783$

$$\begin{array}{r} 42.445 \\ -39.783 \\ \hline 02.662 \end{array}$$

3. Solve the following in your exercise book :

Ans. a. $[43.125 + 72.059] - 83.196$ b. $[320 - 129.468] + 79.66$
 $= 115.184 - 83.196 = \mathbf{31.988}$ $= 190.532 + 79.66 = \mathbf{270.192}$

$$\begin{array}{r} 43.125 \\ + 72.059 \\ \hline 115.184 \\ - 83.196 \\ \hline 31.988 \end{array}$$

$$\begin{array}{r} 320.000 \\ - 129.468 \\ \hline 190.532 \\ + 79.660 \\ \hline 270.192 \end{array}$$

c. $[\text{Difference between } 81.245 \text{ and } 35.629] + [\text{Sum of } 146.2 \text{ and } 69.458]$
 $= [81.245 - 35.629] + [146.2 + 69.458]$
 $= 45.616 + 215.658 = \mathbf{261.274}$

$$\begin{array}{r} 81.245 \\ - 35.629 \\ \hline 45.616 \end{array}$$

$$\begin{array}{r} 146.200 \\ + 69.458 \\ \hline 215.658 \end{array}$$

$$\begin{array}{r} 45.616 \\ + 215.658 \\ \hline 261.274 \end{array}$$

d. $[\text{Sum of } 723.945 \text{ and } 62.38] - [\text{Sum of } 192.38 \text{ and } 245.47]$
 $= [723.945 + 62.38] - [192.38 + 245.47]$
 $= 786.325 - 437.85 \Rightarrow \mathbf{348.475}$

$$\begin{array}{r} 723.945 \\ + 62.380 \\ \hline 786.325 \end{array}$$

$$\begin{array}{r} 192.38 \\ + 245.47 \\ \hline 437.85 \end{array}$$

$$\begin{array}{r} 786.325 \\ - 437.850 \\ \hline 348.475 \end{array}$$

e. $[\text{Difference of } 172.84 \text{ and } 95.99] + 125.06$
 $= [172.84 - 95.99] + 125.06$
 $= 76.85 + 125.06$
 $= \mathbf{201.91}$

$$\begin{array}{r} 172.84 \\ - 95.99 \\ \hline 76.85 \\ + 125.06 \\ \hline 201.91 \end{array}$$

f. $[\text{Sum of } 845.647 \text{ and } 73.49] - [\text{Sum of } 291.48 \text{ and } 196.81]$
 $= [845.647 + 73.49] - [291.48 + 196.81]$
 $= 919.137 - 488.29 = \mathbf{430.847}$

$$\begin{array}{r} 845.647 \\ + 73.490 \\ \hline 919.137 \end{array}$$

$$\begin{array}{r} 291.48 \\ + 196.81 \\ \hline 488.29 \end{array}$$

$$\begin{array}{r} 919.137 \\ - 488.290 \\ \hline 430.847 \end{array}$$

Exercise-5.7

1. Multiply the following :

Ans. a. 3.45×15 b. 65.56×12 c. 15.23×17

$$\begin{array}{r} 3.45 \\ \times 15 \\ \hline 17.25 \\ 34.50 \\ \hline 51.75 \end{array}$$

$$\begin{array}{r} 65.56 \\ \times 12 \\ \hline 131.12 \\ 655.60 \\ \hline 786.72 \end{array}$$

$$\begin{array}{r} 15.23 \\ \times 17 \\ \hline 106.61 \\ 152.30 \\ \hline 258.91 \end{array}$$

d. 6.38×23

$$\begin{array}{r} 6.38 \\ \times 23 \\ \hline 19.14 \\ 127.60 \\ \hline 146.74 \end{array}$$

e. 75.78×21

$$\begin{array}{r} 75.78 \\ \times 21 \\ \hline 75.78 \\ 1515.60 \\ \hline 1591.38 \end{array}$$

f. 325.1×18

$$\begin{array}{r} 325.1 \\ \times 18 \\ \hline 2600.8 \\ 3251.0 \\ \hline 5851.8 \end{array}$$

g. 12.48×36

$$\begin{array}{r} 12.48 \\ \times 36 \\ \hline 74.88 \\ 374.40 \\ \hline 449.28 \end{array}$$

h. 93.78×43

$$\begin{array}{r} 93.78 \\ \times 43 \\ \hline 281.34 \\ 3751.20 \\ \hline 4032.54 \end{array}$$

i. 16.75×75

$$\begin{array}{r} 16.75 \\ \times 75 \\ \hline 83.75 \\ 1172.50 \\ \hline 1256.25 \end{array}$$

2. Find the product :

Ans. a. 0.7×1.2

$$\begin{array}{r} 0.7 \\ \times 1.2 \\ \hline 0.14 \\ + 0.70 \\ \hline 0.84 \end{array}$$

b. 1.5×6.5

$$\begin{array}{r} 1.5 \\ \times 6.5 \\ \hline 0.75 \\ + 9.00 \\ \hline 9.75 \end{array}$$

c. 6.7×1.9

$$\begin{array}{r} 6.7 \\ \times 1.9 \\ \hline 6.03 \\ + 6.70 \\ \hline 12.73 \end{array}$$

d. 1.33×1.4

$$\begin{array}{r} 1.33 \\ \times 1.4 \\ \hline 0.532 \\ + 1.330 \\ \hline 1.862 \end{array}$$

e. 1.023×1.4

$$\begin{array}{r} 1.023 \\ \times 1.4 \\ \hline 0.4092 \\ + 1.0230 \\ \hline 1.4322 \end{array}$$

f. 2.379×2.2

$$\begin{array}{r} 2.379 \\ \times 2.2 \\ \hline 0.4758 \\ + 4.7580 \\ \hline 5.2338 \end{array}$$

g. 4.365×4.4

$$\begin{array}{r} 4.365 \\ \times 4.4 \\ \hline 1.7460 \\ + 17.4600 \\ \hline 19.2060 \end{array}$$

h. 7.013×1.3

$$\begin{array}{r} 7.013 \\ \times 1.3 \\ \hline 2.1039 \\ + 7.0130 \\ \hline 9.1169 \end{array}$$

i. 6.312×1.6

$$\begin{array}{r} 6.312 \\ \times 1.6 \\ \hline 3.7872 \\ + 6.3120 \\ \hline 10.0992 \end{array}$$

j. 4.02×1.02

$$\begin{array}{r} 4.02 \\ \times 1.02 \\ \hline 0.0804 \\ + 4.0200 \\ \hline 4.1004 \end{array}$$

k. 6.155×0.25

$$\begin{array}{r} 6.155 \\ \times 0.25 \\ \hline 0.30775 \\ + 1.23100 \\ \hline 1.53875 \end{array}$$

l. 3.33×1.4

$$\begin{array}{r} 3.33 \\ \times 1.4 \\ \hline 1.332 \\ + 3.330 \\ \hline 4.662 \end{array}$$

4. Perform the following divisions :

a. $50.7 \div 6 = 8.45$

$$\begin{array}{r} 6 \overline{)50.7(8.45} \\ \underline{-48} \\ 27 \\ \underline{-24} \\ 30 \\ \underline{-30} \\ \times \end{array}$$

b. $99.1 \div 5 = 19.82$

$$\begin{array}{r} 5 \overline{)99.1(19.82} \\ \underline{-5} \\ 49 \\ \underline{-45} \\ 41 \\ \underline{-40} \\ 10 \\ \underline{10} \\ \times \end{array}$$

c. $84.91 \div 7 = 12.13$

$$\begin{array}{r} 7 \overline{)84.91(12.13} \\ \underline{-7} \\ 14 \\ \underline{-14} \\ 09 \\ \underline{-7} \\ 21 \\ \underline{-21} \\ \times \end{array}$$

d. $237.84 \div 12 = 19.82$

$$\begin{array}{r} 12 \overline{)237.84(19.82} \\ \underline{-12} \\ 117 \\ \underline{-108} \\ 98 \\ \underline{-96} \\ 24 \\ \underline{-24} \\ \times \end{array}$$

e. $201.2 \div 8 = 25.15$

$$\begin{array}{r} 8 \overline{)201.2(25.15} \\ \underline{-16} \\ 41 \\ \underline{-40} \\ 12 \\ \underline{-8} \\ 40 \\ \underline{-40} \\ \times \end{array}$$

f. $276.25 \div 17 = 16.25$

$$\begin{array}{r} 17 \overline{)276.25(16.25} \\ \underline{-17} \\ 106 \\ \underline{-102} \\ 42 \\ \underline{-34} \\ 85 \\ \underline{-85} \\ \times \end{array}$$

g. $1026.6 \div 40 = 25.665$

$$\begin{array}{r} 40 \overline{)1026.6(25.665} \\ \underline{-80} \\ 226 \\ \underline{-200} \\ 266 \\ \underline{-240} \\ 260 \\ \underline{-240} \\ 200 \\ \underline{-200} \\ \times \end{array}$$

h. $305.2 \div 50 = 6.104$

$$\begin{array}{r} 50 \overline{)305.2(6.104} \\ \underline{-300} \\ 52 \\ \underline{-50} \\ 200 \\ \underline{-200} \\ \times \end{array}$$

5. Divide :

a. 5.18 by 0.37
 $= 5.18 \div 0.37$

$$\begin{array}{r} 5.18 \quad 518 \\ - 0.37 \quad 37 \\ \hline \end{array} = 14$$

$$\begin{array}{r} 37 \overline{)518(14} \\ - 37 \\ \hline 148 \\ - 148 \\ \hline \times \\ \hline \end{array}$$

b. 0.936 by 1.3
 $= 0.936 \div 1.3$

$$\begin{array}{r} 0.936 \quad 936 \\ - 1.3 \quad 13 \\ \hline \end{array} = 0.72$$

$$\begin{array}{r} 13 \overline{)936(0.72} \\ - 91 \\ \hline 26 \\ - 26 \\ \hline \times \\ \hline \end{array}$$

c. 25.11 by 2.7
 $= 25.11 \div 2.7$

$$\begin{array}{r} 25.11 \quad 2511 \\ - 2.7 \quad 27 \\ \hline \end{array} = 9.3$$

$$\begin{array}{r} 27 \overline{)251.1(9.3} \\ - 243 \\ \hline 81 \\ - 81 \\ \hline \times \\ \hline \end{array}$$

d. 49.653 by 8.1
 $= 49.653 \div 8.1$

$$\begin{array}{r} 49.653 \quad 49653 \\ - 8.1 \quad 81 \\ \hline \end{array} = 6.13$$

$$\begin{array}{r} 81 \overline{)496.53(6.13} \\ - 486 \\ \hline 105 \\ - 81 \\ \hline 243 \\ - 243 \\ \hline \times \\ \hline \end{array}$$

e. 9.5 by 0.95
 $= 9.5 \div 0.95$

$$\begin{array}{r} 9.5 \quad 950 \\ - 0.95 \quad 95 \\ \hline \end{array} = 10$$

f. 60.25 by 1.25
 $= 60.25 \div 1.25$

$$\begin{array}{r} 60.25 \quad 6025 \\ - 1.25 \quad 125 \\ \hline \end{array} = 48.2$$

$$\begin{array}{r} 125 \overline{)6025(48.2} \\ - 500 \\ \hline 1025 \\ - 1000 \\ \hline 250 \\ - 250 \\ \hline \times \\ \hline \end{array}$$

g. 24.2 by 0.44
 $= 24.2 \div 0.44$

$$\begin{array}{r} 24.2 \quad 2420 \\ - 0.44 \quad 44 \\ \hline \end{array} = 55$$

$$\begin{array}{r} 44 \overline{)2420(55} \\ - 220 \\ \hline 220 \\ - 220 \\ \hline \times \\ \hline \end{array}$$

h. 1.875 by 0.25
 $= 1.875 \div 0.25$

$$\begin{array}{r} 1.875 \quad 1875 \\ - 0.25 \quad 25 \\ \hline \end{array} = 7.5$$

$$\begin{array}{r} 25 \overline{)1875(7.5} \\ - 175 \\ \hline 125 \\ - 125 \\ \hline \times \\ \hline \end{array}$$

Exercise-5.10

1. Convert the following into l and then kl :

Ans. \because 1000 ml = 1 l and 1000 l = 1 kl

- | | | | |
|----|------------------------------------------------------------------------------------------------------------|----|------------------------------------------------------------------------------------------------------------|
| a. | 956507 ml
= (956507 \div 1000) l
= 956.507 l
= (956.507 \div 1000) kl
= 0.956507 kl | b. | 853247 ml
= (853247 \div 1000) l
= 853.247 l
= (853.247 \div 1000) kl
= 0.853247 kl |
| c. | 752124 ml
= (752124 \div 1000) l
= 752.124 l
= (752.124 \div 1000) kl
= 0.752124 kl | d. | 42863 ml
= (42863 \div 1000) l
= 42.863 l
= (42.863 \div 1000) kl
= 0.042863 kl |

2. Convert the following into g and kg :

Ans. \because 1000 mg = 1 g and 1000 g = 1 kg;

- | | | | |
|----|-------------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------------|
| a. | 652141 mg
= (652141 \div 1000) g
= 652.141 g
= (652.141 \div 1000) kg
= 0.652141 kg | b. | 554566 mg
= (554566 \div 1000) g
= 554.566 g
= (554.566 \div 1000) kg
= 0.554566 kg |
| c. | 443443 mg
= (443443 \div 1000) g
= 443.443 g
= (443.443 \div 1000) kg
= 0.443443 kg | d. | 239168 mg
= (239168 \div 1000) g
= 239.168 g
= (239.168 \div 1000) kg
= 0.239168 kg |

3. Convert the following into m and km :

Ans. \because 100 cm = 1 m and 1000 m = 1 km

- | | | | |
|----|-------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------|
| a. | 63342 cm
= (63342 \div 100) m
= 633.42 m
= (633.42 \div 1000) km
= 0.63342 km | b. | 55472 cm
= (55472 \div 100) m
= 554.72 m
= (554.72 \div 1000) km
= 0.55472 km |
| c. | 23366 cm
= (23366 \div 100) m
= 233.66 m
= (233.66 \div 1000) km
= 0.23366 km | d. | 21369 cm
= (21369 \div 100) m
= 213.69 m
= (213.69 \div 1000) km
= 0.21369 km |

4. Convert the following into gram and milligrams :

Ans. \because 1 kg = 1000 gram and 1 gram = 1000 mg

- | | | | |
|----|---------------------------------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------------------------------|
| a. | 0.35 kg
= (0.35 \times 1000) gram
= 350 gram
= (350 \times 1000) mg
= 350000 mg | b. | 0.47 kg
= (0.47 \times 1000) gram
= 470 gram
= 470 \times 1000 mg
= 470000 mg |
| c. | 0.16 kg
= (0.16 \times 1000) gram
= 160 gram | d. | 0.41 kg
= (0.41 \times 1000) gram
= 410 gram |

$$= (160 \times 1000) \text{ mg}$$
$$= \mathbf{160000 \text{ mg}}$$

$$= 410 \times 1000 \text{ mg}$$
$$= \mathbf{410000 \text{ mg}}$$

5. Convert the following into kg :

Ans. $\because 1000 \text{ g} = 1 \text{ kg}$

a. 42.3 g
 $= (42.3 \div 1000) \text{ kg}$
 $= \mathbf{0.0423 \text{ kg}}$

b. 26.5 g
 $= (26.5 \div 1000) \text{ kg}$
 $= \mathbf{0.0265 \text{ kg}}$

c. 37.2 g
 $= (37.2 \div 1000) \text{ kg}$
 $= \mathbf{0.0372 \text{ kg}}$

d. 3307 g
 $= (3307 \div 1000) \text{ kg}$
 $= \mathbf{3.307 \text{ kg}}$

6. Convert the following into m and mm :

Ans. $\because 1 \text{ km} = 1000 \text{ m}$ and $1 \text{ m} = 1000 \text{ mm}$;

a. 6.38 km
 $= (6.38 \times 1000) \text{ m}$
 $= \mathbf{6380 \text{ m}}$
 $= (6380 \times 1000) \text{ mm}$
 $= \mathbf{6380000 \text{ mm}}$

b. 8.46 km
 $= (8.46 \times 1000) \text{ m}$
 $= \mathbf{8460 \text{ m}}$
 $= (8460 \times 1000) \text{ mm}$
 $= \mathbf{8460000 \text{ mm}}$

c. 3.23 km
 $= (3.23 \times 1000) \text{ m}$
 $= \mathbf{3230 \text{ m}}$
 $= (3230 \times 1000) \text{ mm}$
 $= \mathbf{3230000 \text{ mm}}$

d. 7.18 km
 $= (7.18 \times 1000) \text{ m}$
 $= \mathbf{7180 \text{ m}}$
 $= (7180 \times 1000) \text{ mm}$
 $= \mathbf{7180000 \text{ mm}}$

7. Convert the following into km and mm :

Ans. $\because 1 \text{ m} = 1000 \text{ mm}$ and $1000 \text{ m} = 1 \text{ km}$;

a. 7.6 m
 $= (7.6 \div 1000) \text{ km}$
 $= \mathbf{0.0076 \text{ km}}$
 $= (7.6 \times 1000) \text{ mm}$
 $= \mathbf{7600 \text{ mm}}$

b. 5.2 m
 $= (5.2 \div 1000) \text{ km}$
 $= \mathbf{0.0052 \text{ km}}$
 $= (5.2 \times 1000) \text{ mm}$
 $= \mathbf{5200 \text{ mm}}$

c. 8.3 m
 $= (8.3 \div 1000) \text{ km}$
 $= \mathbf{0.0083 \text{ km}}$
 $= (8.3 \times 1000) \text{ mm}$
 $= \mathbf{8300 \text{ mm}}$

d. 3.6 m
 $= (3.6 \div 1000) \text{ km}$
 $= \mathbf{0.0036 \text{ km}}$
 $= (3.6 \times 1000) \text{ mm}$
 $= \mathbf{3600 \text{ mm}}$

8. Convert the following into kg and mg :

Ans. $\because 1 \text{ g} = 1000 \text{ mg}$ and $1000 \text{ g} = 1 \text{ kg}$;

a. 7.13 g
 $= (7.13 \div 1000) \text{ kg}$
 $= \mathbf{0.00713 \text{ kg}}$
 $= (7.13 \times 1000) \text{ mg}$
 $= \mathbf{7130 \text{ mg}}$

b. 2.12 g
 $= (2.12 \div 1000) \text{ kg}$
 $= \mathbf{0.00212 \text{ kg}}$
 $= (2.12 \times 1000) \text{ mg}$
 $= \mathbf{2120 \text{ mg}}$

c. 7.27 g
 $= (7.27 \div 1000) \text{ kg}$
 $= \mathbf{0.00727 \text{ kg}}$
 $= (7.27 \times 1000) \text{ mg}$
 $= \mathbf{7270 \text{ mg}}$

d. 3.28 g
 $= (3.28 \div 1000) \text{ kg}$
 $= \mathbf{0.00328 \text{ kg}}$
 $= (3.28 \times 1000) \text{ mg}$
 $= \mathbf{3280 \text{ mg}}$

9. Convert the following into ml :

Ans. $\because 1 \text{ l} = 1000 \text{ ml};$

a. 4.5 l

$= (4.5 \times 1000) \text{ ml}$

$= 4500 \text{ ml}$

c. 9.2 l

$= (9.2 \times 1000) \text{ ml}$

$= 9200 \text{ ml}$

b. 7.3 l

$= (7.3 \times 1000) \text{ ml}$

$= 7300 \text{ ml}$

d. 3.6 l

$= (3.6 \times 1000) \text{ ml}$

$= 3600 \text{ ml}$

MCQs

1. c

2. a

3. c

4. b

5. a

6. a

NEP : Life Skills

Count the boxes and write each as a decimal and a fraction.

1. $1\frac{1}{10} = 1.1$

2. $2\frac{2}{10} = 2.2$

3. $3\frac{6}{10} = 3.6$

4. $1\frac{9}{10} = 1.9$

5. $3\frac{7}{10} = 3.7$

6. $2\frac{3}{10} = 2.3$

7. $2\frac{5}{10} = 2.5$

8. $1\frac{8}{10} = 1.8$

9. $3\frac{4}{10} = 3.4$



Rounding Decimals

Exercise 6.1

1. Round off to the nearest one :

Ans. a. $4.2 = 4$

b. $5.6 = 6$

c. $7.8 = 8$

d. $3.41 = 3$

e. $5.76 = 6$

f. $3.9 = 4$

2. Multiply and round off to the nearest one :

Ans. a. 2.5×1.6

b. 7.8×3.2

$$\begin{array}{r} 2.5 \\ \times 1.6 \\ \hline 1.50 \\ + 2.50 \\ \hline 4.00 \end{array}$$

So, 4.00 is rounded to 4.

$$\begin{array}{r} 7.8 \\ \times 3.2 \\ \hline 1.56 \\ + 23.40 \\ \hline 24.96 \end{array}$$

So, 24.96 is rounded to 25.

c. 4.9×0.8

d. 7.7×4.9

$$\begin{array}{r} 4.9 \\ \times 0.8 \\ \hline 3.92 \end{array}$$

So, 3.92 is rounded to 4.

$$\begin{array}{r} 7.7 \\ \times 4.9 \\ \hline 6.93 \\ + 30.80 \\ \hline 37.73 \end{array}$$

So, 37.73 is rounded to 38.

e. 3.6×8.2

$$\begin{array}{r} 3.6 \\ \times 8.2 \\ \hline 0.72 \\ + 28.80 \\ \hline 29.52 \end{array}$$

So, 29.52 is rounded to 30.

f. 2.3×1.7

$$\begin{array}{r} 2.3 \\ \times 1.7 \\ \hline 1.61 \\ + 2.30 \\ \hline 3.91 \end{array}$$

So, 3.91 is rounded to 4.

3. Round off to one decimal place :

- Ans. a. $6.23 = 6.2$ b. $4.299 = 4.3$ c. $7.88 = 7.9$
 d. $1.32 = 1.3$ e. $1.45 = 1.5$ f. $9.23 = 9.2$

4. Solve and round off to one decimal place :

- Ans. a. $1.456 + 2.519 - 2.7 = 1.275 = 1.3$ b. $6.597 \div 3 = 2.199 = 2.2$

$$\begin{array}{r} 1.456 \\ + 2.519 \\ \hline 3.975 \\ - 2.700 \\ \hline 1.275 \end{array}$$

So, 2.775 is rounded to 2.3.

- c. $3.714 \div 2 = 1.857 = 1.9$

$$\begin{array}{r} 2 \overline{)3.714} (1.857 \\ \underline{-2} \\ 17 \\ \underline{-16} \\ 11 \\ \underline{-10} \\ 14 \\ \underline{-14} \\ \times \end{array}$$

So, 1.857 is rounded to 1.9

$$\begin{array}{r} 3 \overline{)6.597} (2.199 \\ \underline{-6} \\ 05 \\ \underline{-3} \\ 29 \\ \underline{-27} \\ 27 \\ \underline{-27} \\ \times \end{array}$$

So, 2.199 is rounded to 2.2.

- d. $7.845 - 2.418 = 5.427 = 5.4$

$$\begin{array}{r} 7.845 \\ - 2.418 \\ \hline 5.427 \end{array}$$

So, 5.427 is rounded to 5.4.

5. Round off to two decimal places :

- Ans. a. $5.435 = 5.44$ b. $6.218 = 6.22$ c. $7.444 = 7.44$
 d. $8.3174 = 8.32$ e. $2.5155 = 2.52$ f. $3.431 = 3.43$

6. Solve and round off to two decimal places :

- Ans. a. $3.1789 + 2.145 = 5.3239 = 5.32$ b. $7.34 - 2.456 = 4.884 = 4.88$

$$\begin{array}{r} 3.1789 \\ + 2.1450 \\ \hline 5.3239 \end{array}$$

So, 5.3239 is rounded to 5.32.

$$\begin{array}{r} 7.340 \\ - 2.456 \\ \hline 4.884 \end{array}$$

So, 4.884 is rounded to 4.88.

c. $8.435 \times 2 = \mathbf{16.870} = \mathbf{16.87}$

$$\begin{array}{r} 8.435 \\ \times 2 \\ \hline 16.870 \end{array}$$

d. $7.482 \div 4 = \mathbf{1.8705} = \mathbf{1.87}$

$$\begin{array}{r} \overline{4)7.482} \mathbf{1.8705} \\ -4 \\ \hline 34 \\ -32 \\ \hline 28 \\ -28 \\ \hline 20 \\ -20 \\ \hline 0 \\ \times \end{array}$$

So, 16.870 is rounded to 16.87.

So, 1.8705 is rounded to 1.87.

Exercise 6.2

1. Find out the rounded value of the following decimals to nearest one :

- Ans.** a. 16.3 rounding off to nearest one is 16.
 b. 136.6 rounding off to nearest one is 137.
 c. 1550.5 rounding off to nearest one is 1551.

2. Find out the rounded value of the following decimals to nearest tenth :

- Ans.** a. 15.75 rounding off to nearest tenth is 15.8
 b. 170.71 rounding off to nearest tenth is 170.7
 c. 1370.73 rounding off to nearest tenth is 1370.7

3. Find out the rounded value of the following decimals to their nearest hundredth place :

- Ans.** a. 25.638 rounding off to nearest hundredth is 25.64.
 b. 130.674 rounding off to nearest hundredth is 130.67
 c. 2054.063 rounding off to nearest hundredth is 2054.06

4. Add the following and correct the sum to two decimal places :

- Ans.** a. $2.301 + 12.231 = \mathbf{14.532}$
 $ = \mathbf{14.53}$
 b. $9.370 + 0.319 = 9.689$
 $ = 9.69$

$$\begin{array}{r} 2.301 \\ + 12.231 \\ \hline 14.532 \end{array}$$

So, 14.532 is rounded to 14.53.

$$\begin{array}{r} 9.370 \\ + 0.319 \\ \hline 9.689 \end{array}$$

So, 9.689 is rounded to 9.69.

- c. $47.50 + 67.651 + 45.60 = \mathbf{160.751} = \mathbf{160.75}$
 d. $165.45 + 147.362 + 160.48 = \mathbf{473.292} = \mathbf{473.29}$

$$\begin{array}{r} 47.500 \\ 67.651 \\ + 45.600 \\ \hline 160.751 \end{array}$$

So, 160.751 is rounded to 160.75.

$$\begin{array}{r} 165.450 \\ 147.362 \\ + 160.480 \\ \hline 473.292 \end{array}$$

So, 473.292 is rounded to 473.29.

5. Subtract the following and correct the difference to two decimal places :

Ans. a. $103.326 - 99.765$
 $= 3.561 = 3.56$

$$\begin{array}{r} 103.326 \\ + 99.765 \\ \hline 03.561 \end{array}$$

So, 3.561 is rounded to 3.56.

b. $169.309 - 160.693$
 $= 8.616 = 8.62$

$$\begin{array}{r} 169.309 \\ - 160.693 \\ \hline 008.616 \end{array}$$

So, 8.616 is rounded to 8.62.

c. $169.30 - 67.002$
 $= 102.298 = 102.30$

$$\begin{array}{r} 169.300 \\ - 67.002 \\ \hline 102.298 \end{array}$$

So, 169.30 is rounded to 102.30.

b. $69.000 - 58.089$
 $= 10.911 = 10.91$

$$\begin{array}{r} 69.000 \\ - 58.089 \\ \hline 10.911 \end{array}$$

So, 69.000 is rounded to 10.91.

6. Multiply the following and correct the product to two decimal places :

Ans. a. $81.54 \times 6.73 = 548.7642$

$$\begin{array}{r} 81.54 \\ \times 6.73 \\ \hline 2.4462 \\ 57.0780 \\ 489.2400 \\ \hline 548.7642 \end{array}$$

So, 548.7642 is rounded to 548.76.

b. $10.05 \times 11.01 = 110.6506$
 $= 110.65$

$$\begin{array}{r} 10.05 \\ \times 11.01 \\ \hline 0.1005 \\ 10.0500 \\ \hline 110.6506 \end{array}$$

So, 110.6506 is rounded to 110.65.

c. $21.02 \times 125.3 = 2613.806 = 2613.81$

$$\begin{array}{r} 125.3 \\ \times 21.02 \\ \hline 2.506 \\ 125.300 \\ 2506.000 \\ \hline 2633.806 \end{array}$$

So, 2633.806 is rounded to 2633.81

7. Divide the following and correct the quotient to two decimal places :

Ans. a. $115 \div 7 = 16.428 = 16.43$

$$\begin{array}{r} 16.428 \\ 7 \overline{) 115} \\ \underline{-7} \\ 45 \\ \underline{-42} \\ 30 \\ \underline{-28} \\ 20 \\ \underline{-14} \\ 60 \\ \underline{-56} \\ 4 \end{array}$$

So, 16.428 is rounded to 16.43.

b. $209 \div 8 = 26.125 = 26.13$

$$\begin{array}{r} 26.125 \\ 8 \overline{) 209} \\ \underline{-16} \\ 49 \\ \underline{-48} \\ 10 \\ \underline{-8} \\ 20 \\ \underline{-16} \\ 40 \\ \underline{-40} \\ \times \end{array}$$

So, 26.125 is rounded to 26.13.

c. $310 \div 9 = 34.444 = \mathbf{34.44}$

$$\begin{array}{r}
 34.4444 \\
 9 \overline{) 310} \\
 \underline{-27} \\
 40 \\
 \underline{-36} \\
 40 \\
 \underline{-36} \\
 40 \\
 \underline{-36} \\
 4
 \end{array}$$

So, 34.4444 is rounded to 34.44.

MCQs

1. a 2. a 3. b 4. a 5. b



Geometry

Exercise-7.1

1. Write down the following symbols :

- Ans. a. Line segment $CD = \overline{CD}$ b. Ray $GH = \overrightarrow{GH}$
 c. Straight line $EF = \overleftrightarrow{EF}$ d. Ray $AB = \overrightarrow{AB}$

2. Fill in the blanks :

- Ans. a. A **line segment** has two end points.
 b. A **ray** has only one end point.
 c. A **line** has no end points.
 d. A **line** does not have a definite length.
 e. A table top represents a part of a **plane**.

3. Match the columns :

- Ans. a. A line segment has iii. two end points.
 b. A straight line has i. no end points
 c. A line segment has v. has a definite length.
 d. A black board iv. represents a part of a plane.
 e. A point has ii. no length or breadth.

Exercise-7.2

1. Fill in the blanks :

- Ans. a. A **ray** has one fixed point.
 b. A **line** has no end point.
 c. A **line segment** has two end points and **definite** length.
 d. Angle between the two perpendicular lines is **90°**.
 e. Angle of straight line is **180°**.

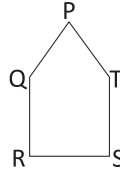
- f. Angle between 180° and 360° is called **reflex angle**.
 g. If the sum of the two angles is 90° , then they are **complementary angles**.
 h. The sum of two supplementary angles is **180°** .
 i. Angles having equal value are called **congruent angles**.
 j. The measurement of vertically opposite angles are **always equal**.
 k. Two adjacent angles have same **vertex**.
 l. **Congruent** angles are equal in measurement.

2. **State whether the angles in each of the following is acute, right, obtuse or reflex :**

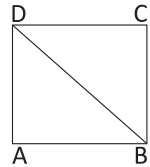
- Ans. a. Acute angle b. Right angle c. Obtuse angle
 d. Reflex angle e. Acute angle f. Acute angle

3. **Name the angles in the following figures :**

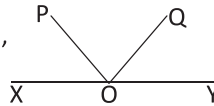
- Ans. a. **Angles :** $\angle PQR, \angle QRS, \angle RST,$
 $\angle PTS$ and $\angle QPT$.



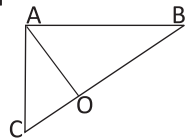
- b. **Angles :** $\angle ABC, \angle DCB, \angle ADC,$
 $\angle DAB, \angle ADB, \angle CDB,$
 $\angle ABD$ and $\angle DBC$.



- c. **Angles :** $\angle POX, \angle POQ, \angle QOY,$
 $\angle QOX, \angle POY$
 and $\angle XOY$.



- d. **Angles :** $\angle CAB, \angle ABC, \angle ACB, \angle CAO,$
 $\angle BAO, \angle AOC, \angle AOB$
 and $\angle COB$.



5. **Find out the complementary angle of the following :**

- Ans. a. Complementary angle of 60° is $(90^\circ - 60^\circ) = 30^\circ$.
 b. Complementary angle of 45° is $(90^\circ - 45^\circ) = 45^\circ$.
 c. Complementary angle of 25° is $(90^\circ - 25^\circ) = 65^\circ$.
 d. Complementary angle of 15° is $(90^\circ - 15^\circ) = 75^\circ$.
 e. Complementary angle of 80° is $(90^\circ - 80^\circ) = 10^\circ$.
 f. Complementary angle of 20° is $(90^\circ - 20^\circ) = 70^\circ$.
 g. Complementary angle of 40° is $(90^\circ - 40^\circ) = 50^\circ$.
 h. Complementary angle of 75° is $(90^\circ - 75^\circ) = 15^\circ$.

6. **Find out the supplementary angle of the following :**

- Ans. a. Supplementary angle of 30° is $(180^\circ - 30^\circ) = 150^\circ$.
 b. Supplementary angle of 45° is $(180^\circ - 45^\circ) = 135^\circ$.
 c. Supplementary angle of 75° is $(180^\circ - 75^\circ) = 105^\circ$.
 d. Supplementary angle of 90° is $(180^\circ - 90^\circ) = 90^\circ$.
 e. Supplementary angle of 105° is $(180^\circ - 105^\circ) = 75^\circ$.
 f. Supplementary angle of 135° is $(180^\circ - 135^\circ) = 45^\circ$.

- g. Supplementary angle of 150° is $(180^\circ - 150^\circ) = 30^\circ$.
 h. Supplementary angle of 165° is $(180^\circ - 165^\circ) = 15^\circ$.

7. Fill in the blanks :

- Ans.** a. The angle 60° is **acute** angle. b. The angle 180° is **straight** angle.
 c. The angle 90° is **right** angle. d. The angle 120° is **obtuse** angle.
 e. The angle 135° is **obtuse** angle. f. The angle 75° is **acute** angle.
 g. The angle 200° is **reflex** angle. h. The angle 130° is **obtuse** angle.
 i. The angle 65° is **acute** angle. j. The angle 275° is **reflex** angle.
 k. The angle 55° is **acute** angle.

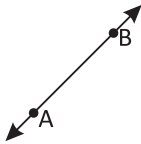
Exercise-7.3

Do it yourself

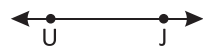
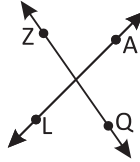
Exercise-7.4

1. Draw and label an example of each :

Ans. (a) line AB



(b) \vec{LA} intersecting \vec{ZQ} (c) \vec{UJ}



2. Classify each pair of lines as parallel, intersecting, or perpendicular.

- Ans.** a. Perpendicular lines b. Parallel lines
 c. Intersecting lines d. Parallel lines

3. Put a tick (✓) on the parallel lines :

Ans. a. ✓

MCQs

1. b 2. a 3. b 4. b 5. c



Triangles

Exercise-8.1

1. Whether the following angles forms a triangle or not?

- Ans.** a. $45^\circ, 60^\circ, 75^\circ$
 \therefore Sum of the angles $= 45^\circ + 60^\circ + 75^\circ = 180^\circ$
 Hence, angles $(45^\circ, 60^\circ, 75^\circ)$ form a triangle.
 b. $90^\circ, 90^\circ, 10^\circ$
 \therefore Sum of the angles $= 90^\circ + 90^\circ + 10^\circ = 190^\circ \neq 180^\circ$
 Hence, angles $(90^\circ, 90^\circ, 10^\circ)$ does not form a triangle.
 c. $55^\circ, 95^\circ, 30^\circ$
 \therefore Sum of the angles $= 55^\circ + 95^\circ + 30^\circ = 180^\circ$
 Hence, angles $(55^\circ, 95^\circ, 30^\circ)$ form a triangle.

d. $120^\circ, 30^\circ, 30^\circ$

\therefore Sum of the angles $= 120^\circ + 30^\circ + 30^\circ = 180^\circ$

Hence, angles $(120^\circ, 30^\circ, 30^\circ)$ form a triangle.

2. Find out the third angle of a triangle, if two of them are given :

Ans. \therefore The sum of the angles of a triangle $= 180^\circ$

\therefore The angle of a triangle $= 180^\circ - (\text{Sum of other two angles})$

a. $65^\circ, 35^\circ$

Thus, third angle of the triangle $= 180^\circ - (\text{Sum of two angles})$
 $= 180^\circ - (65^\circ + 35^\circ)$
 $= 180^\circ - 100^\circ$
 $= 80^\circ$

b. $39^\circ, 60^\circ$

Thus, third angle of the triangle $= 180^\circ - (\text{Sum of first two angles})$
 $= 180^\circ - (39^\circ + 60^\circ)$
 $= 180^\circ - 99^\circ$
 $= 81^\circ$

c. $60^\circ, 28.5^\circ$

Thus, third angle of the triangle $= 180^\circ - (\text{Sum of first two angles})$
 $= 180^\circ - (60^\circ + 28.5^\circ)$
 $= 180^\circ - 88.5^\circ = 91.5^\circ$

d. $90^\circ, 30^\circ$

Thus, third angle of the triangle $= 180^\circ - (\text{Sum of first two angles})$
 $= 180^\circ - (90^\circ + 30^\circ)$
 $= 180^\circ - 120^\circ = 60^\circ$

e. $60^\circ, 60^\circ$

Thus, third angle of the triangle $= 180^\circ - (\text{Sum of first two angles})$
 $= 180^\circ - (60^\circ + 60^\circ)$
 $= 180^\circ - 120^\circ = 60^\circ$

f. $150^\circ, 20^\circ$

Thus, third angle of the triangle $= 180^\circ - (\text{Sum of first two angles})$
 $= 180^\circ - (150^\circ + 20^\circ)$
 $= 180^\circ - 170^\circ = 10^\circ$

g. $130^\circ, 30^\circ$

Thus, third angle of the triangle $= 180^\circ - (\text{Sum of first two angles})$
 $= 180^\circ - (130^\circ + 30^\circ)$
 $= 180^\circ - 160^\circ = 20^\circ$

h. $120^\circ, 15^\circ$

Thus, third angle of the triangle $= 180^\circ - (\text{Sum of first two angles})$
 $= 180^\circ - (120^\circ + 15^\circ)$
 $= 180^\circ - 135^\circ = 45^\circ$

3. Is the triangle possible with the following sides given? (Write your answer in 'Yes' or 'No') :

Ans. a. 6 cm, 4 cm, 3 cm **Yes**

b. 2 cm, 6 cm, 5 cm **Yes**

c. 10 cm, 9 cm, 12 cm **Yes**

d. 3 cm, 6 cm, 12 cm **No**

e. 3 cm, 2 cm, 2 cm **Yes**

f. 6 cm, 3 cm, 4 cm **Yes**

g. 9 cm, 6 cm, 5 cm **Yes**

h. 6 cm, 3 cm, 5 cm **Yes**

Exercise-8.2

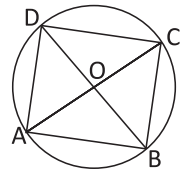
1. Fill in the blanks :

- Ans.**
- A triangle having an angle 138° is called **obtuse-angled triangle**.
 - A triangle having an angle 90° is called **right-angled triangle**.
 - A obtuse angled triangle has one **obtuse** angle.
 - A triangle have **three** angles.
 - The sum of the angles of a triangle is **180°** .
 - The triangle having all the sides unequal is called **scalene** triangle.
 - An isosceles triangle have two sides of **equal in** length.
 - A triangle having all sides equal is known as **equilateral** triangle.
 - A triangle in which all the angles are acute angles is called **acute-angled triangle**.
 - A right angled triangle have a **right** angle.
 - A triangle has **three** vertices.
 - An isosceles triangle has **two** sides of equal length.

2. Name and count the triangles in each of the following figures :

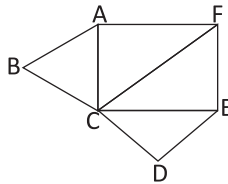
- Ans.** a. Total number of triangles = 8

And, name of triangles :
 $\triangle ABC$, $\triangle ADC$, $\triangle BAD$,
 $\triangle BCD$, $\triangle AOB$, $\triangle BOC$, $\triangle COD$
 and $\triangle AOD$.



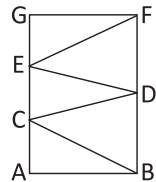
- b. Total number of triangles = 4

And, name of triangles :
 $\triangle ABC$, $\triangle AFC$, $\triangle FCE$
 and $\triangle CED$.



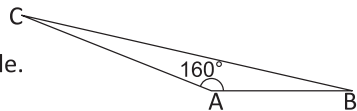
- c. Total number of triangles = 5

And, name of triangles :
 $\triangle ABC$, $\triangle BCD$, $\triangle CDE$,
 $\triangle DEF$ and $\triangle EFG$.

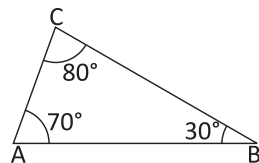


3. Write the name of the triangle in the given figures :

- Ans.** a. $\because \angle A = 160^\circ$ (obtuse angle)
 So, $\triangle ABC$ is an obtuse-angled triangle.



- b. \because All three angles are acute angles.
 So, $\triangle ABC$ is an acute-angled triangle.

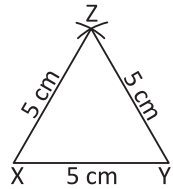


Exercise-8.3

Construct the following triangles in your note book :

Ans. 1. Steps of Construction :

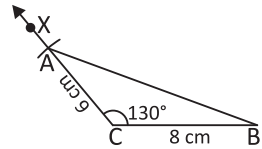
- Draw a line segment $XY = 5$ cm.
- Taking radius 5 cm in compass and cut an arc from point X.
- Taking radius 5 cm in compass and cut an another arc from point Y. So, that both the arcs intersect at point Z.
- Join XZ and YZ.



So, $\triangle XYZ$ is the required equilateral triangle.

2. Steps of Construction :

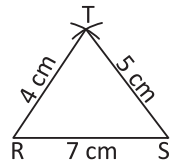
- Draw a line segment $CB = 8$ cm.
- At point C, draw an angle $\angle BCX = 130^\circ$.
- Taking radius 6 cm in compass and cut the ray CX at point A.
- Join points A to B.



So, $\triangle ABC$ is the required triangle.

3. Steps of Construction :

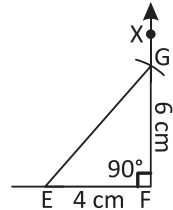
- Draw a line segment $RS = 7$ cm.
- From point R, cut an arc of $RT = 4$ cm.
- From point S, cut an another arc of $ST = 5$ cm, such that both the arcs intersect at point T.
- Join TR and TS.



So, $\triangle RST$ is the required triangle.

4. Steps of Construction :

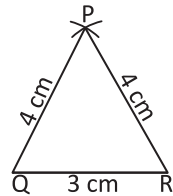
- Draw a line segment $EF = 4$ cm.
- At point F, draw an angle $\angle EFX = 90^\circ$.
- From point F, taking radius 6 cm in compass and cut the ray FX at point G.
- Join points E to G.



So, $\triangle EFG$ is the required triangle.

5. Steps of Construction :

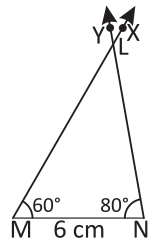
- Draw a line segment $QR = 3$ cm.
- From point Q, cut an arc of $PQ = 4$ cm.
- From point R, cut an another arc of $PR = 4$ cm. Such that both the arcs intersect at point P.
- Join PQ and PR.



So, $\triangle PQR$ is the required triangle.

6. Steps of Construction :

- Draw a line segment $MN = 6$.
- At point M, draw an angle $\angle NMX = 60^\circ$.
- At point N, draw an angle $\angle MNY = 80^\circ$.
- Such that rays MX and NY intersect at point L.

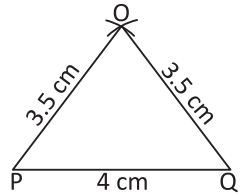


So, $\triangle LMN$ is the required triangle.

7. Steps of Construction :

- (a) Draw a line segment $PQ = 4$ cm.
- (b) From point P , cut an arc of $OP = 3.5$ cm.
- (c) From point Q , cut another arc of $OQ = 3.5$ cm. Such that both the arcs intersect at point O .

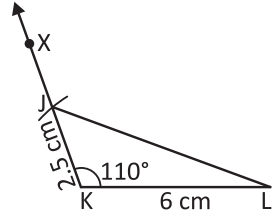
So, $\triangle OPQ$ is the required triangle.



8. Steps of Construction :

- (a) Draw a line segment $KL = 6$ cm.
- (b) At point K , draw an angle $\angle LKX = 110^\circ$.
- (c) From point K , cut an arc on ray KX at point J . Such that $KJ = 2.5$ cm.
- (d) Join points J to L .

So, $\triangle JKL$ is the required triangle.



MCQs

1. b 2. c 3. c 4. a 5. c 6. b 7. a



Circles

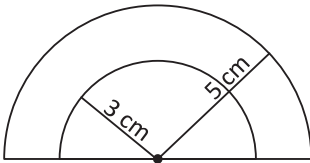
Exercise-9

1. Construct circles with the following radii using a compass :

Ans. Do it yourself

2. Construct two semicircles with the same centre, one with radius 3 cm and the other with radius 5 cm.

Ans.



3. Draw a circle with the given radius and calculate the diameter in each case :

Ans. a. Radius = 2 cm

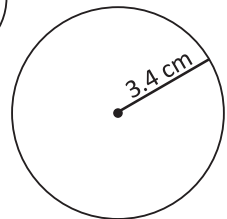
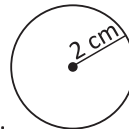
$$\begin{aligned}\therefore \text{Diameter} &= 2 \times \text{radius} \\ &= 2 \times 2 \text{ cm} \\ &= 4 \text{ cm}\end{aligned}$$

So, the diameter of the circle is 4 cm.

b. Radius = 3.4 cm

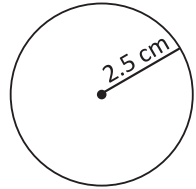
$$\begin{aligned}\therefore \text{Diameter} &= 2 \times \text{radius} \\ &= 2 \times 3.4 \text{ cm} \\ &= 6.8 \text{ cm}\end{aligned}$$

So, the diameter of the circle is 6.8 cm.



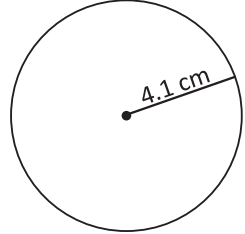
- c. Radius = 2.5 cm
 \therefore Diameter = $2 \times$ radius
 $= 2 \times 2.5$ cm
 $= 5.0$ cm

So, the diameter of the circle is 5 cm.



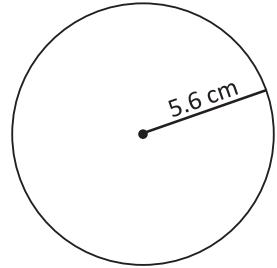
- d. Radius = 4.1 cm
 \therefore Diameter = $2 \times$ radius
 $= 2 \times 4.1$ cm
 $= 8.2$ cm

So, the diameter of the circle is 8.2 cm.



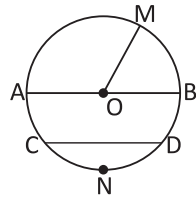
- e. Radius = 5.6 cm
 \therefore Diameter = $2 \times$ radius
 $= 2 \times 5.6$ cm
 $= 11.2$ cm

So, the diameter of the circle is 11.2 cm.



4. Draw a circle in your notebook and mark the following on it :

- Ans. a. Centre = O
 b. Radius = OM
 c. Chord = CD
 d. Diameter = AOB
 e. Circumference = $ACNDBMA$



5. Fill in the blanks :

- Ans. a. The diameter is the longest **chord**.
 b. The radius is **half** of the diameter.
 c. An arc lies on the **edge** of the circle.
 d. Exact **half** part of a circle is called a semicircle.
 e. The length of the curve of the circle is called the **circumference** of the circle.

6. Which of the given groups of circles are concentric :

- Ans. a. ✓

MCQs

1. c 2. c 3. c 4. b 5. c 6. c 7. c

Exercise-10

1. Rotate the given figures in clockwise direction (in three steps) :

a.				
b.				
c.				
d.				
e.				
f.				

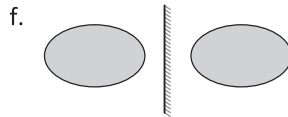
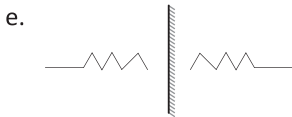
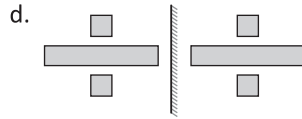
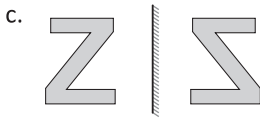
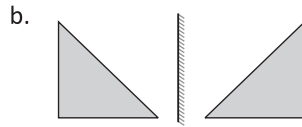
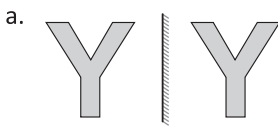
2. Rotate the given figures in anticlockwise direction :

Ans.

a.				
b.				
c.				

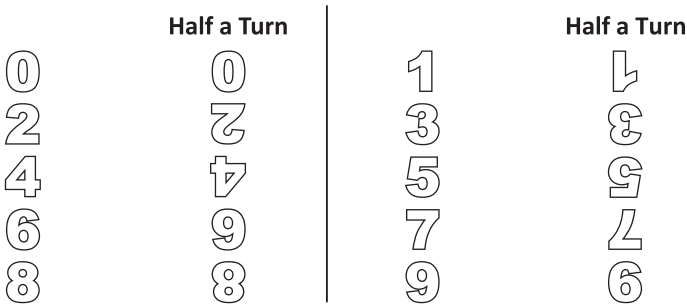
3. Draw the figure after the reflection of the following figures :

Ans.



4. Letters H, I, N, O, S, X and Z in the English alphabet look at the same after half a turn.

5.



Numbers 0 and 8 still look the same.

MCQs

1. c 2. c 3. a 4. a 5. a



The Metric System

Exercise-11.1

1. Express in cm :

Ans. $\because 1 \text{ m} = 100 \text{ cm};$

a. 3.16 m
 $= 3.16 \times 100 \text{ cm}$
 $= \mathbf{316 \text{ cm}}$

b. 3.42 m
 $= 3.42 \times 100 \text{ cm}$
 $= \mathbf{342 \text{ cm}}$

c. 7.75 m
 $= 7.75 \times 100 \text{ cm}$
 $= \mathbf{775 \text{ cm}}$

d. 27.076 m
 $= 27.076 \times 100 \text{ cm}$
 $= \mathbf{2707.6 \text{ cm}}$

e. 42.44 m
 $= 42.44 \times 100 \text{ cm}$
 $= \mathbf{4244 \text{ cm}}$

f. 75.08 m
 $= 75.08 \times 100 \text{ cm}$
 $= \mathbf{7508 \text{ cm}}$

- g. 0.009 m
 $= 0.009 \times 100 \text{ cm}$
 $= \mathbf{0.9 \text{ cm}}$
- h. 367.5 m
 $= 367.5 \times 100 \text{ cm}$
 $= \mathbf{36750 \text{ cm}}$

2. Express in hm :

- Ans.** $\therefore 1 \text{ km} = 10 \text{ hm}$
- a. 2.355 km
 $= 2.355 \times 10 \text{ hm}$
 $= \mathbf{23.55 \text{ hm}}$
- b. 47.86 km
 $= 47.86 \times 10 \text{ hm}$
 $= \mathbf{478.6 \text{ hm}}$
- c. 35.250 km
 $= 35.250 \times 10 \text{ hm}$
 $= \mathbf{352.50 \text{ hm}}$
- d. 9.003 km
 $= 9.003 \times 10 \text{ hm}$
 $= \mathbf{90.03 \text{ hm}}$
- e. 7.075 km
 $= 7.075 \times 10 \text{ hm}$
 $= \mathbf{70.75 \text{ hm}}$
- f. 7.878 km
 $= 7.878 \times 10 \text{ hm}$
 $= \mathbf{78.78 \text{ hm}}$
- g. 0.9 km
 $= 0.9 \times 10 \text{ hm}$
 $= \mathbf{9 \text{ hm}}$
- h. 0.104 km
 $= 0.104 \times 10 \text{ hm}$
 $= \mathbf{1.04 \text{ hm}}$

3. Express in dag :

- Ans.** $\therefore 1 \text{ kg} = 100 \text{ dag}$
- a. 3.127 kg
 $= 3.127 \times 100 \text{ dag}$
 $= \mathbf{312.7 \text{ dag}}$
- b. 7.779 kg
 $= 7.779 \times 100 \text{ dag}$
 $= \mathbf{777.9 \text{ dag}}$
- c. 96.750 kg
 $= 96.750 \times 100 \text{ dag}$
 $= \mathbf{9675 \text{ dag}}$
- d. 0.358 kg
 $= 0.358 \times 100 \text{ dag}$
 $= \mathbf{35.8 \text{ dag}}$
- e. 8.65 kg
 $= 8.65 \times 100 \text{ dag}$
 $= \mathbf{865 \text{ dag}}$
- f. 84.050 kg
 $= 84.050 \times 100 \text{ dag}$
 $= \mathbf{8405 \text{ dag}}$
- g. 7.392 kg
 $= 7.392 \times 100 \text{ dag}$
 $= \mathbf{739.2 \text{ dag}}$
- h. 37.065 kg
 $= 37.065 \times 100 \text{ dag}$
 $= \mathbf{3706.5 \text{ dag}}$

4. Express in mg :

- Ans.** $\therefore 1 \text{ g} = 1000 \text{ mg}$
- a. 3.164 g
 $= 3.164 \times 1000 \text{ mg}$
 $= \mathbf{3164 \text{ mg}}$
- b. 0.185 g
 $= 0.185 \times 1000 \text{ mg}$
 $= \mathbf{185 \text{ mg}}$
- c. 9.009 g
 $= 9.009 \times 1000 \text{ mg}$
 $= \mathbf{9009 \text{ mg}}$
- d. 17.06 g
 $= 17.06 \times 1000 \text{ mg}$
 $= \mathbf{17060 \text{ mg}}$
- e. 5.570 g
 $= 5.570 \times 1000 \text{ mg}$
 $= \mathbf{5570 \text{ mg}}$
- f. 97.450 g
 $= 97.450 \times 1000 \text{ mg}$
 $= \mathbf{97450 \text{ mg}}$
- g. 0.008 g
 $= 0.008 \times 1000 \text{ mg}$
 $= \mathbf{8 \text{ mg}}$
- h. 0.950 g
 $= 0.950 \times 1000 \text{ mg}$
 $= \mathbf{950 \text{ mg}}$

5. Express in dl :

- Ans.** $\therefore 1 \text{ l} = 1000 \text{ ml}$
- a. 6.542 l
 $= 6.542 \times 10 \text{ dl}$
 $= \mathbf{65.42 \text{ dl}}$
- b. 32.750 l
 $= 32.750 \times 10 \text{ dl}$
 $= \mathbf{327.50 \text{ dl}}$
- c. 8.616 l
 $= 8.616 \times 10 \text{ dl}$
 $= \mathbf{86.16 \text{ dl}}$
- d. 0.5 l
 $= 0.5 \times 10 \text{ dl}$
 $= \mathbf{5 \text{ dl}}$
- e. 38.950 l
 $= 38.950 \times 10 \text{ dl}$
 $= \mathbf{389.50 \text{ dl}}$
- f. 0.25 l
 $= 0.25 \times 10 \text{ dl}$
 $= \mathbf{2.5 \text{ dl}}$
- g. 9.65 l
 $= 9.65 \times 10 \text{ dl}$
 $= \mathbf{96.5 \text{ dl}}$
- h. 6.003 l
 $= 6.003 \times 10 \text{ dl}$
 $= \mathbf{60.03 \text{ dl}}$

Exercise-11.2

1. Fill in the blanks :

Ans. a. $5 \text{ km } 135 \text{ m} + 20 \text{ km } 142 \text{ m}$
 $= 25 \text{ km } 277 \text{ m}.$

km	m
5	135
+20	142
25	277

b. $2 \text{ hg } 5 \text{ dag} + 20 \text{ hg } 4 \text{ dag}$
 $= 22 \text{ hg } 9 \text{ dag}$

hg	dag
2	5
+20	4
22	9

c. $215 \text{ l } 25 \text{ cl} - 25 \text{ l } 5 \text{ dl} / 2 \text{ cl}$

l	cl
215	25
-25	52
189	73

$= 215 \text{ l } 25 \text{ cl} - 25 \text{ l } 52 \text{ cl}$
 $= 189 \text{ cl } 73 \text{ cl} \text{ or } 189 \text{ l } 7 \text{ dl } 3 \text{ cl}$

d. $789 \text{ cm} \div 1000$
 $= (789 \div 1000) \text{ cm}$
 $= 0.789 \text{ cm} \text{ or } 7.89 \text{ mm}$

2. Add the following :

Ans. a. $15 \text{ g } 380 \text{ mg} \text{ and } 30 \text{ g}$

g	mg
15	380
+30	000
45	380

b. $10 \text{ k} / 222 \text{ l} \text{ and } 9 \text{ k} / \text{ and } 1000 \text{ l}$

k/	l
10	222
9	000
+1	000
20	222

c. $24 \text{ m } 40 \text{ mm}, 16 \text{ m } 985 \text{ mm}$
 $\text{and } 2 \text{ m } 235 \text{ mm}$

m	mm
24	040
16	985
+2	235
43	260

d. $5 \text{ l } 525 \text{ ml}, 750 \text{ ml}$
 $\text{and } 10 \text{ l } 900 \text{ ml}$

l	ml
5	525
0	750
+10	900
17	175

3. Subtract the following :

Ans. a. $12 \text{ cm } 1 \text{ mm} \text{ from } 15 \text{ cm } 2 \text{ mm}$

cm	mm
15	2
-12	1
3	1

b. $8 \text{ kg } 5 \text{ hg } 3 \text{ dag} \text{ from } 9 \text{ kg } 5 \text{ hg } 3 \text{ dag}$

kg	hg	dag
9	5	3
-8	5	3
1	0	0

c. $5 \text{ da} / 34 \text{ dl} \text{ from } 8 \text{ da} / 55 \text{ dl}$

dal	dl
8	55
-5	34
3	21

d. $5 \text{ dam } 3 \text{ m } 2 \text{ dm} \text{ from } 5 \text{ hm}$

hm	dam	m	dm
5	0	0	0
-0	5	3	2
4	4	6	8

Exercise-11.3

1. Sanjay purchase potatoes = 5 kg 500 g
 He purchase tomatoes = 2 kg 250 g
 And, he purchase onions = 1 kg
 So, total weight of vegetables purchased
 by Sanjay = 5 kg 500 g + 2 kg 250 g + 1 kg
 = 8 kg 750 g

hg	g
5	500
2	250
+1	000
8	750

2. Length of first cloth = 2 m 15 cm
 Length of second cloth = 1 m 25 cm
 And, length of third cloth = 900 cm \Rightarrow 9 m
 So, the total length of the cloth sold by Varun
 = 2 m 15 cm + 1 m 25 cm + 900 cm
 = 12 m 40 cm

m	cm
2	15
1	25
+9	00
12	40

3. Ramu purchase wheat from first place = 55 kg 225 hg
 = 55 kg + 22 hg + 5 hg
 = 77 kg 5 hg
 And, he purchase wheat from second place = 20 kg
 \therefore Total wheat purchased by Ramu = 77 kg 5 hg + 20 kg
 = 97 kg 5 hg

kg	hg
77	5
+20	0
97	5

- Wheat sold by Ramu = 60 kg
 So, remaining wheat left with Ramu = 97 kg 5 hg - 60 kg
 = 37 kg 5 hg

kg	hg
97	5
-60	0
37	5

4. Vickey can drink water in a day = 4 l 125 ml
 Raman can drink water in a day = 5 l 500 ml
 Clearly show that, Raman can drink more water
 than Vickey.
 Now, 5 l 500 ml - 4 l 125 ml = 1 l 375 ml

l	ml
5	500
-4	125
1	375

Hence, Raman can drink 1 l 375 ml of more water than Vickey can drink.

5. A bottle contain cold drink = 1 l 200 ml
 \therefore Another bottle contain 1 l 50 ml of cold drink
 more than first bottle.
 \therefore Second bottle contain cold drink
 = 1 l 200 ml + 1 l 50 ml
 = 2 l 250 ml

l	ml
1	200
+1	050
2	250

Hence, the second bottle contains 2 l 250 ml of cold drink.

6. Water contained in a bucket = 75 l 15 ml
 More water poured into the bucket = 2 l 30 ml
 Now, the quantity of water in the bucket
 = 75 l 15 ml + 2 l 30 ml
 = 77 l 45 ml

l	ml
75	15
+2	30
77	45

Hence, 77 l 45 ml of water is present in the bucket.

MCQs

1. a 2. a 3. a 4. b

Exercise-12.1

1. Observe the following diagrams carefully and complete the following table :

Ans.

Figure	A	B	C	D	E
Length	80 cm	20 cm	80 cm	40 cm	120 cm
Breadth	50 cm	15 cm	30 cm	40 cm	80 cm
Area = L × B	4000 cm ²	300 cm ²	2400 cm ²	1600 cm ²	9600 cm ²

2. Complete the following table :

Ans.

	Length	Breadth	Area
a.	12 m	4.5 m	54 m ²
b.	27 m	15 m	405 m ²
c.	36 m	2.5 cm	90 m ²
d.	40 cm	17 cm	680 cm ²
e.	12.5 cm	6 cm	75 cm ²

3. Find the area of the following squares whose diagonals are given :

Ans. a. Diagonal of a square = 8 cm

$$\begin{aligned} \text{So, the area of the square} &= \frac{1}{2} (\text{diagonal})^2 = \frac{1}{2} \times (8 \text{ cm})^2 \\ &= \frac{1}{2} \times 64 \text{ cm}^2 = \mathbf{32 \text{ cm}^2} \end{aligned}$$

b. Diagonal of a square = 14 cm

$$\begin{aligned} \text{So, the area of the square} &= \frac{1}{2} (\text{diagonal})^2 = \frac{1}{2} \times (14 \text{ cm})^2 \\ &= \frac{1}{2} \times 196 \text{ cm}^2 = \mathbf{98 \text{ cm}^2} \end{aligned}$$

c. Diagonal of a square = 12 cm

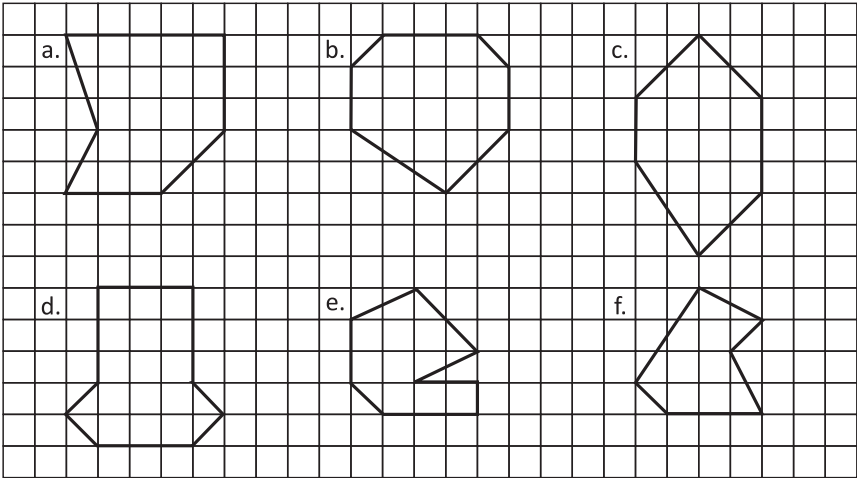
$$\begin{aligned} \text{So, the area of the square} &= \frac{1}{2} (\text{diagonal})^2 = \frac{1}{2} \times (12 \text{ cm})^2 \\ &= \frac{1}{2} \times 144 \text{ cm}^2 = \mathbf{72 \text{ cm}^2} \end{aligned}$$

d. Diagonal of a square = 9.8 cm

$$\begin{aligned} \text{So, the area of the square} &= \frac{1}{2} (\text{diagonal})^2 = \frac{1}{2} \times (9.8 \text{ cm})^2 \\ &= \frac{1}{2} \times 96.04 \text{ cm}^2 = \mathbf{48.02 \text{ cm}^2} \end{aligned}$$

Exercise-12.2

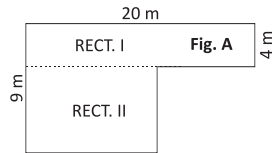
1. Assuming each square to be 1 cm^2 , find the approximate area of each figure :



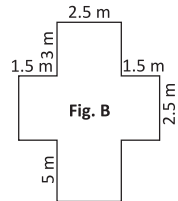
- Ans. a. Area of figure – a = $(17 + 3.5) = 20.5\text{ cm}^2$
 b. Area of figure – b = $(15 + 4) = 19\text{ cm}^2$
 c. Area of figure – c = $(14 + 5) = 19\text{ cm}^2$
 d. Area of figure – d = $(15 + 2) = 17\text{ cm}^2$
 e. Area of figure – e = $(8 + 3.5) = 11.5\text{ cm}^2$
 f. Area of figure – f = $(5 + 5) = 10\text{ cm}^2$

2. Calculate the area of these composite shapes by dividing into rectangles and finding the sum of their areas :

- Ans. a. Area of rect. I = $20\text{ m} \times 4\text{ m} = 80\text{ m}^2$
 Area of rect. II = $10\text{ m} \times 5\text{ m} = 50\text{ m}^2$
 So, the area of figure – A
 $= 80\text{ m}^2 + 50\text{ m}^2$
 $= 130\text{ m}^2$

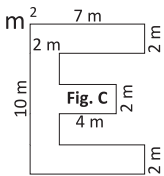


- b. Area of rect. I = $2.5\text{ m} \times 3\text{ m} = 7.5\text{ m}^2$
 Area of rect. II = $(1.5\text{ m} + 2.5\text{ m} + 1.5\text{ m}) \times 2.5\text{ m}$
 $= 5.5\text{ m} \times 2.5\text{ m}$
 $= 13.75\text{ m}^2$
 Area of rect. III = $2.5\text{ m} \times 5\text{ m} = 12.5\text{ m}^2$

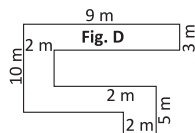


- So, the area of figure – B = $7.5\text{ m}^2 + 13.75\text{ m}^2 + 12.5\text{ m}^2$
 $= 33.75\text{ m}^2$

- c. Area of rect. I = $5\text{ m} \times 2\text{ m} = 10\text{ m}^2$
 Area of rect. II = $4\text{ m} \times 2\text{ m} = 8\text{ m}^2$
 Area of rect. III = $5\text{ m} \times 2\text{ m} = 10\text{ m}^2$
 Area of rect. IV = $10\text{ m} \times 2\text{ m} = 20\text{ m}^2$
 So, the area of figure – C = $10\text{ m}^2 + 8\text{ m}^2 + 10\text{ m}^2 + 20\text{ m}^2 = 48\text{ m}^2$



- d. Area of rect. I = $7\text{ m} \times 3\text{ m} = 21\text{ m}^2$
 Area of rect. II = $10\text{ m} \times 2\text{ m} = 20\text{ m}^2$
 Area of rect. III = $7\text{ m} \times 2\text{ m} = 14\text{ m}^2$
 Area of rect. IV = $2\text{ m} \times 3\text{ m} = 6\text{ m}^2$



So, the area of figure – D

$$= 21\text{ m}^2 + 20\text{ m}^2 + 14\text{ m}^2 + 6\text{ m}^2 = 61\text{ m}^2$$

- e. Area of rect. I = $30\text{ m} \times 20\text{ m}$

$$= 600\text{ m}^2$$

- Area of rect. II = $50\text{ m} \times 10\text{ m}$

$$= 500\text{ m}^2$$

- Area of rect. III = $10\text{ m} \times 20\text{ m}$

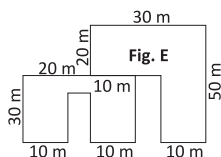
$$= 200\text{ m}^2$$

- Area of rect. IV = 200 m^2

- Area of rect. V = 200 m^2

So, the area of figure – E

$$= 600\text{ m}^2 + 500\text{ m}^2 + 200\text{ m}^2 + 200\text{ m}^2 + 200\text{ m}^2 = 1700\text{ m}^2$$



- f. Area of rect. I = $15\text{ m} \times 5\text{ m}$

$$= 75\text{ m}^2$$

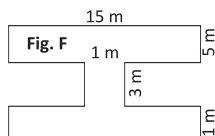
- Area of rect. II = $1\text{ m} \times 3\text{ m}$

$$= 3\text{ m}^2$$

- Area of rect. III = $15\text{ m} \times 1\text{ m}$

$$= 15\text{ m}^2$$

So, the area of figure – F = $75\text{ m}^2 + 3\text{ m}^2 + 15\text{ m}^2 = 93\text{ m}^2$



3. 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. Garden 30 cm^2
 b. Playground 20 cm^2
 c. School 65 cm^2
 d. Library 8 cm^2
 e. Cycle stand 4 cm^2
 f. Laboratory 4 cm^2
 g. Canteen 8 cm^2

MCQs

1. c 2. c 3. c 4. b 5. b 6. b

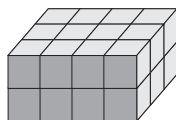


Volume

Exercise-13.1

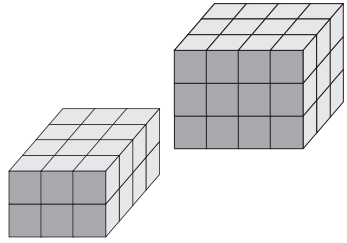
1. Find the volume of the following cuboids and cubes by counting the unit cubes of volume 1 cu cm :

- Ans. a. Volume of cuboid = $l \times b \times h$
 $= (4 \times 3 \times 2)\text{ cu. cm.}$
 $= 24\text{ cu. cm.}$



b. Volume of cuboid $= l \times b \times h$
 $= (4 \times 3 \times 3)$ cu. cm.
 $= \mathbf{36}$ cu. cm.

c. Volume of cuboid $= l \times b \times h$
 $= (3 \times 4 \times 2)$ cu. cm.
 $= \mathbf{24}$ cu. cm.



2. Find the volume of the cube whose each edge is :

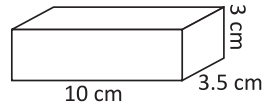
- Ans.** a. Each edge of a cube = 3 cm
 Thus, the volume of cube $= (\text{edge})^3 = (3 \text{ cm})^3 = \mathbf{27 \text{ cm}^3}$
 b. Each edge of a cube = 5 cm
 Thus, the volume of cube $= (\text{edge})^3 = (5 \text{ cm})^3 = \mathbf{125 \text{ cm}^3}$
 c. Each edge of a cube = 4 cm
 Thus, the volume of cube $= (\text{edge})^3 = (4 \text{ cm})^3 = \mathbf{64 \text{ cm}^3}$
 d. Each edge of a cube = 7 cm
 Thus, the volume of cube $= (\text{edge})^3 = (7 \text{ cm})^3 = \mathbf{343 \text{ cm}^3}$

3. Find the volume of the cuboid whose dimensions are :

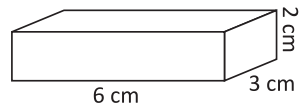
- Ans.** Dimensions of a cuboid are :
 a. Length = 5 cm, Breadth = 4 cm and Height = 3 cm.
 So, the volume of cuboid $= l \times b \times h$
 $= 5 \text{ cm} \times 4 \text{ cm} \times 3 \text{ cm} = \mathbf{60 \text{ cm}^3}$
 b. Length = 7 cm, Breadth = 6 cm and Height = 4 cm.
 So, the volume of cuboid $= l \times b \times h$
 $= 7 \text{ cm} \times 6 \text{ cm} \times 4 \text{ cm} = \mathbf{168 \text{ cm}^3}$

4. Find the volume of these solids :

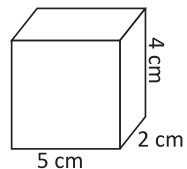
- Ans.** a. Length of solid = 10 cm
 Breadth of solid = 3.5 cm
 And, height of solid = 3 cm
 So, the volume of this solid $= l \times b \times h$
 $= 10 \text{ cm} \times 3.5 \text{ cm} \times 3 \text{ cm}$
 $= \mathbf{105 \text{ cu. cm.}}$



- b. Length of solid = 6 cm
 Breadth of solid = 3 cm
 And, height of solid = 2 cm
 So, the volume of this solid $= l \times b \times h$
 $= 6 \text{ cm} \times 3 \text{ cm} \times 2 \text{ cm}$
 $= \mathbf{36 \text{ cu. cm.}}$



- c. Length of solid = 5 cm
 Breadth of solid = 2 cm
 And, height of solid = 4 cm
 So, the volume of this solid $= l \times b \times h$
 $= 5 \text{ cm} \times 2 \text{ cm} \times 4 \text{ cm}$
 $= \mathbf{40 \text{ cu. cm.}}$



5. Complete the table :

Ans.

	$L = \frac{V}{B \times H}$	$B = \frac{V}{L \times H}$	$H = \frac{V}{L \times B}$	$V = L \times B \times H$
a.	16 cm	3.5 cm	2 cm	112 cm^3
b.	12 cm	11 cm	7 cm	924 cm^3
c.	15cm	14 cm	4 cm	840 cm^3
d.	12 cm	11 cm	6 cm	792 cm^3
e.	12 cm	3 cm	8 cm	288 cm^3
f.	9 cm	10 cm	4 cm	360 cm^3
g.	10.5 cm	3.2 cm	5 cm	168 cm^3
h.	20 cm	5.5 cm	4 cm	440 cm^3
i.	14 cm	4 cm	2.5 cm	140 cm^3

Exercise-13.2

- Each side of a cube = 15 cm 4 mm = 15.4 cm
So, the volume of the cube = $(\text{side})^3 = (15.4 \text{ cm})^3 = 3652.264 \text{ cm}^3$
- Edge of a small cube = 2.5 cm
 \therefore Volume of a small cube = $(\text{edge})^3 = (2.5 \text{ cm})^3 = 15.625 \text{ cm}^3$
Thus, the volume of 25 small cubes = $25 \times 15.625 \text{ cm}^3 = 390.625 \text{ cm}^3$
 \therefore 25 small cubes are casted by a cubical block of gold was melted.
 \therefore Volume of cubical block = Volume of 25 small cubes = 390.625 cm^3
Hence, the volume of cubical block of gold is 390.625 cm^3 .
- Each side of cubical shaped room = 25 m
And, each side of a cubical box = 2.5 cm
 \therefore Number of required boxes =
$$\begin{aligned} &= \frac{\text{Volume of room}}{\text{Volume of a box}} \\ &= \frac{25 \text{ m} \times 25 \text{ m} \times 25 \text{ m}}{2.5 \text{ cm} \times 2.5 \text{ cm} \times 2.5 \text{ cm}} \\ &= \frac{2500 \times 2500 \times 2500 \text{ cm}^3}{(2.5 \times 2.5 \times 2.5) \text{ cm}^3} \\ &= 1000 \times 1000 \times 1000 = 1000,000,000 \end{aligned}$$

Hence, 1,000,000,000 boxes can be placed in the room.

- Dimension of the big cube = 5 m
And, the dimension of the small cube = 5 cm
 \therefore Required number of small cubes =
$$\begin{aligned} &= \frac{\text{Volume of big cube}}{\text{Volume of a small cube}} \\ &= \frac{5 \text{ m} \times 5 \text{ m} \times 5 \text{ m}}{5 \text{ cm} \times 5 \text{ cm} \times 5 \text{ cm}} \\ &= \frac{(500 \times 500 \times 500) \text{ cm}^3}{(5 \times 5 \times 5) \text{ cm}^3} \\ &= 100 \times 100 \times 100 = 1,000,000 \end{aligned}$$

Hence, 1,000,000 cubes of dimensions 5 cm can be formed from the big cube of dimension 5 m.

5. Dimension of a cubical pond = $\frac{35}{8}$ m

$$\therefore \text{Volume of mud of the pond} = \frac{35}{8} \text{ m} \times \frac{35}{8} \text{ m} \times \frac{35}{8} \text{ m} = \frac{42875}{512} \text{ m}^3$$

Hence, $\frac{42875}{512}$ meter cube of mud was obtained from the pond.

6. Length of the pit = 50 m

Breadth of the pit = 35 m

And, depth of the pit = $\frac{23}{4}$ m

$$\begin{aligned} \therefore \text{Volume of the mud of pit} &= l \times b \times h \\ &= 50 \text{ m} \times 35 \text{ m} \times \frac{23}{4} \text{ m} = \frac{40250}{4} \text{ m}^3 \\ &= 10062.5 \text{ m}^3 \end{aligned}$$

Hence, the volume of mud scooped out from the pit is 10062.5 meter cube.

7. Length of water tank = 15 m

Breadth of water tank = 12.25 m

And, height of water tank = 10 m

$$\begin{aligned} \therefore \text{Volume of the water tank} &= l \times b \times h \\ &= 15 \text{ m} \times 12.25 \text{ m} \times 10 \text{ m} \\ &= 1837.5 \text{ m}^3 \end{aligned}$$

Hence, 1837.5 meter cube of water is required to fill the tank completely.

8. Volume of one small cube = 1 cm^3

$$\therefore \text{Volume of 100 small cubes} = 100 \times 1 \text{ cm}^3 = 100 \text{ cm}^3$$

\therefore 100 small cubes of equal size together to form a cuboid.

Hence, the volume of the cuboid thus formed is 100 cm^3 .

9. Length of a hall = 25 m

Breadth of the hall = 19 m

And, height of the hall = 8 m

$$\begin{aligned} \therefore \text{Volume of the hall} &= l \times b \times h \\ &= 25 \text{ m} \times 19 \text{ m} \times 8 \text{ m} = 3800 \text{ m}^3 \end{aligned}$$

Hence, the volume of air in the hall is 3800 m^3 .

10. Length of a wall = 35 m = 3500 cm

Breadth of the wall = 2 m = 200 cm

And, Height of the wall = 25 m = 2500 cm

Dimensions of a brick = 25 cm \times 20 cm \times 7 cm

$$\begin{aligned} \therefore \text{Required number of bricks} &= \frac{\text{Volume of wall}}{\text{Volume of a brick}} \\ &= \frac{3500 \text{ cm} \times 200 \text{ cm} \times 2500 \text{ cm}}{25 \text{ cm} \times 20 \text{ cm} \times 7 \text{ cm}} \\ &= 500 \times 10 \times 100 \\ &= 5,00,000 \end{aligned}$$

Hence, 5,00,000 bricks was used to make the wall.

MCQs :

1. b 2. b 3. b 4. c 5. b 6. b

NEP : Multiple Intelligence

Complete the table by finding the missing measurement :

Figure	Volume	$l = \frac{V}{b \times h}$	$b = \frac{V}{l \times h}$	$h = \frac{V}{l \times b}$
1.	300 m^3	15 m	5 m	$h = \frac{300}{15 \times 5} = 4 \text{ m}$
2.	33 m^3	5.5 m	$b = \frac{33}{5.5 \times 2} = 3 \text{ m}$	2m
3.	126 m^3	$l = \frac{126}{4.2 \times 3} = 10 \text{ m}$	4.2 m	3m
4.	85 m^3	8.5 m	2.5 m	$h = \frac{85}{8.5 \times 2.5} = 4 \text{ m}$



Simple Interest

Exercise-14

1. Find the simple interest when :

- a. Principal = ₹ 1000, Rate of Interest = 2% per annum, time = 3 yrs.

$$\begin{aligned} \text{So, simple interest} &= \frac{P \times R \times T}{100} \\ &= ₹ \frac{1000 \times 2 \times 3}{100} = ₹ 60 \end{aligned}$$

- b. Principal = ₹ 1250, Rate of Interest = 18% per annum, time = 6 months

$$\begin{aligned} \text{So, simple interest} &= \frac{P \times R \times T}{100} \\ &= ₹ \frac{1250 \times 18 \times 6}{100 \times 12} \\ &= ₹ (12.50 \times 9) = ₹ 112.50 \end{aligned}$$

- c. Principal = ₹ 3000, Rate of Interest = $4\frac{1}{2}$ % per annum, time = 2 years.

$$\begin{aligned} \text{So, simple interest} &= \frac{P \times R \times T}{100} \\ &= ₹ \frac{3000 \times 4\frac{1}{2} \times 2}{100} = ₹ \left(30 \times \frac{9}{2} \times 2 \right) = ₹ 270 \end{aligned}$$

- d. Principal = ₹ 2000, Rate of Interest = $1\frac{1}{2}$ % per annum, time = 6 months.
- $$\text{So, simple interest} = \frac{P \times R \times T}{100} = ₹ \frac{2000 \times 1\frac{1}{2} \times \frac{6}{12}}{100} = ₹ \left(20 \times \frac{3}{2} \times \frac{1}{2} \right)$$
- $$= ₹ (5 \times 3) = ₹ 15$$
- e. Principal = ₹ 2500, Rate of Interest = 2% per annum, time = 3 months
- $$\text{So, simple interest} = \frac{P \times R \times T}{100} = ₹ \frac{2500 \times 2 \times \frac{3}{12}}{100} = ₹ \left(25 \times 2 \times \frac{1}{4} \right)$$
- $$= ₹ \frac{25}{2} = ₹ 12.50$$
2. a. Principal = ₹ 1200 and interest = ₹ 340
So, the amount = Principal + interest
 $= ₹ 1200 + ₹ 340 = ₹ 1540.$
- b. Principal = ₹ 800 and interest = ₹ 120
So, the amount = Principal + interest
 $= ₹ 800 + ₹ 120 = ₹ 920.$
- c. Principal = ₹ 800 and amount = ₹ 880
So, the interest = Amount – Principal
 $= ₹ 880 - ₹ 800 = ₹ 80.$
- d. Amount = ₹ 1200 and interest = ₹ 220
So, the Principal = Amount – Interest
 $= ₹ 1200 - ₹ 220 = ₹ 980.$
3. Borrowed money (Principal) = ₹ 900
Rate of interest = 5% per annum
And, time = 2 years
- $$\therefore \text{Simple interest} = \frac{P \times R \times T}{100} = ₹ \frac{900 \times 5 \times 2}{100} = ₹ 90$$
- Now, Amount = Principal + Interest
 $= ₹ 900 + ₹ 90 = ₹ 990$
- Hence, Arvind paid ₹ 990 to his friend after 2 years.
4. Money deposits in bank (Principal) = ₹ 3600
Rate of interest = 4% per annum
And, time = $2\frac{1}{2}$ years = $\frac{5}{2}$ yrs
- $$\therefore \text{Simple interest} = \frac{P \times R \times T}{100} = ₹ \frac{3600 \times 4 \times \frac{5}{2}}{100} = ₹ (36 \times 10) = ₹ 360$$
- Now, Amount = Principal + Interest
 $= ₹ 3600 + ₹ 360 = ₹ 3960$
- Hence, Suman will get ₹ 3960 back from the bank at the end of $2\frac{1}{2}$ years.
5. Money invested by Shikha (Principal) = ₹ 10,000
Rate of interest = $6\frac{1}{2}$ % per annum = $\frac{13}{2}$ % p.a.

And, time = $3\frac{1}{2}$ years = $\frac{7}{2}$ yrs

$$\therefore \text{Simple interest} = \frac{P \times R \times T}{100} = ₹ \frac{10,000 \times \frac{13}{2} \times \frac{7}{2}}{100} = ₹ \left(100 \times \frac{91}{4}\right)$$
$$= ₹ (25 \times 91) = ₹ 2275$$

Now, Amount = Principal + Interest
= ₹ 10000 + ₹ 2275 = ₹ 12,275

Hence, Shikha will get ₹ 12,275 back from the company after $3\frac{1}{2}$ years.

6. Money deposited in a bank ((Principal) = ₹ 2,000

Rate of interest = 6% per annum

And, time = 5 years

$$\therefore \text{Simple interest} = \frac{P \times R \times T}{100} = ₹ \frac{2000 \times 6 \times 5}{100} = ₹ (20 \times 30) = ₹ 600$$

Now, Amount = Principal + Interest
= ₹ 2000 + ₹ 600 = ₹ 2600

Hence, Pinky will get ₹ 2600 back from the bank after 5 years.

7. Money invested by Chintu (Principal) = ₹ 10,000

Rate of interest = 10% per annum

And, time = 7 years 4 months = $\left(7 + \frac{4}{12}\right)$ yrs = $\frac{22}{3}$ years

$$\therefore \text{Simple interest} = \frac{P \times R \times T}{100} = \frac{₹ 10000 \times 10 \times \frac{22}{3}}{100} = ₹ \frac{22000}{3} = ₹ 7333.33$$

Now, Amount = Principal + Interest
= ₹ 10,000 + ₹ 7333.33 = ₹ 17333.33

Hence, Chintu will get ₹ 17333.33 back from the company at the end of 3 years and 4 months.

8. Money invested by Mona (Principal) = ₹ 15,000

Rate of interest = 6% per annum

And, time = 3 years and 10 months = $\left(3 + \frac{10}{12}\right)$ yrs = $\frac{23}{6}$ years

$$\therefore \text{Simple interest} = \frac{P \times R \times T}{100} = ₹ \frac{15,000 \times 6 \times \frac{23}{6}}{100}$$
$$= ₹ (150 \times 23) = ₹ 3450$$

Now, Amount = Principal + Interest
= ₹ 15,000 + ₹ 3450 = ₹ 18,450

Hence, Mona will get ₹ 18,450 back from the company at the end of 3 years and 10 months.

MCQs

1. b 2. c 3. c 4. b 5. b 6. b

NEP : The 4Cs : Core Learning Skills

Ans. Do it yourself

Exercise-15.1

1. Observe the pattern and write the next term of the following :

Ans. a. 4, 16, 64, 256 : **1024**

b. 243, 81, 27, 9 : **3**

c. $6^2 - 5^3 + 4^2 - 3^3 : + 2^2 - 1^3$

d. $3 \times 5^2, 4 \times 6^2, 5 \times 7^2, 6 \times 8^2 : 7 \times 9^2$

e. 20, 17, 13, 8 : **2**

f. $5^3 + 9 + 7^3 + 7 : + 9^3 + 5$

2. Find the next term in the following :

Ans. a. $2 + 6 + 10 + 14 : + 18$

b. $7^2 + 6^2 + 5^2 + 4^2 : + 3^2$

c. $4 + 16 + 36 + 64 : + 100$

d. 1, 4, 27, 16 : **125**

e. $10^3 \times 2^2, 8^3 \times 4^2, 6^3 \times 6^2, 4^3 \times 8^2 : 2^3 \times 10^2$

f. 7, 3, -1, -5 : **-9**

3. Identify the pattern in the following and fill in the blanks :

Ans. $9 \times 9 + 7 = 88$

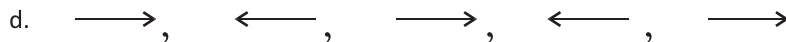
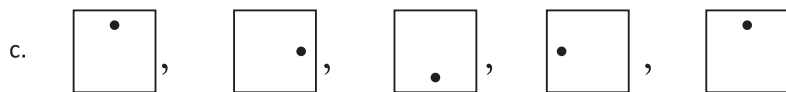
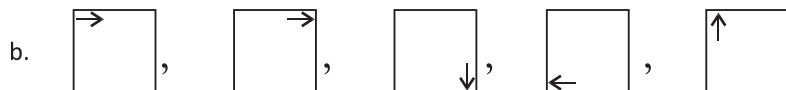
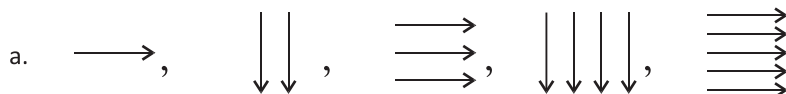
$98 \times 9 + 6 = 888$

$987 \times 9 + 5 = 8888$

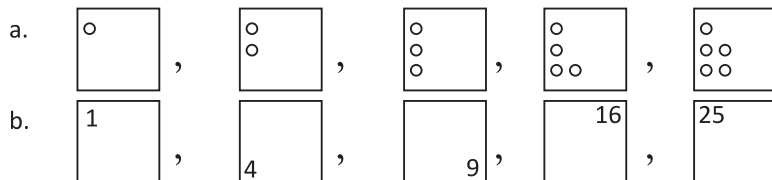
$9876 \times 9 + 4 = 88888$

Exercise-15.2

1. Draw the next figure in the following :



2. Observe the pattern and draw a next shape in the following :



- c. 7 years 4 months 16 days and 5 years 9 months and 17 days.
- d. 2 hours 20 minutes 30 seconds and 3 hours 35 minutes 40 seconds.

years	months	days
7	4	16
+5	9	17
13	2	03

hrs	min	sec
2	20	30
+3	35	40
5	56	10

3. Subtract the following :

- Ans. a. 3 hours 40 minutes from 10 hours 25 seconds.

hrs	min	sec
10	00	25
-3	40	00
6	20	25

- b. 5 years 8 months 16 days from 7 years 8 months 25 days.

years	mon	days
7	8	25
-5	8	16
2	0	09

- c. 4 hours 15 minutes from 11 hours 05 minutes.

hr	min
11	05
-4	15
6	50

- d. 3 years 4 months 12 days from 7 years 11 months 22 days.

years	mon	days
7	11	22
-3	4	12
4	7	10

4. Starting time of an office = 9:30 am
And, starting time of lunch = 1:15 pm
Closing time of lunch = 2 pm
And, closing time of office = 6 pm

hr	min
3	45
+4	00
7	45

\therefore 9:30 am $\xrightarrow{3 \text{ hrs}}$ 12:30 pm $\xrightarrow{45 \text{ mins}}$ 1:15 pm

And, 2:00 pm $\xrightarrow{4 \text{ hrs}}$ 6:00 pm

Hence, the working time of office = 3 hrs 45 mins + 4 hrs
= 7 hours 45 minutes.

5. Starting time of bus from Delhi = on Monday at 14:30 hours
And, reaching time of bus to Kanyakumari = 20:45 hours

hr	min
24	00
24	00
+6	15
54	15

\therefore Monday $\xrightarrow{24 \text{ hrs}}$ Tuesday $\xrightarrow{24 \text{ hrs}}$ Wednesday

And, 14:30 hours $\xrightarrow{6 \text{ hrs}}$ 20:30 hours $\xrightarrow{15 \text{ mins}}$ 20:45 hours

Hence, the total time taken by bus from Delhi to Kanyakumari
= 24 hrs + 24 hrs + 6 hrs 15 mins
= 54 hours 15 minutes.

Exercise-16.2

1. Here is a section of a Railway Time Table for a train which leaves Delhi and goes to Amritsar. Study the table and answer the questions which follow :

- Ans. a. The total distance travelled from Delhi to Amritsar is **516** km.
b. The distance from Ludhiana to Amritsar is **136** km.

- c. Stops at each station are as follows : Delhi **35 min.**, Panipat **10 min.**, Ambala **10 min.**, Ludhiana **20 min.**, Jalandhar **5 min.**
- d. The time between the departure from Delhi and the arrival at Amritsar is **8 hours 20 minutes.**
- e. The time between the arrival at Ambala and departure from Jalandhar is **4 hours 5 minutes.**
- f. The total time taken for stops at all the stations is **1 hr 20 mins.**
- g. The total travelling time excluding time for stops is **7 hrs 35 mins.**

2. Using the bus time table given above, answer the following questions :

- Ans.**
- a. The bus leaving from Delhi for Dosha leaves from platform number **18.**
 - b. The fare from Delhi to Bikaner for one person is ₹ **307.00.**
 - c. The distance from Delhi to Makrana is **389 km.**
 - d. The bus leaves Delhi at **20:30 hrs** and arrives at Sikar at **3:15 hrs.**
 - e. The bus which leaves Delhi at **10:30 hrs** reaches Ganganagar at 19:15 hours.
 - f. The journey to Alwar takes **3 hours 45 minutes.**
 - g. The bus which leaves from platform number 06 goes to **kota.**

MCQs

- 1. c 2. b 3. b 4. b 5. b 6. c**

NEP : Computational and Analytical Thinking

Do it yourself



Speed, Distance and Time

Exercise-17

1. Find speed, when :

- a. Distance = 75km, time = 3 hours
So, Speed = $\frac{\text{Distance}}{\text{Time}} = \frac{75 \text{ km}}{3 \text{ hrs}} = \mathbf{25 \text{ km/hr}}$
- b. Distance = 120 km, time = 4 hours
So, Speed = $\frac{\text{Distance}}{\text{Time}} = \frac{120 \text{ km}}{4 \text{ hrs}} = \mathbf{30 \text{ km/hr}}$
- c. Distance = 300 km, time = 15 hours
So, Speed = $\frac{\text{Distance}}{\text{Time}} = \frac{300 \text{ km}}{15 \text{ hrs}} = \mathbf{20 \text{ km/hr}}$
- d. Distance = 200 km, time = 5 hours
So, Speed = $\frac{\text{Distance}}{\text{Time}} = \frac{200 \text{ km}}{5 \text{ hrs}} = \mathbf{40 \text{ km/hr}}$
- e. Distance = 225km, time = 3 hours
So, Speed = $\frac{\text{Distance}}{\text{Time}} = \frac{225 \text{ km}}{3 \text{ hrs}} = \mathbf{75 \text{ km/hr}}$

f. Distance = 500 m, time = 25 minutes

$$\begin{aligned}\text{So, Speed} &= \frac{\text{Distance}}{\text{Time}} = \frac{500 \text{ m}}{25 \text{ minutes}} \\ &= \mathbf{20 \text{ m/min}} \text{ or } \frac{20 \times 60}{1000} \text{ km/hr} = \mathbf{1.2 \text{ km/hr}}\end{aligned}$$

2. Average speed of train = 70 km/hours

Total distance for travel = 2800 kms

$$\therefore \text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\therefore \text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{2800 \text{ km}}{70 \text{ km/hr}} = 40 \text{ hours}$$

Hence, the train will take 40 hours to travel 2800 kms.

3. The speed of a cyclist = 175 metre per minutes.

And, total distance for cycling = 2.0 kilometres

$$\therefore \text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\begin{aligned}\therefore \text{Time} &= \frac{\text{Distance}}{\text{Speed}} = \frac{2000 \text{ metre}}{175 \text{ metre/minute}} \\ &= \frac{80}{7} \text{ min} = 11\frac{3}{7} \text{ minutes} = 11 \text{ min} + \frac{3 \times 60}{7} \text{ secs} \\ &= 11 \text{ min } 26 \text{ secs}\end{aligned}$$

Hence, the cyclist take 11 minutes and 26 seconds to run 2.0 kilometres of distance.

4. Vaibhav travels = 6.2 km

And, time taken by Vaibhav = 6 minutes

$$\begin{aligned}\therefore \text{Speed} &= \frac{\text{Distance}}{\text{Time}} = \frac{6.2 \text{ km}}{\left(\frac{6}{60}\right) \text{ hours}} \\ &= \left(\frac{6.2 \times 60}{6}\right) \text{ km/hr} = 62 \text{ km/hr}\end{aligned}$$

Hence, the speed of Vaibhav's motorcycle is 62 km/hour.

5. Speed of car = 50 km/hour

And, time taken by car = 3 hours

$$\therefore \text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\begin{aligned}\therefore \text{Distance} &= \text{Speed} \times \text{Time} \\ &= 50 \text{ km/hr} \times 3 \text{ hr} = 150 \text{ kms}\end{aligned}$$

Hence, Suman travelled 150 kms in 3 hours by the car.

6. Speed of a train = 90 km/hour

And, time taken by train = $3\frac{1}{2}$ hours

$$\therefore \text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\begin{aligned} \therefore \text{Distance} &= \text{Speed} \times \text{Time} = 90 \text{ km/hr} \times 3\frac{1}{2} \text{ hours} \\ &= \left(90 \times \frac{7}{2}\right) \text{ km} = 315 \text{ kms} \end{aligned}$$

Hence, the train will cover 315 km of distance in $3\frac{1}{2}$ hours.

7. Distance travelled by an Aeroplane = 1200 km

And, time taken by Aeroplane = 2 hours

$$\therefore \text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{1200 \text{ km}}{2 \text{ hours}} = 600 \text{ km/hour}$$

Hence, the speed of the aeroplane is 600 km/hr.

8. The speed of a scooter = 25 km/hr = $\frac{25 \times 1000 \text{ meter}}{60 \text{ minute}}$

$$= \frac{1250}{3} = 416\frac{2}{3} \text{ meter per minute.}$$

9. The speed of a car = 55 km/hour

And, distance covered by car = 120 km

$$\therefore \text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\begin{aligned} \therefore \text{Time} &= \frac{\text{Distance}}{\text{Speed}} = \frac{120 \text{ km}}{55 \text{ km/hour}} = \left(\frac{24}{11}\right) \text{ hours} = 2\frac{2}{11} \text{ hours} \\ &= 2 \text{ hours} + \frac{2 \times 60}{11} \text{ mins} = 2 \text{ hrs } 11 \text{ mins.} \end{aligned}$$

Hence, the car will take 2 hrs 11 mins to cover 120 km of distance.

10. Distance of station from Nishu's location = 25 km

And, the speed of Nishu's cycle = 10 km/hour

$$\therefore \text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\therefore \text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{25 \text{ km}}{10 \text{ km/hour}} = 2.5 \text{ hours}$$

Hence, Nishu will take $2\frac{1}{2}$ hours to reach the station.

11. Total distance has to cover by car = 300 km

And, time for cover the distance = 5 hours

Speed of car for the first three hours = 60 km/hour

$$\therefore \text{Distance travelled by car in first three hours} = 60 \times 3 = 180 \text{ km}$$

Now, remaining distance = 300 km – 180 km = 120 km

And, remaining time = 5 hrs – 3 hrs = 2 hrs

$$\therefore \text{required speed} = \frac{\text{Remaining distance}}{\text{Remaining time}} = \frac{120 \text{ km}}{2 \text{ hrs}} = 60 \text{ km/hr}$$

Hence, the speed of the car after first three hours is 60 km/hr to reach the destination in the desired time.

12. Distance travelled by first car = 300 km

And, time taken by car = 5 hours

$$\therefore \text{Speed of first car} = \frac{\text{Distance}}{\text{Time}} = \frac{300 \text{ km}}{5 \text{ hrs}} = 60 \text{ km/hr}$$

\therefore Speed of second car is 10 km/hr less than the first car.

$$\therefore \text{Speed of second car} = 60 \text{ km/hr} - 10 \text{ km/hr} = 50 \text{ km/hr}$$

$$\text{Now, time taken by second car} = \frac{\text{Distance}}{\text{Speed}} = \frac{300 \text{ km}}{50 \text{ km/hr}} = 6 \text{ hours}$$

Hence, the second car will take 1 hour more than the first car taken the same distance.

13. A bus take time to cover a distance of 20 metre = 1 seconds

$$\begin{aligned} \text{So, the speed of the bus} &= \frac{\text{Distance}}{\text{Time}} = \frac{20 \text{ metre}}{1 \text{ second}} = \frac{\left(\frac{20}{1000}\right) \text{ km}}{\left(\frac{1}{60 \times 60}\right) \text{ hours}} \\ &= \left(\frac{20 \times 60 \times 60}{1000}\right) \text{ km/hr} = 72 \text{ km/hour.} \end{aligned}$$

14. Speed of a bus = 45 km/hour

And, time taken by bus = 14 hours

$$\therefore \text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

$$\therefore \text{Distance} = \text{Speed} \times \text{Time} \\ = 45 \text{ km/hr} \times 14 \text{ hr} = 630 \text{ km}$$

Hence, the bus covers 630 km of distance in 14 hours.

MCQs

1. b 2. c 3. a 4. b 5. b

NEP : SDGs for Qualitative Education

Look at the table and calculate :

a. $(20 + 5000 + 750 + 500) \text{ kg} \times 3 = 6270 \text{ kg} \times 3 = \mathbf{18,810 \text{ kg}}$

b. $(25 \times 5) \text{ km} = \mathbf{125 \text{ kms}}$

c. $(48 \div 12) \text{ hr} = \mathbf{4 \text{ hours}}$

Activity :

Do it yourself.



Pictorial Representation of Data

Exercise-18.1

1. Answer the following questions :

- State B has maximum number of educated males.
- State B has minimum number of educated females.
- State C has minimum number of educated males.

2. a. The production of rice was below 760 quintal in year 2018, 2020 and 2021.

- b. The production of wheat was more than 1000 quintal in years 2018, 2019 and 2022.
- c. The total production is maximum in year 2022.
- d. The production of wheat in year 2022 is 1200 quintals and production of rice in year 2019 is 800 quintals.
3. The population of India in six different censuses is given below in nearest crores :

Years	Population of India
1951	
1961	
1971	
1981	
1991	
2001	







Scale : = 4 crore population

Exercise-18.2

1. Record made by shopkeeper is given below :

Cold Drinks	Tally Marks	Frequency
Limca		16
Coke		12
Pepsi		13
Mirinda		22
Maaza		20
Thums-up		11
7-up		11

2. Use the data below to build a table using tally marks to find the number of different shapes.

Figure	Tally Marks	Frequency
		8
		14
		5
		10
		12
		9

3. Answer the following questions :

- There are 50 students in Class-V.
- Class-II has minimum number of students.
- Class-V has maximum number of students.
- Class-III and Class-IV have same number of students.
- The total number of students in the school = $50 + 40 + 40 + 30 + 35 = 195$ students.

MCQs

1. c 2. c 3. b

NEP : Development of Traditional Knowledge

President	From-to	Number of years
Dr Rajendra Prasad (RP)	1950-1962	12
Dr S. Radhakrishnan (SR)	1962-1967	5
Dr Zakir Husain (ZH)	1967-1969	
Shri V.V. Giri (VVG)	1969-1974	
DR Fakhruddin Ali Ahmed (FAA)	1974-1977	

Answer the following questions :

- Dr Rajendra Prasad was the longest-serving president.
- Dr Zakir Husain had the shortest term.
- Dr. S. Radhakrishnan and Shri V.V. Giri served for the same number of years. They served 5-5 years each as president.
- The first five presidents of India served 27 years in all.

