Mathematics Book 4

Contents

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Unit 1

Whole Numbers

Exercise 1.1

1 ***Write the Standard numerals equivalent to the following Roman numerals.***

Roman Numerals	Standard Numerals	Roman Numerals	Standard Numerals
XXX	30	XXIX	29
XXVI	26	XVII	17
XIV	14	XXXVIII	38
XX	20	XXV	25

2 ***Write the Roman numerals equivalent to the following standard numerals.***

(1) 30 — XXX

(2) 20 — XX

(3) 35 — XXXV

(4) 39 — XXXIX

(5) 38 — XXXVIII

(6) 13 — XIII

(7) 25 — XXV

(8) 18 — XVIII

(9) 29 — XXIX

Exercise 1.2

1 ***Write the place value of the encircled digit in each number.***

1. 8 (6) 4 2 4 9 7 — 600000

2. 3 5 (4) 1 9 3 2 — 40000

3. 9 8 (7) 6 4 5 0 — 70000

4.	(1) 8 9 6 5 3 2	1000000
5.	2 0 (4) 2 2 0 2	40000

2 Write the following in numerals.

1.	Twenty lac, thirty-five thousand, four hundred and ninety-nine.	20,35,499
2.	Seventy-nine lac, one thousand, six hundred and fifty-four.	79,01,654
3.	Thirty-two lac, five thousand and eighty-two.	20,35,499

3 Write the following numerals in words.

1.	9,269,951	Nine million, two hundred and sixty-nine thousand, nine hundred and fifty-one.
2.	6,254,996	Six million, two hundred and fifty-four thousand, nine hundred and ninety six.
3.	3,548,260	Three million, five hundred and fourty-eight thousand, two hundred and sixty.

4 Write the following in numerals.

1.	Five million, fifty thousand, three hundred and fifty-six.	5,050,356
2.	One million, seven thousand, one hundred and three.	1,007,103

5 Put commas according to the Pakistani place value system.

1.	8907	8,907	2.	69084	69,084
3.	247092	2,47,092	4.	2697421	26,97,421

6 Put commas according to the International place value system.

1.	5021858	5,021,858	2.	508742	508,742
3.	9005444	9,005,444	4.	9080675	9,080,675

The smallest 8-digit number 10000000 will be represented on International place value chart as:

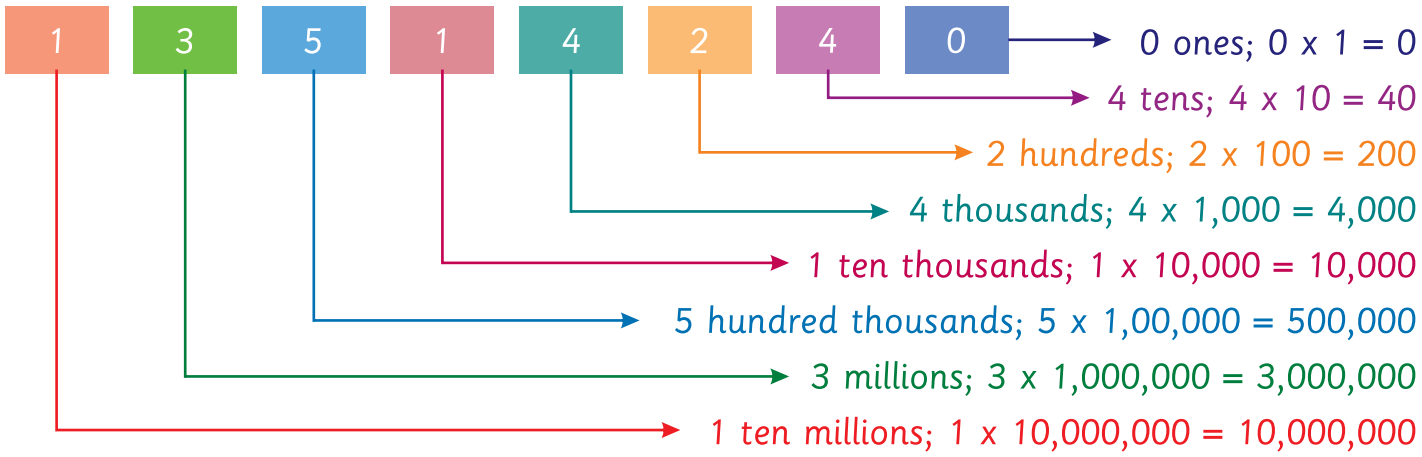
Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
1	0	0	0	0	0	0	0

The standard form, word form and expanded form of 8-digit number 13514240 will be represented in International place value system as:

Standard Form	13,514,240
Word Form	Thirteen million, five hundred and fourteen thousand, two hundred and forty.

Expanded Form

First, we show the place value of each digit of 13514240.



Thus, expanded form of 13,514,240 is:

13,514,240 = 10,000,000 + 3,000,000 + 500,000 + 10,000 + 4,000 + 200 + 40 + 0

Exercise 1.3

1 **Fill the place value charts then put commas at the correct places according to Pakistani place value system to change in standard form.**

1. Nine crore, forty-three lac, seventy-three thousand, six hundred and ninety.

Crores	Ten Lacs	Lacs	Ten Thousands	Thousands	Hundreds	Tens	Ones
9	4	3	7	3	6	9	0

Standard Form: 9,43,73,690

2. Five crore, seven lac, five thousand and thirty-five.

Crores	Ten Lacs	Lacs	Ten Thousands	Thousands	Hundreds	Tens	Ones
5	0	7	0	5	0	3	5

Standard Form: 5,07,05,035

2 Put commas for the following numbers according to the International place value system.

1. 9870	9,870	**2.** 48356	48,356
3. 769845	769,845	**4.** 900865	900,865
5. 1294039	1,294,039	**6.** 28103812	28,103,812
7. 40600328	40,600,328	**8.** 80043276	80,043,276

3 Put commas and write the number names of the following numbers both in the Pakistani system and the International place value system.

3,69,75,032 **Pakistani System**
Three crore, sixty-nine lac, seventy-five thousand and thirty-two.

36,975,032 **International System**
Thirty-six million, nine hundred and seventy-five thousand and thirty-two.

1.

8 7 6 0 0 9 4 2	8,76,00,942
xxxxxx	

8 7 6 0 0 9 4 2	87,600,942

2.

5 6 6 0 8 0 4 3	5,66,08,043
5 6 6 0 8 0 4 3	56,608,043

3.

9 3 0 4 0 5 3 2	9,30,40,532
9 3 0 4 0 5 3 2	93,040,532

4.

6 8 0 0 7 3 3 3	6,80,07,333
6 8 0 0 7 3 3 3	68,007,333

5.

5 4 0 5 7 2 5	54,05,725
5 4 0 5 7 2 5	5,405,725

6.

7 9 1 2 1 9 5	79,12,195

7 9 1 2 1 9 5	7,912,195

Comparing Numbers

Comparison of numbers tells us the difference between them. By comparing numbers we decide either one number is less than, greater than or equal to another number.
Each number is greater than the number before it and smaller than the number next to it.
While comparing two numbers we follow these steps:

- compare the number of digits in two numbers.
- compare digits in the same place values starting from the left side.

For example to check which number is smaller between 289345 and 298345, we proceed as:

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
2	8	9	3	4	5

Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
2	9	8	3	4	5

H Th	T Th	Th	H	T	O
2	8	9	3	4	5

and

H Th	T Th	Th	H	T	O
2	9	8	3	4	5

Both numbers have six digits.

H Th	T Th	Th	H	T	O
2	8	9	3	4	5

There is 8 in ten thousands place.

H Th	T Th	Th	H	T	O
2	9	8	3	4	5

There is 9 in ten thousands place.

Therefore, 289,345 < 298,345.

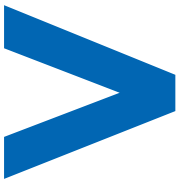
Exercise 1.4

1 **Circle the greatest number and tick (✓) the smallest number in each of the following numbers.**

1.	40508	29648✓	(98312991)	7560804
2.	98023	(98901)	92456	21544✓
3.	900580✓	554321	743431	(21893331)
4.	112847✓	(5122342)	311999	133402

2 **Compare the following numbers by using symbols "<", ">" or "=".**

1.	19540	>	18540
2.	84640	<	84730
3.	233928	=	233928
4.	426561	<	436691
5.	125998	<	128561
6.	998684	=	998684
7.	3004532	>	820089
8.	10000235	<	53078700
9.	543024	<	7453102
10.	10010018	<	10012051



Greater than

Smaller than

Equal to

Ascending and Descending Order

Ascending means from the smallest to the largest and descending means from the largest to the smallest. Thus, ascending order means to arrange the given numbers from the smallest to the largest number and descending order means to arrange the given numbers from the greatest to the smallest number.

For example, the ascending order of 79245, 912162, 8745, 78262901 is:
8745, 79245, 912162, 78262901
Similarly, the descending order of above numbers is:
78262901, 912162, 79245, 8745

Exercise 1.5

1 Arrange the given numbers in ascending order.

1.

74622	842665	6362627	54226
54226	74622	842665	6362627

2.

5322159	68799072	621009	2565763
621009	2565763	5322159	68799072

2 Arrange the given numbers in descending order.

1.

714623	8446325	3711184	5082222
8446325	5082222	3711184	714623

2.

3435436	23766637	9680101	734222
23766637	9680101	3435436	734222

Review Exercise 1

1 Tick (✓) the correct answer in the following multiple choice questions (mcqs).

1. *The smallest 1-digit whole number is:*

a 1 (b) 0 c 9 d 2

2. *The greatest 7-digit number is:*

a 9990913 b 1000000 (c) 9999999 d 99999999

3. 1 million = _____

(a) 5 lac (b) 10 lac (c) 1 crore (d) 1 lac

4. In natural numbers, the successor of 1 is:

(a) 0 (b) 2 (c) 12 (d) 10

5. The ascending order of 1, 9, 0 and 3 is:

(a) 0, 9, 3, 1 (b) 1, 9, 3, 0 (c) 0, 1, 3, 9 (d) 9, 3, 1, 0

6. 3400578 _____ 1000001

(a) < (b) = (c) > (d) > and <

7. The standard form of 2572924 in Pakistani place value system is:

(a) 25,72,92,4 (b) 25,72,924 (c) 25,729,24 (d) 2,572,924

8. In 74572, the place value of 5 is:

(a) 50 (b) 500 (c) 572 (d) 502

9. The standard form of 27873053 in International place value system is:

(a) 27,873,053 (b) 27,87,30,53 (c) 2,78,73,053 (d) 27,8,73,053

2 Write short answers to the following questions.

1. What are natural numbers?

Ans The numbers 1,2,3..... which are used for counting are called natural numbers.

2. What is meant by whole numbers?

Ans The natural numbers along with 0 are called whole numbers.

3. Name the two place value systems.

Ans The two place value systems are:

1. Pakistani Place Value System **2.** International Place Value System

4. *Write the signs which are used to compare two numbers.*

Ans **>**(*greater than*), **<**(*smaller than*) *and* **=**(*equal to*) *are signs to compare the numbers.*

5. *What is ascending order of numbers?*

Ans *Ascending order means to arrange the given numbers from the smallest to the largest number.*

6. *Define the descending order of numbers.*

Ans *Descending order of numbers mean to arrange the given numbers from greatest to smallest number.*

Unit 2

Addition

Exercise 2.1

Add the following numbers.

(1) 836510 + 31215

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

(2) 583142 + 13413

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

(3) 751234 + 135644

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

(4) 123455 + 852402

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

(5) 521156 + 200142

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

(6) 122139 + 324120

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

Exercise 2.2

Verify the commutative property of addition for the following numbers.

1. 67241 and 58321

$$\begin{array}{r} 67241 \\ +\ 58321 \\ \hline 125562 \end{array} \qquad \begin{array}{r} 67241 \\ +\ 58321 \\ \hline 125562 \end{array}$$

The sum of 67241 and 58321 or 58321 and 67241, remains same. Thus, commutative property of addition is verified.

2. 61249 and 37828

$$\begin{array}{r} {\scriptstyle (1)\ \ (1)} \\ 61249 \\ +\ 37828 \\ \hline 99077 \end{array} \qquad \begin{array}{r} {\scriptstyle (1)\ \ (1)} \\ 37828 \\ +\ 61249 \\ \hline 99077 \end{array}$$

The sum of 61249 and 37828 or 37828 and 61249, remains same. Thus, commutative property of addition is verified.

3. 345633 and 672321

$$\begin{array}{r} {\scriptstyle (1)\ \ (1)} \\ 345633 \\ +\ 672321 \\ \hline 1017954 \end{array} \qquad \begin{array}{r} {\scriptstyle (1)\ \ (1)} \\ 48341 \\ +\ 87124 \\ \hline 135465 \end{array}$$

The sum of 61249 and 37828 or 37828 and 61249, remains same. Thus, commutative property of addition is verified.

4. 87124 and 48341

$$\begin{array}{r} \overset{1}{8}\,7\,1\,2\,4 \\ +\ 4\,8\,3\,4\,1 \\ \hline 1\,3\,5\,4\,6\,5 \end{array} \qquad \begin{array}{r} \overset{1}{4}\,8\,3\,4\,1 \\ +\ 8\,7\,1\,2\,4 \\ \hline 1\,3\,5\,4\,6\,5 \end{array}$$

The sum of 87124 and 48341 or 48341 and 87124, remains same. Thus, commutative property of addition is verified.

5. 513475 and 504523

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

Hence commutative property of addition is verified.

6. 543942 and 812937

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

Hence commutative property of addition is verified.

Exercise 2.3

Verify the associative property of addition for the following numbers.

(1) 78421, 20012 and 34134

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

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

Now add 98433 and 34134

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

Now add 54146 and 78421

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

(7842 + 20012) + 34134 = 132567

78421 + (20012 + 34134) = 132567

Hence associative property of addition is verified.

(2) 34134, 43322 and 55111

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

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

Now add

Now add

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

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

(34134 + 43322) + 55111 = 132567

34134 + (43322 + 55111) = 132567

(3) 14463, 53162 and 71005

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

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

Now add

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

Now add

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

(14463 + 53162) + 71005 = 138630

14463 + (53162 + 71005) = 138630

(4) 144625, 620413 and 621201

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

		6	2	0	4	1	3
+		6	2	1	2	0	1
	1	2	4	1	6	1	4

Now add

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

Now add

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

(144625 + 620413) + 621201 = 1386239

14463 + (53162 + 71005) = 138630

(5) 144625, 620413 and 621201

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

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

Now add

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

(448492 + 331259) + 225839 = 1005590

Now add

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

448492 + (331259 + 225839) = 1005590

(5) 448492, 331259 and 225839

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

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

Now add

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

(531259 + 227839) + 468492 = 1227590

Now add

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

531259 + (227839 + 468492) = 1227590

Exercise 2.4

Solve the following word problems.

1. One project required 45033 trucks while another project required 12780 trucks. How many trucks are required to complete both projects?

one project required trucks	=	45033
another project required trucks	=	+ 12780
Total required trucks	=	57813

2. A factory produced 448197 "A" quality bats and 430831 "B" quality bats. How many bats did it produce altogether?

'A' quality bats	=	448197
'B' quality bats	=	+ 430831
Total bats produced	=	879028

3. The number of people who visited the Lahore museum in 2018 was 375460 and in 2019 the figure was 344531. How many people did visit the museum in two years?

number of visitors in 2018	=	375460
number of visitors in 2019	=	+ 344531
Total visitors in two years	=	719991

4. A company spent 456876 rupees in January and 406341 rupees in February on advertisements. How many rupees did the company spend in all?

Rupees spent in Januray	=	456876
Rupees spent in February	=	+ 406341
Total spent rupees	=	863217

5. A company purchased a car for Rs. 875300 and a van for Rs. 525094. How much did the company spend on both vehicles?

Car purchase in rupees	=	875300
Van purchase in rupees	=	+ 525094
Total spend on both	=	1400394

Review Exercise 2

1 Tick (✓) the correct answer in the following multiple choice questions (mcqs).

1. The sum of 100121 and 2521 is:

(a) 102624 (b) 102642 (c) 120642 (d) 102462

2. In commutative property of addition, we need _____ numbers.

(a) two (b) three (c) four (d) five

3. If 2572 and 1005 are two whole numbers then according to commutative property of addition:

(a) 2572 = 1005 (b) 2572 > 1005

(c) 2572 + 1005 = 1005 + 2572 (d) 1005 < 2572

4. To verify associative property of addition, we need _____ numbers.

(a) two (b) three (c) four (d) five

5. The sum of 101, 10 and 111 is:

(a) 122 (b) 212 (c) 221 (d) 222

2 Write short answers to the following questions.

1. Define commutative property of addition.

Ans Changing the order of two numbers in addition does not affect their sum, this is called commutative property of addition.

2. What is associative property of addition?

Ans When three whole numbers are added by grouping any two numbers first and then the remaining third number, the total sun remain same in each case. This is called associative property of addition.

3. *Verify commutative property of addition for 123 and 321.*

Ans

123	321
+ 321	+ 123
444	444

The sum of 123 and 321 or 321 and 123 are same. Thus the commutative property of addition is verified.

4. *Find the sum of 2145 and 111011.*

Ans *2145 + 111011*

$$\begin{array}{r} 111011 \\ +\ 2145 \\ \hline 113156 \end{array}$$

5. *Add 20005 and 100054.*

$$\begin{array}{r} 20005 \\ +100054 \\ \hline 120059 \end{array}$$

Unit 3

Subtraction

Exercise 3.1

Subtract the following numbers.

1. 98432 – 61211

	9	8	4	3	2
–	6	1	2	1	1
	3	7	2	2	1

2. 653549 – 43232

	6	5	3	5	4	9
–		4	3	2	3	3
	6	1	0	3	1	7

3. 654112 – 397223

	⑤	⑭	⑬	⑩	⑩	①
	~~6~~	~~5~~	~~4~~	~~1~~	~~1~~	2
–	3	9	7	2	2	3
	2	5	6	8	8	9

4. 881355 – 398759

	7	⑰	⑩	⑫	⑭	①
	~~8~~	~~8~~	~~1~~	~~3~~	~~5~~	5
–	3	9	8	7	5	9
	4	8	2	5	9	6

5. 923121 – 765438

	⑤	⑭	⑬	⑩	⑩	①
	~~6~~	~~5~~	~~4~~	~~1~~	~~1~~	2
–	3	9	7	2	2	3
	2	5	6	8	8	9

6. 433225 – 156847

	7	⑰	⑩	⑫	⑭	①
	~~8~~	~~8~~	~~1~~	~~3~~	~~5~~	5
–	3	9	8	7	5	9
	4	8	2	5	9	6

7. 707543 – 403412

	7	0	7	5	4	3
–	4	0	3	4	1	2
	3	0	4	1	3	1

8. 436744 – 234500

	4	3	6	7	4	4
–	2	3	4	5	0	0
	2	0	2	2	4	4

9. 376819 − 175707

	3	7	6	8	1	9
−	1	7	5	7	0	7
	2	0	1	1	1	2

10. 986344 − 544230

	9	8	6	3	4	4
−	5	4	4	2	3	0
	4	4	2	1	1	4

Exercise 3.2

Solve the following word problems.

1. *The total population of men and women in a city is 742579. If there are 484014 men, find the number of women in the city.*

Total population in a city	=	742579
Population of men	=	− 484014
Number of women	=	258565

2. *The sum of two numbers is 963562. One number is 493098. Find the other number.*

Sum of two numbers	=	963562
one number	=	− 493098
other number	=	470464

3. *116452 trees were planted in the year 2015 and 245134 trees were planted in the year 2016. How many more trees were planted in 2016 than in 2015?*

Tree planted in 2016	=	2 ~~4~~ ~~5~~ ~~1~~ 34 (3 4 0 ①)
Tree planted in 2015	=	− 116452
More trees planted in 2016	=	128682

4. A shopkeeper purchased the stock of 213472 pencils. If 30066 pencils were sold, how many pencils were left?

Stock of pencils purchase	=	213472
Pencils sold	=	− 30066
Remaining pencils	=	128682

5. There were 435443 oranges in a garden. If 323211 oranges were sold, how many oranges were left?

Total oranges in a garden	=	435443
Oranges sold	=	− 323211
Oranges left	=	112232

6. Two towns have populations 759548 and 427536 respectively. Find the difference in their populations.

Population of one town	=	759548
Population of second town	=	− 427536
Difference in populations	=	332012

Review Exercise 3

1 Tick (✓) the correct answer in the following multiple choice questions (mcqs).

1. The difference of 1001 and 201 is:

a 591 (b) 800

c 781 d 1581

2. *The sum of two whole numbers is 101, if one number is 99, then the second number will be:*

(a) 1 (b) 2

(c) 3 (d) 12

3. *The difference of two whole numbers is 23, if one number is 8, then the second number is:*

(a) 31 (b) 13

(c) 23 (d) 32

4. *When we subtract 111 from 200, we get:*

(a) 88 (b) 98

(c) 79 (d) 89

2 Write short answers to the following questions.

1. *What is the difference of 111111 and 211100?*

$$\begin{array}{rcccccc} & 2 & 1 & 1 & 1 & 0 & 0 \\ - & 1 & 1 & 1 & 1 & 1 & 1 \\ \hline & & 9 & 9 & 9 & 8 & 9 \end{array}$$

2. *The sum of two numbers is 1001. Find the second number, if first number is 999.*

$$\begin{array}{rcccc} & 1 & 0 & 0 & 1 \\ - & & 9 & 9 & 9 \\ \hline & & & & 2 \end{array}$$

3. *302 is how much greater than 99?*

$$\begin{array}{rccc} & 3 & 0 & 2 \\ - & & 9 & 9 \\ \hline & 2 & 0 & 3 \end{array}$$

Unit 4

Multiplication

Exercise 4.1

Write vertically and multiply the following numbers.

(1) 6531 x 53

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

(2) 1530 x 54

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

(3) 6210 x 60

	6	2	1	0
x			6	0
	0	0	0	0
3	7	2	6	0	0
3	7	2	6	0	0

(4) 8815 x 603

	8	8	1	5	
x		6	0	3	
	2	6	4	4	5
	0	0	0	0	0
5	2	8	9	0	0	0
5	3	1	5	4	4	5

(5) 1108 x 251

	1	1	0	8
x		2	5	1
	1	1	0	8
5	5	4	0	0
2	2	1	6	0	0
2	7	8	1	0	8

(6) 9828 x 125

	9	8	2	8
x		1	2	5
	4	9	1	4	0
1	9	6	5	6	0
9	8	2	8	0	0
1	2	2	8	5	0	0

(7) 1007 x 101

	1	0	0	7	
x		1	0	1	
	1	0	0	7	
0	0	0	0	0	
1	0	0	7	0	0
1	0	1	7	0	7

(8) 42315 x 15

	4	2	3	1	5
x				1	5
2	1	1	5	7	5
4	2	3	1	5	0
6	3	4	7	2	5

(9) 56742 x 70

	5	6	7	4	2
x				7	0
	0	0	0	0	0
3	9	7	1	9	4	0
3	9	7	1	9	4	0

(10) 10151 x 31

		1	0	1	5	1
x					3	1
		1	0	1	5	1
	3	0	4	5	3	0
	3	1	4	6	8	1

(11) 63153 x 180

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

(12) 91206 x 361

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

Exercise 4.2

Solve the following word problems.

1. *If Fahad saves Rs. 5000 every month, how much will he save in 36 months?*

Fahad saves money in a month = 5000

money saves in 36 months = 5000 x 36

Savings in 36 months = 18000

		5	0	0	0
x				3	6
	3	0	0	0	0
1	5	0	0	0	0
1	8	0	0	0	0

2. *There are 80 cupboards in a library. If each cupboard holds 5500 books, find the total number of books in the library.*

Books in each cupboard = 5500

Total book in 80 cupboard = 5500 x 80

Total number of books = 440000

		5	5	0	0
x				8	0
		0	0	0	0
4	4	0	0	0	0
4	4	0	0	0	0

3. There are 3000 cartons of oranges. If each carton contains 200 oranges, how many oranges will be there altogether?

Cartons of oranges = 3000

Oranges in each carton = 200

Total oranges = 600000

$$\begin{array}{r} 3000 \\ \times \quad 200 \\ \hline 30000 \\ 150000 \\ \hline 180000 \end{array}$$

Review Exercise 4

1 Tick (✓) the correct answer in the following multiple choice questions (mcqs).

1. Multiplication is a repeated _____.

(a) subtraction (b) difference

(c) addition (d) division

2. The product of 11 and 10 is:

(a) 1110 (b) 21

(c) 1 (d) 110

3. An hour is equal to 60 minutes, 3 hours will be equal to _____ minutes.

(a) 180 (b) 90

(c) 30 (d) 120

4. There are 75 rows of trees in a garden. Each row has 100 trees. Total number of trees in the garden are _____.

(a) 7500 (b) 175

(c) 750 (d) 700

5. In 7 x 20, 11 x 5 and 18 x 7, the greatest answer is:

(a) 55 (b) 140

(c) 1520 (d) 126

2 Write short answers to the following questions.

1. Find the product of 101 and 23.

$$\begin{array}{rrrr} & 1 & 0 & 1 \\ \times & & 2 & 3 \\ \hline & 3 & 0 & 3 \\ 2 & 0 & 2 & 0 \\ \hline 2 & 3 & 2 & 3 \end{array}$$

2. Write vertically and multiply 9280 by 2030.

3. Multiply 6532 by 426.

Unit 5

Division

Exercise 5.1

Divide the following numbers and recheck your answers, too.

1. 1449 ÷ 50

```
      2 8
50 ) 1 4 4 9
   − 1 0 0
   ---------
      4 4 9
      4 0 0
   ---------
        4 9
```

28, r49

2. 5050 ÷ 36

```
     1 4 0
36 ) 5 0 5 0
   − 3 6
   ---------
     1 4 5
     1 4 4
   ---------
       1 0
```

140, r10

3. 2525 ÷ 69

```
     3 6
69 ) 2 5 2 5
   − 2 0 7
   ---------
       4 5 5
       4 1 4
   ---------
         4 1
```

36, r41

4. 9517 ÷ 25

```
       3 8
25 ) 9 5 1 7
   − 7 5
   ---------
     2 0 1
     2 0 0
   ---------
         1 7
```

380, r17

5. 8421 ÷ 47

```
     1 7 9
47 ) 8 4 2 1
   − 4 7
   -----------
       3 7 2
       3 2 9
   -----------
         4 3 1
         4 2 3
   -----------
             8
```

179, r9

6. 5807 ÷ 85

```
     6 8
85 ) 5 8 0 7
   − 5 1 0
   ---------
       7 0 7
       6 8 0
   ---------
         2 7
```

68, r27

Exercise 5.2

Solve the following word problems.

1. 30 students made 3540 gift boxes to distribute among teachers. How many boxes did each student make?

```
      1 5 4
   ________
30 ) 3 5 4 0
   − 3 0
   ________
       5 4
       5 0
   ________
         4 0
         4 0
   ________
          x
```

2. A motorbike can run 1350 km in 25 hours. How many kilometres can it run in one hour?

```
      5 4
   ________
25 ) 1 3 5 0
   − 1 2 5
   ________
       1 0 0
       1 0 0
   ________
         x
```

3. If 6578 kg of apples are packed in 23 bags equally, how many apples will each bag contain?

```
      2 8 6
   ________
23 ) 6 5 7 8
   − 4 6
   ________
       1 9 7
       1 8 4
   ________
         1 3 8
         1 3 8
   ________
           x
```

4. *If 9975 kg of dates are packed in 95 sacks equally, how many dates will each sack contain?*

$$
\begin{array}{r}
105 \\
95\overline{)9975} \\
-95 \\
\hline
475 \\
-475 \\
\hline
x
\end{array}
$$

5. *A school has a capacity of 3296 students. If there are 32 classes in school, how many students can sit in each class? Each class has equal number of students.*

$$
\begin{array}{r}
103 \\
32\overline{)3296} \\
-32 \\
\hline
96 \\
-96 \\
\hline
x
\end{array}
$$

6. *The cost of 22 books is Rs. 1650. What is the cost of each book?*

$$
\begin{array}{r}
75 \\
22\overline{)1650} \\
-154 \\
\hline
110 \\
-110 \\
\hline
x
\end{array}
$$

Review Exercise 5

1 **Tick (✓) the correct answer in the following multiple choice questions (mcqs).**

1. Division is a repeated _____.

(a) addition (b) subtraction

(c) multiplication (d) sum

2. The quotient of 15 ÷ 3 is:

(a) 15 (b) 3

(c) 5 (d) 20

3. In 100 ÷ 8, remainder is:

(a) 1 (b) 2

(c) 3 (d) 4

4. In 14772 ÷ 35, divisor is:

(a) 14572 (b) 416

(c) 35 (d) 12

5. If 3250 ÷ 75, then dividend is:

(a) 75 (b) 25

(c) 3250 (d) 43

2 **Write short answers to the following questions.**

1. Find the remainder of 37 ÷ 11.

$$\begin{array}{r} 3 \\ 11\overline{)\,3\;7} \\ -\,3\;3 \\ \hline 4 \end{array} \qquad r = 4$$

2. What is the quotient of $1111 \div 11$?

$$
\begin{array}{r|l}
 & 1\ 0\ 1 \\
\hline
11 & 1\ 1\ 1\ 1 \\
 & -1\ 1 \\
\hline
 & \quad 1\ 1 \\
 & \quad 1\ 1 \\
\hline
 & \quad\quad x
\end{array}
$$

quotient=101

3. If the price of two dozen eggs is Rs. 240. What will be the price of one egg?

$$
\begin{array}{r|l}
 & 2\ 0 \\
\hline
12 & 2\ 4\ 0 \\
 & -2\ 4 \\
\hline
 & \quad x
\end{array}
$$

The price of one egg is 20.

4. Divide 322 candies among 23 boys equally. How many candies will each boy get?

$$
\begin{array}{r|l}
 & 1\ 4 \\
\hline
23 & 3\ 2\ 2 \\
 & -2\ 3 \\
\hline
 & \quad 9\ 2 \\
 & \quad 9\ 2 \\
\hline
 & \quad\quad x
\end{array}
$$

Each boy get 14 candies.

Unit 6

Factors and Multiples

Exercise 6.1

Circle the numbers which are divisible by 2.

1. 4567	**2.** 5692	**3.** 6781	**4.** 1548

Exercise 6.2

Circle the numbers which are divisible by 3.

1. 1122

2. 93142

3. 3216

$$
\begin{array}{r}
1\,0\,7\,2 \\
3\overline{)\,3\,2\,1\,6} \\
-\,3 \\
\hline
2\,1 \\
2\,1 \\
\hline
6 \\
6 \\
\hline
0
\end{array}
$$

divisible by 3

4. 4095

$$
\begin{array}{r}
1\,3\,6\,5 \\
3\overline{)\,4\,0\,9\,5} \\
-\,3 \\
\hline
1\,0 \\
9 \\
\hline
1\,9 \\
1\,8 \\
\hline
1\,5 \\
1\,5 \\
\hline
0
\end{array}
$$

divisible by 3

Exercise 6.3

Circle the numbers which are divisible by 5.

1. 45605

$$
\begin{array}{r}
9\,1\,2\,0\,1 \\
5\overline{)\,4\,5\,6\,0\,5} \\
-\,4\,5 \\
\hline
6\,0 \\
5 \\
\hline
1\,0 \\
1\,0 \\
\hline
5 \\
5 \\
\hline
0
\end{array}
$$

divisible by 5

2. 67815

$$
\begin{array}{r}
1\,3\,5\,6\,3 \\
5\overline{)\,6\,7\,8\,1\,5} \\
-\,5 \\
\hline
1\,7 \\
1\,5 \\
\hline
2\,8 \\
2\,5 \\
\hline
3\,1 \\
3\,0 \\
\hline
1\,5 \\
1\,5 \\
\hline
0
\end{array}
$$

divisible by 5

3. 3787

$$
\begin{array}{r}
7\,5\,7 \\
5\overline{)\,3\,7\,8\,7} \\
-\,3\,5 \\
\hline
2\,8 \\
2\,5 \\
\hline
3\,7 \\
3\,5 \\
\hline
2
\end{array}
$$

divisible by 5

4. 3445

$$
\begin{array}{r}
6\,8\,9 \\
5\overline{)\,3\,4\,4\,5} \\
-\,3\,0 \\
\hline
4\,4 \\
4\,0 \\
\hline
4\,5 \\
4\,5 \\
\hline
0
\end{array}
$$

divisible by 5

5. 8904

$$
\begin{array}{r}
1\,7\,8 \\
5\overline{)\,8\,9\,0\,4} \\
-\,5 \\
\hline
3\,9 \\
3\,5 \\
\hline
4\,0 \\
4\,0 \\
\hline
0
\end{array}
$$

Not divisible by 5

6. 1706

$$
\begin{array}{r}
7\,5\,7 \\
5\overline{)\,1\,7\,0\,6} \\
-\,1\,5 \\
\hline
2\,0 \\
2\,0 \\
\hline
6 \\
5 \\
\hline
1
\end{array}
$$

Not divisible by 5

7. 1750

$$
\begin{array}{r}
3\,5\,0 \\
5\overline{)\,1\,7\,5\,0} \\
-\,1\,5 \\
\hline
2\,5 \\
2\,5 \\
\hline
0
\end{array}
$$

divisible by 5

8. 1020

$$
\begin{array}{r}
2\,0\,4 \\
5\overline{)\,1\,0\,2\,0} \\
-\,1\,0 \\
\hline
2\,0 \\
2\,0 \\
\hline
0
\end{array}
$$

divisible by 5

Exercise 6.4

1 **Circle the numbers which are divisible by 10.**

1. 2400	**2.** 77750	**3.** 5695	**4.** 2060
5. 11692	**6.** 91000	**7.** 8460	**8.** 5000

2 **Test the divisibility of the following numbers and tick (✓) the right column.**

	Number	Divisible by 2	Divisible by 3	Divisible by 5	Divisible by 10
1.	1548	✓	✓		
2.	8460	✓	✓	✓	✓
3.	3445			✓	
4.	2060	✓		✓	✓
5.	6183		✓		

Exercise 6.5

1 **Determine if the given numbers are prime (P) or composite (C).**

	Numbers	P / C		Numbers	P / C
1.	15	C	2.	95	C
3.	23	P	4.	64	C
5.	22	C	6.	67	P
7	71	P	8.	11	P

2 **Write down all the prime numbers between 1 and 50.**

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47

3 **Write down the first 5 composite numbers.**

4, 6, 8, 9, 10

Exercise 6.6

1 **Use the factorisation method to find the prime factors of the following numbers.**

1. 48

2	24
2	12
2	6
3	3
	1

48 = 2 x 2 x 2 x 2 x 3

2, 2, 2, 2, 3 are prime factors of 48

2. 100

2	100
2	50
2	25
3	5
	1

100 = 2 x 2 x 5 x 5

2, 2, 5, 5, are prime factors of 100

3. 140

2	140
2	70
5	35
7	7
	1

140 = 2 x 2 x 5 x 7

are prime factors of 140

4. 38

2	38
19	19
	1

38 = 2 x 19

2, 19 are prime factors of 38

5. 400

2	400
2	200
2	100
2	50
5	25
5	5
	1

400 = 2 x 2 x 2 x 2 x 5 x 5

2, 2, 2, 2, 5, 5, are prime factors of 400

6. 125

5	140
5	70
5	35
	1

125 = 5 x 5 x 5

5, 5, 5 are prime factors of 125

7. 104

2	104
2	52
2	26
13	13
	1

104 = 2 x 2 x 2 x 13

2, 19 are prime factors of 38

8. 150

2	400
2	200
2	100
2	50
5	25
5	5
	1

400 = 2 x 2 x 2 x 2 x 5 x 5

2, 2, 2, 2, 5, 5, are prime factors of 400

9. 96

5	140
5	70
5	35
	1

125 = 5 x 5 x 5

5, 5, 5 are prime factors of 125

10. 35

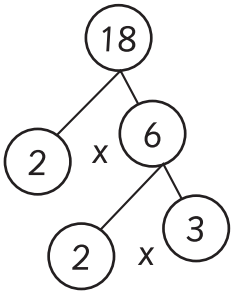
5	35
7	7
	1

35 = 5 x 7

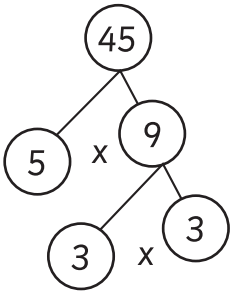
5, 7 are prime factors of 35

2 ***Use the factor tree method to find the prime factors of the following numbers.***

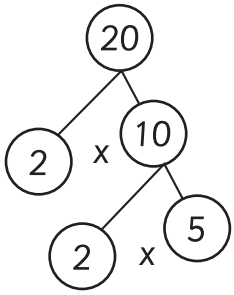
1. 18



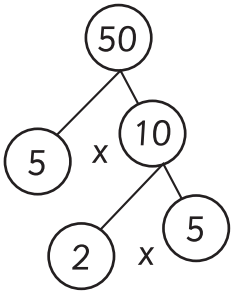
2. 45



3. 20



4. 50



Exercise 6.7

Find the common factors of the following numbers.

1. 9, 12

Factors of 9: 1 , 3 , 9

Factors of 12: 1 , 2 , 3 , 4 , 6 , 12

Common factors of 9 and 12 are 1 and 3.

2. 24, 32

Factors of 24: 1 , 2 , 3 , 4 , 6 , 8 , 12

Factors of 32: 1 , 2 , 4 , 8 , 16 , 32

Common factors of 24 and 32 are 1, 2, 4, 8.

3. 64, 80

Factors of 64: 1 , 2 , 4 , 8 , 16 , 64

Factors of 80: 1 , 2 , 4 , 5 , 8 , 10 , 16 , 80

Common factors of 64 and 80 are 1, 2, 4, 8, 16.

4. 12, 18

Factors of 12: 1 , 2 , 3 , 4 , 6 , 12

Factors of 18: 1 , 2 , 3 , 6 , 9 , 18

Common factors of 12 and 18 are 1, 2, 3, 6

5. 48, 96, 144

Factors of 48: 1 , 2 , 3 , 4 , 6 , 8 , 12 , 16 , 48

Factors of 96: 1 , 2 , 3 , 4 , 6 , 8 , 12 , 16 , 96

Factors of 144: 1 , 2 , 3 , 4 , 6 , 8 , 12 , 16

Common factors of 12 and 18 are 1, 2, 3, 6

6. 25, 75, 100

Factors of 25: 1 , 5 , 25

Factors of 75: 1 , 3 , 5 , 15 , 25 , 75

Factors of 100: 1 , 2 , 4 , 5 , 10 , 25 , 100

Common factors of 25, 75, 100 are 1, 5 and 25.

7. 10, 15, 20

Factors of 10: 1 , 2 , 5 , 10

Factors of 15: 1 , 3 , 5 , 15

Factors of 20: 1 , 2 , 4 , 5 , 10 , 20

Common factors of 25, 75, 100 are 1, 5 and 25.

8. 15, 75, 90

Factors of 15: 1 , 2 , 5 , 10

Factors of 75: 1 , 3 , 5 , 15

Factors of 90: 1 , 2 , 4 , 5 , 10 , 20

Common factors of 25, 75, 100 are 1, 5 and 25.

9. 18, 20, 24

Factors of 18: 1 , 2 , 5 , 10

Factors of 20: 1 , 3 , 5 , 15

Factors of 24: 1 , 2 , 4 , 5 , 10 , 20

Common factors of 25, 75, 100 are 1, 5 and 25.

Exercise 6.8

1 **Find the HCF of the following numbers by factor method.**

1. 24, 32

Factors of 24: 1 , 2 , 3 , 4, 6, 8, 12, 24

Factors of 32: 1 , 2 , 4 , 8, 16, 32

1, 2, 4, 8 are common factor.

The highest common factor (HCF) is 8.

2. 24, 40

Factors of 24: 1 , 2 , 3 , 4, 6, 8, 12, 24

Factors of 40: 1 , 2 , 4 , 5, 8, 10, 40

1, 2, 4, 8 are common factor.

The highest common factor (HCF) is 8.

3. 15, 25

Factors of 15: 1 , 3 , 5 , 15

Factors of 25: 1 , 5 , 25

1, 5 are common factor.

The highest common factor is 5.

4. 10, 50, 60

Factors of 10: 1 , 2 , 5 ,10

Factors of 50: 1 , 2 , 5, 10

Factors of 60: 1 , 2, 3, 4, 5, 6, 10, 12, 60

1, 2, 5, 10 are common factors.

The highest common factor is 10.

5. 15, 75, 90

Factors of 15: 1 , 3 , 5 ,15

Factors of 75: 1 , 3 , 5, 15, 75

Factors of 90: 1 , 2, 3, 4, 5, 6, 10, 15

1, 3, 5, 15 are common factors.

The highest common factor is 15.

6. 30, 42, 60

Factors of 30: 1 , 2, 3, 5, 6, 10, 15, 30

Factors of 42: 1 , 2, 3, 6, 7, 14, 42

Factors of 60: 1 , 2, 3, 4, 5, 6, 10, 12, 60

1, 2, 3, 6 are common factors.

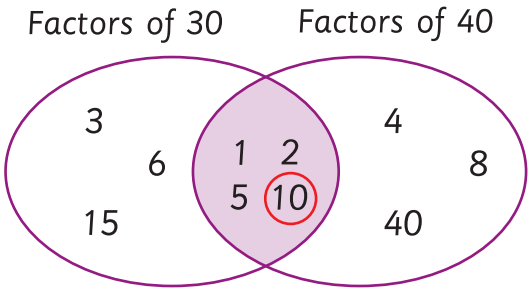
The highest common factor is 6.

2 Draw a Venn diagram and use it to find the HCF of the following numbers.

1. 30, 40

Factors of 30: 1 , 2, 3, 5, 6, 10, 15

Factors of 42: 1 , 2, 4, 5, 8, 10, 40

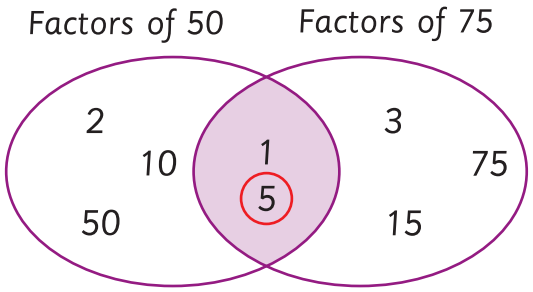


So, the HCF of 30 and 40 is 10.

2. 50, 75

Factors of 30: 1 , 2, 5, 10, 50

Factors of 42: 1 , 3, 5, 15, 75

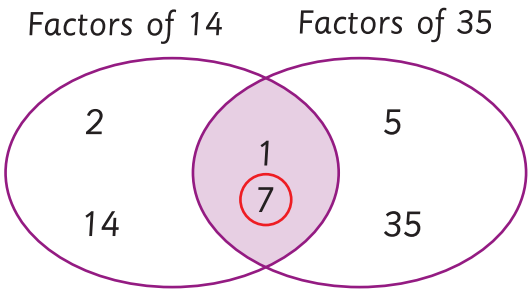


So, the HCF of 50, 75 is 5.

3. 14, 35

Factors of 14: 1 , 2, 7, 14

Factors of 35: 1 , 5, 7, 35



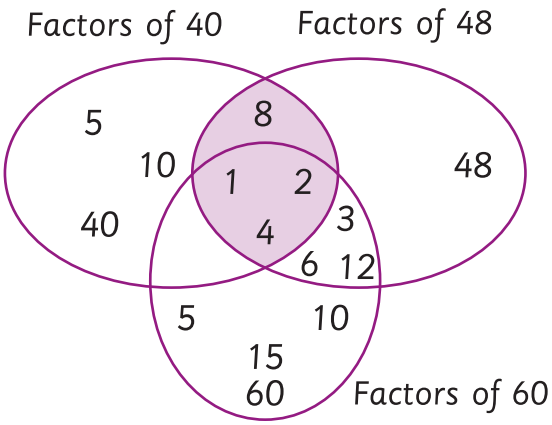
So, the HCF of 14, 35 is 7.

4. 40, 48, 60

Factors of 40: 1 , 2, 4, 5, 8, 10, 40

Factors of 48: 1 , 2, 3, 4, 6, 8, 12, 48

Factors of 60: 1 , 2, 3, 4, 5, 6, 10, 12, 15, 60

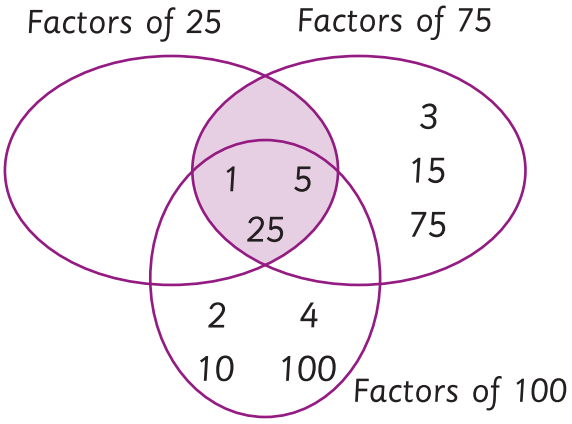


5. 25, 75, 100

Factors of 25: 1 , 5, 25

Factors of 75: 1 , 3, 5, 15, 25, 75

Factors of 100: 1 , 2, 4, 5, 10, 25, 100

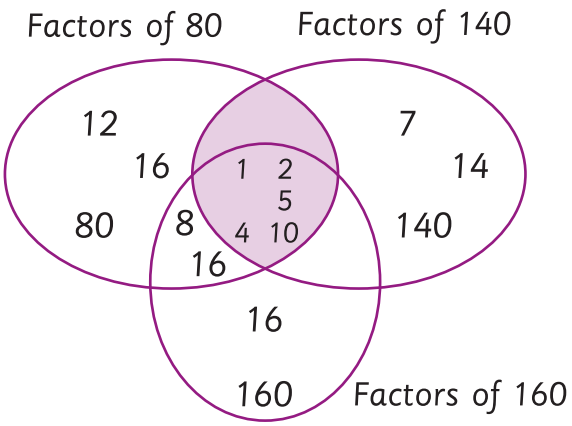


6. 80, 140, 160

Factors of 80: 1 , 2, 4, 5, 8, 10, 12, 16, 80

Factors of 140: 1 , 2, 4, 5, 7, 10, 14, 140

Factors of 160: 1 , 2, 4, 5, 8, 10, 16, 160



Exercise 6.9

Find the HCF of the following numbers by prime factorisation method.

1. 20, 48

Prime factors of 20 = 2 x 2 x 5

Prime factors of 48 = 2 x 2 x 7

HCF = 2 x 2 = 4

2	20
2	10
5	5
	1

2	48
2	14
7	7
	1

2. 20, 30, 40

Prime factors of 20 = 2 x 2 x 5

Prime factors of 30 = 2 x 3 x 5

Prime factors of 40 = 2 x 2 x 2 x 5

HCF = 2 x 5 = 10

2	20
2	10
5	5
	1

2	30
3	15
5	5
	1

2	40
2	20
2	10
5	5
	1

3. 75, 80, 100

Prime factors of 75 = 3 x 5 x 5

Prime factors of 80 = 2 x 2 x 2 x 2 x 5

Prime factors of 100 = 2 x 2 x 5 x 5

HCF = 5

2	100
2	50
5	25
5	5
	1

3	75
5	25
5	5
	1

2	80
2	40
2	20
2	10
5	5
	1

4. 9, 18

Prime factors of 9 = 3 x 3

Prime factors of 18 = 2 x 3 x 3

HCF = 3 x 3 = 9

3	9
3	3
	1

2	18
3	9
3	3
	1

5. 10, 12, 14

Prime factors of 10 = 2 x 5

Prime factors of 12 = 2 x 2 x 3

Prime factors of 14 = 2 x 7

HCF = 2

2	10
5	5
	1

2	12
2	6
3	3
	1

2	14
7	7
	1

6. 15, 50

Prime factors of 5 = 3 x 5

Prime factors of 50 = 2 x 5 x 5

HCF = 5

3	15
5	5
	1

2	50
5	25
5	5
	1

7. 14, 28

Prime factors of 14 = 2 x 7

Prime factors of 28 = 2 x 2 x 7

HCF = 2 x 7 = 14

2	14
7	7
	1

2	28
2	14
7	7
	1

8. 38, 40, 100

Prime factors of 38 = 2 x 19

Prime factors of 40 = 2 x 2 x 2 x 5

Prime factors of 100 = 2 x 2 x 5 x 5

HCF = 2

2	38
19	19
	1

2	40
2	20
2	10
5	5
	1

2	100
2	50
5	25
5	5
	1

9. 190, 380, 95

Prime factors of 190 = 2 x 5 x 13

Prime factors of 380 = 2 x 2 x 5 x 19

Prime factors of 95 = 5 x 19

HCF = 5

2	190
5	65
13	13
	1

2	380
2	190
5	95
19	19
	1

5	95
19	19
	1

10. 16, 20

Prime factors of 16 = 2 x 2 x 2 x 2

Prime factors of 20 = 2 x 2 x 5

HCF = 2 x 2 = 4

2	16
2	8
2	4
2	2
	1

2	20
2	10
5	5
	1

11. 40, 48

Prime factors of 40 = 2 x 2 x 2 x 5

Prime factors of 48 = 2 x 2 x 2 x 2 x 3

HCF = 2 x 2 x 2 = 8

2	40
2	20
2	10
3	5
	1

2	48
2	24
2	12
2	6
3	3
	1

12. 14, 44, 48

Prime factors of 14 = 2 x 7

Prime factors of 44 = 2 x 2 x 11

Prime factors of 48 = 2 x 2 x 2 x 2 x 3

HCF = 2

2	14
7	7
	1

2	44
2	22
11	11
	1

2	48
2	24
2	12
2	6
3	3
	1

13. 8, 30

Prime factors of 8 = 2 x 2 x 2

Prime factors of 30 = 2 x 3 x 5

HCF = 2

2	8
2	4
2	2
	1

2	30
3	15
5	5
	1

14. 16, 20, 24

Prime factors of 16 = 2 x 2 x 2 x 2

Prime factors of 20 = 2 x 2 x 5

Prime factors of 24 = 2 x 2 x 2 x 3

HCF = 2 x 2 = 4

2	16
2	8
2	4
2	2
	1

2	20
2	10
5	5
	1

2	24
2	12
2	6
3	3
	1

15. 20, 22, 48

Prime factors of 20 = 2 x 2 x 5

Prime factors of 22 = 2 x 11

Prime factors of 48 = 2 x 2 x 2 x 2 x 3

HCF = 2

2	20
2	10
5	5
	1

2	48
2	24
2	12
2	6
3	3
	1

Exercise 6.10

Solve the following word problems.

1. Three rods of different lengths 12cm, 18cm and 24cm are to be cut into equal lengths. What is the greatest possible length of each piece?

Prime factors of 12 = 2 x 2 x 3

Prime factors of 18 = 2 x 3 x 3

Prime factors of 24 = 2 x 2 x 2 x 3

The Greatest number is 2 x 3 = 6cm

2	12
2	6
3	3
	1

2	18
3	9
3	3
	1

2	24
2	12
2	6
3	3
	1

2. Find the greatest number that exactly divides the numbers 36, 40 and 48.

Prime factors of 36 = 2 x 2 x 3 x 3

Prime factors of 40 = 2 x 2 x 2 x 5

Prime factors of 48 = 2 x 2 x 2 x 2 x 3

2 x 2 = 4

4 is the number that exactly divides the 36, 40, 48.

2	48
2	24
2	12
2	6
3	3
	1

2	36
2	18
3	9
3	3
	1

2	4
2	20
2	10
5	5
	1

3. *There are 40 girls and 32 boys who want to participate in a Maths competition. Each team must have the same number of girls and boys. What is the greatest number of teams that can be formed in the competition?*

Prime factors of 40 = 2 x 2 x 2 x 5

Prime factors of 32 = 2 x 2 x 2 x 2

2 x 2 x 2 = 8

2	40
2	20
2	10
5	5
	1

2	32
2	16
2	8
2	4
2	2
	1

4. *Ali has 16 blue marbles and 8 white ones. If he wants to put them in identical groups without any marble leftover, what is the greatest number of groups, Ali can make?*

Prime factors of 16 = 2 x 2 x 2 x 2

Prime factors of 8 = 2 x 2 x 2

2 x 2 x 2 = 8 groups

2	16
2	8
2	4
2	2
	1

2	8
2	4
2	2
	1

5. *Two wires with lengths 48cm and 16cm are to be cut into pieces of the same length with no remainder. Find the greatest possible length.*

Prime factors of 48 = 2 x 2 x 2 x 2 x 3

Prime factors of 16 = 2 x 2 x 2 x 2

2 x 2 x 2 x 2 = 16

2	48
2	24
2	12
2	6
3	3
	1

2	16
2	8
2	4
2	2
	1

Exercise 6.11

1 **Find the first two common multiples of the following numbers.**

1. 9 and 12

Multiples of 9 = 9 , 18 , 27 , 36 , 45 , 54 , 63 , 72 , 81

Multiples of 12 = 12 , 24 , 36 , 48 , 60 , 72 , 96

Thus 36 and 72 are first two common multiples.

2. 10 and 15

Multiples of 10 = 10 , 20 , 30 , 40 , 50 , 60 , 70 , 80 , 90 . . .

Multiples of 15 = 15 , 30 , 45 , 60 , 75 , . . .

Thus 30 and 60 are first two common multiples.

3. 14, 7 and 28

Multiples of 14 = 14 , 28 , 42 , 56 , 70 , 84 , 98 , 112 , 126, 140 . . .

Multiples of 7 = 14 , 21 , 28 , 35 , 42 , 56 , 63 , 10 . . .

Multiples of 28 = 28 , 56 , 84 , 112 . . .

Thus 28 and 56 are first two common multiples.

2 **Find the first ten multiples of given numbers and write the common multiples.**

1.

2	2	4	6	8	10	12	14	16	18	20
4	4	8	12	16	20	24	28	32	36	40

Common Multiples
4, 8, 12, 16, 20

2.

5	5	10	15	20	25	30	35	40	45	50
10	10	20	30	40	50	60	70	80	90	100

Common Multiples
10, 20, 30, 40, 50

Exercise 6.12

1 ***Find the LCM of the following numbers by common multiple method.***

1. 8, 12

Multiples of 8 = 8 , 16 , 24 , 32 , 40 , 48 , 56 , 64 , 80 . . .

Multiples of 12 = 12 , 24 , 36 , 48 , 60 , 72 , 96 . . .

LCM = 24

2. 5, 6

Multiples of 5 = 5 , 10 , 15 , 20 , 25 , 30 , 35 , 40 , 45 , 50 . . .

Multiples of 6 = 6 , 12 , 18 , 24 , 30 , 36 , 42 , 48 , 54 , 60 . . .

LCM = 30

3. 8, 6, 12

Multiples of 8 = 8 , 16 , 24 , 32 , 40 , 48 , 56 , 64 , 72 . . .

Multiples of 6 = 6 , 12 , 18 , 24 , 30 , 36 , 48 , 54 . . .

Multiples of 12 = 12 , 24 , 36 , 48 , 60 , 72 , 84 . . .

LCM = 24

4. 3, 7, 21

Multiples of 3 = 3 , 6 , 9 , 12 , 18 , 21 , 24 , 27 . . .

Multiples of 7 = 7 , 14 , 21 , 28 , 35 , 42 , 56 . . .

Multiples of 21 = 21 , 42 , 63 , 84 . . .

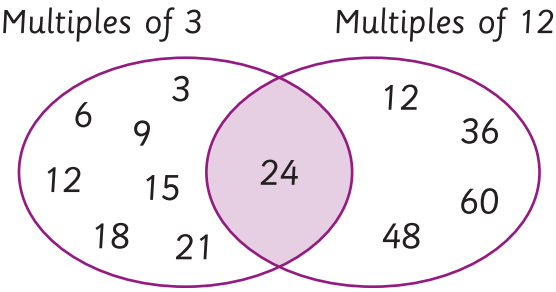
LCM = 21

2 ***Draw a Venn diagram and use it to find the LCM of the following numbers.***

1. 3, 12

Multiples of 3 = 3 , 6 , 9 , 12 , 15 , 18 , 21 , 24 , 27 . . .

Multiples of 12 = 12 , 24 , 36 , 48 , 60 . . .

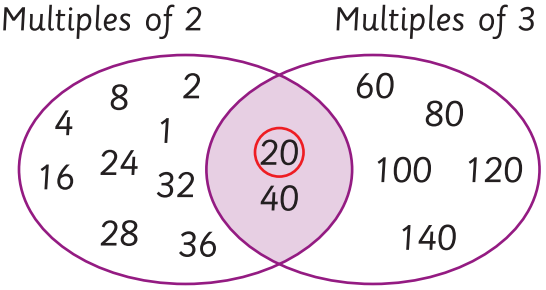


LCM = 24

2. 4, 20

Multiples of 4 = 4 , 8 , 12 , 16 , 20 , 24 , 28 , 32 , 36 , 40 . . .

Multiples of 20 = 20 , 40 , 60 , 80 , 100 , 120 , 140 . . .



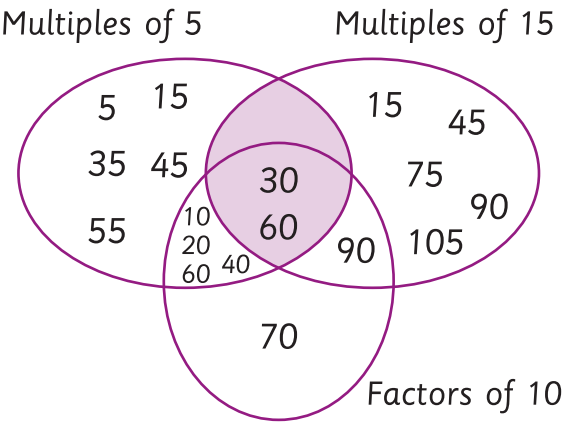
LCM = 20

3. 5, 15, 10

Multiples of 5 = 5 , 10 , 15 , 20 , 30 , 35 , 40 , 45 , 50, 50 , 60 . . .

Multiples of 15 = 15 , 30 , 45 , 60 , 75 , 90 , 105 . . .

Multiples of 10 = 10 , 20 , 30 , 40 , 50 , 60 , 70 . . .



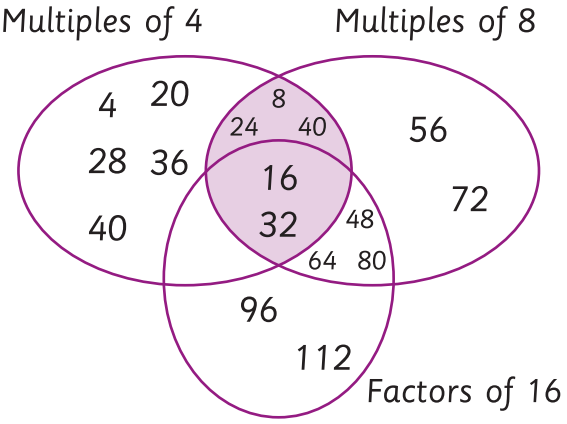
LCM = 30

4. 4, 8, 16

Multiples of 4 = 4 , 8 , 12 , 16 , 20 , 24 , 28 , 32 , 36, 40 . . .

Multiples of 8 = 8 , 16 , 24 , 32 , 40 , 48 , 56 , 64 , 75 , 80 . . .

Multiples of 16 = 16 , 32 , 48 , 64 , 80 , 96 , 112 . . .



LCM = 16

Exercise 6.13

Find the LCM of the following numbers by prime factorisation method.

1. 12, 15

Prime factors of 12 = 2 x 2 x 3

Prime factors of 15 = 3 x 5

LCM = 3 x 2 x 2 x 5 = 60

2	12
2	6
3	3
	1

3	15
5	5
	1

2. 14, 21

Prime factors of 14 = 2 x 7

Prime factors of 21 = 3 x 7

LCM = 7 x 2 x 3 = 42

2	14
7	7
	1

3	21
7	7
	1

3. 3, 9, 12

Prime factors of 3 = 3

Prime factors of 9 = 3 x 3

Prime factors of 12 = 3 x 2 x 2

LCM = 3 x 3 x 2 x 2 = 36

3	3
	1

3	9
3	3
	1

3	12
2	4
2	2
	1

4. 3, 5, 6

Prime factors of 3 = 3

Prime factors of 5 = 5

Prime factors of 6 = 2 x 3

LCM = 2 x 3 x 5 x 3 = 90

2	6
3	3
	1

Exercise 6.14

Solve the following word problems.

1. *Find the least number of candies that can be distributed equally among 15, 25 and 50 children.*

Prime factors of 15 = 3 x 5

Prime factors of 25 = 5 x 5

Prime factors of 50 = 2 x 5

LCM = 5 x 2 x 5 x 3 = 150

3	15
3	5
	1

5	25
5	5
	1

5	50
5	10
2	2
	1

2. *Find the least number of candles that can be distributed equally among 40, 80 and 120 children.*

Prime factors of 40 = 2 x 2 x 2 x 5

Prime factors of 80 = 2 x 2 x 2 x 2 x 5

Prime factors of 120 = 2 x 2 x 2 x 3 x 5

LCM = 2 x 2 x 2 x 5 x 2 x 3

= 240

2	40
2	20
2	10
5	5
	1

2	80
2	40
2	20
2	10
5	5
	1

2	120
2	60
2	30
3	15
5	5
	1

3. *Boxes that are 12 cm tall are being stacked next to boxes that are 18 cm tall. What is the shortest height at which the two stacks will have the same height?*

Prime factors of 12 = 2 x 2 x 3

Prime factors of 18 = 2 x 3 x 3

LCM = 2 x 3 x 2 x 3 = 36

2	12
2	6
3	3
	1

2	18
3	9
3	3
	1

4. Find the smallest number that is divisible by the numbers 20, 30 and 60.

Prime factors of 20 = 2 x 2 x 5

Prime factors of 20 = 2 x 3 x 5

Prime factors of 60 = 2 x 2 x 3 x 5

LCM = 2 x 2 x 3 x 5

= 60

2	20
2	10
5	5
	1

2	30
3	15
5	5
	1

2	60
2	30
3	15
5	5
	1

5. Find the smallest number that is exactly divisible by the numbers 16, 30 and 60.

Prime factors of 16 = 2 x 2 x 2 x 2

Prime factors of 30 = 2 x 3 x 5

Prime factors of 60 = 2 x 2 x 3 x 5

LCM = 2 x 2 x 3 x 5 x 2 x 2

= 240

2	16
2	8
2	4
2	2
	1

2	30
3	15
5	5
	1

2	60
2	30
3	15
5	5
	1

Review Exercise 6

1 Tick (✓) the correct answer in the following multiple choice questions (mcqs).

1. A number divisible by 2 is

(a) 215 (b) 109 (c) 4324 (d) 30213

2. A number is divisible by 5, if the digit at its units place is:

(a) 1 (b) 3 (c) 4 (d) 5

3. A number is divisible by 10, if the digit at its units place is:

(a) 0 (b) 1 (c) 2 (d) 5

4. The factor of 26 is:

(a) 5 (b) 52 (c) 13 (d) 10

5. The multiple of 9 is:

(a) 18 (b) 3 (c) 1 (d) 50

6. HCF of 12 and 15 is:

a 2 (b) 3 c 4 d 6

7. LCM of 2, 20 and 30 is:

a 10 b 20 (c) 30 d 60

8. The smallest prime number is:

a 1 (b) 2 c 3 d 4

9. The smallest composite number is:

a 2 (b) 4 c 6 d 8

10. The prime factors of 15 are:

a 1 x 15 b 3 x 15 (c) 3 x 5 d 1 x 3 x 5

2 Write short answers to the following questions.

1. What is divisibility test for 5?

Ans The divisibility test of 5 means a number is divisible by 5 if the digit at units place is 0 or 5.

2. What are prime numbers?

Ans A number that has only two factors 1 and itself is called a prime number.

3. What are composite numbers?

Ans A number that has more factors other than 1 and itself is called composite number.

4. What is meant by factor of a number?

Ans A number that divides a given number exactly is called factor of that number.

5. Define multiple of a number.

Ans A number that is divisible by a given number is called multiply of that number.

6. *Differentiate between HCF and LCM.*

Ans

HCF	**LCM**
The greatest common factor of given numbers is called highest common factor.	*The lowest number among the common multiples is called least common multiples.*

Unit 7

Fractions

Exercise 7.1

Write the numerator and denominator for each of the given fraction.

Fraction	Numerator	Denominator
$\frac{1}{2}$	1	2
$\frac{1}{3}$	1	3
$\frac{5}{6}$	5	6
$\frac{7}{8}$	7	8
$\frac{9}{11}$	9	11

Exercise 7.2

Identify and tick (✓) the like and cross (✗) the unlike fractions.

(1)	$\frac{1}{4}, \frac{4}{4}, \frac{6}{4}$	✓		$\frac{1}{2}, \frac{4}{5}, \frac{6}{7}$	✗
(2)	$\frac{3}{5}, \frac{2}{7}, \frac{3}{2}$	✗		$\frac{2}{3}, \frac{6}{3}, \frac{8}{3}$	✓
(3)	$\frac{4}{6}, \frac{6}{6}, \frac{9}{6}$	✓		$\frac{1}{7}, \frac{3}{9}, \frac{8}{8}$	✗
(4)	$\frac{4}{8}, \frac{3}{8}, \frac{6}{8}$	✓		$\frac{6}{4}, \frac{7}{2}, \frac{8}{3}$	✗
(5)	$\frac{2}{1}, \frac{4}{6}, \frac{6}{8}$	✗		$\frac{7}{9}, \frac{8}{9}, \frac{9}{9}$	✓

Exercise 7.3

Write "I" for improper fraction, "P" for proper fraction and "U" for unit fraction.

(1)	$\frac{4}{7}$	P	$\frac{9}{8}$	I	(2)	$\frac{8}{25}$	P	$\frac{25}{8}$	I
(3)	$\frac{6}{4}$	I	$\frac{3}{5}$	P	(4)	$\frac{24}{49}$	P	$\frac{52}{31}$	I
(5)	$\frac{4}{11}$	P	$\frac{1}{8}$	U	(6)	$\frac{7}{18}$	P	$\frac{26}{9}$	I
(7)	$\frac{12}{8}$	I	$\frac{5}{15}$	P	(8)	$\frac{3}{7}$	P	$\frac{10}{11}$	P
(9)	$\frac{6}{12}$	P	$\frac{1}{6}$	U	(10)	$\frac{15}{16}$	P	$\frac{16}{15}$	I
(11)	$\frac{40}{16}$	I	$\frac{100}{200}$	P	(12)	$\frac{1}{70}$	U	$\frac{25}{18}$	I

Exercise 7.4

Change the following improper fractions into mixed fractions by using the division method.

(1) $\frac{19}{7}$

$$7\overline{)19}\ 2,\ 14,\ 5$$

$= 16\frac{2}{3}$

(2) $\frac{17}{3}$

$$3\overline{)17}\ 5,\ 15,\ 2$$

$= 5\frac{2}{3}$

(3) $\frac{25}{9}$

$$9\overline{)25}\ 2,\ 18,\ 7$$

$= 2\frac{7}{9}$

(4) $\frac{58}{5}$

$$5\overline{)58}\ 11,\ 5,\ 8,\ 5,\ 3$$

$= 11\frac{3}{5}$

(5) $\frac{50}{3}$

$$3\overline{)50}\ 16,\ 3,\ 20,\ 18,\ 2$$

$= 16\frac{2}{3}$

(6) $\frac{111}{10}$

$$\begin{array}{r} 11 \\ 10\overline{)\,111} \\ \underline{10} \\ 11 \\ \underline{10} \\ 1 \end{array}$$

$= 11\frac{1}{10}$

(7) $\frac{125}{6}$

$$\begin{array}{r} 2 \\ 6\overline{)\,125} \\ \underline{12} \\ 5 \end{array}$$

$= 2\frac{5}{6}$

(8) $\frac{256}{13}$

$$\begin{array}{r} 19 \\ 13\overline{)\,256} \\ \underline{13} \\ 126 \\ \underline{117} \\ 9 \end{array}$$

$= 19\frac{9}{13}$

(9) $\frac{44}{7}$

$$\begin{array}{r} 5 \\ 7\overline{)\,44} \\ \underline{35} \\ 9 \end{array}$$

$= 5\frac{9}{7}$

(10) $\frac{29}{5}$

$$\begin{array}{r} 5 \\ 5\overline{)\,29} \\ \underline{25} \\ 4 \end{array}$$

$= 5\frac{4}{5}$

Exercise 7.5

Convert the following mixed fractions into improper fractions.

(1) $3\frac{1}{3}$

$= 3 + \frac{1}{3} = \frac{9+1}{3} = \frac{10}{3}$

(2) $3\frac{1}{4}$

$= 3 + \frac{1}{4} = \frac{12+1}{4} = \frac{13}{4}$

(3) $4\frac{5}{9}$

$= 4 + \frac{4}{9} = \frac{36+4}{9} = \frac{41}{9}$

(4) $6\frac{2}{3}$

$= 6 + \frac{2}{3} = \frac{18+2}{3} = \frac{20}{3}$

(5) $9\frac{2}{7}$

$= 9 + \frac{2}{7} = \frac{63+2}{7} = \frac{65}{7}$

(6) $3\frac{3}{10}$

$= 3 + \frac{3}{10} = \frac{30+3}{10} = \frac{33}{10}$

(7) $7\frac{5}{8}$

$= 7 + \frac{5}{8} = \frac{56+5}{8} = \frac{61}{8}$

(8) $4\frac{3}{5}$

$= 4 + \frac{3}{5} = \frac{20+3}{5} = \frac{23}{5}$

(9) $7\frac{7}{15}$

$= 7 + \frac{7}{15} = \frac{105+7}{15} = \frac{112}{15}$

(10) $4\frac{5}{13}$

$= 4 + \frac{5}{13} = \frac{52+5}{13} = \frac{57}{13}$

Exercise 7.6

Write two equivalent fractions of the following fractions.

(1) $\frac{1}{13} = \frac{2}{26} = \frac{3}{39}$

(2) $\frac{18}{25} = \frac{36}{50} = \frac{54}{75}$

(3) $\frac{2}{3} = \frac{4}{6} = \frac{6}{9}$

(4) $\frac{5}{12} = \frac{2}{26} = \frac{3}{39}$

(5) $\frac{20}{21} = \frac{40}{42} = \frac{60}{63}$

(6) $\frac{13}{20} = \frac{26}{40} = \frac{39}{60}$

(7) $\frac{12}{15} = \frac{24}{30} = \frac{36}{45}$

(8) $\frac{7}{8} = \frac{14}{16} = \frac{21}{24}$

(9) $\frac{7}{16} = \frac{14}{32} = \frac{21}{48}$

(10) $\frac{11}{20} = \frac{22}{40} = \frac{33}{60}$

(11) $\frac{3}{19} = \frac{6}{38} = \frac{9}{57}$

(12) $\frac{21}{22} = \frac{42}{44} = \frac{63}{66}$

Exercise 7.7

1 ***Write the greater fractions by comparing numerators.***

(1) $\frac{4}{7}$ or $\frac{6}{7}$ <

(2) $\frac{7}{8}$ or $\frac{3}{8}$ >

(3) $\frac{3}{7}$ or $\frac{5}{7}$ <

(4) $\frac{21}{36}$ or $\frac{31}{36}$ <

(5) $\frac{20}{75}$ or $\frac{22}{75}$ <

(6) $\frac{25}{100}$ or $\frac{33}{100}$ <

2 ***Write the smaller fractions by comparing denominators.***

(1) $\frac{7}{8}$ or $\frac{7}{9}$ $\frac{7}{9}$

(2) $\frac{9}{10}$ or $\frac{9}{13}$ $\frac{9}{13}$

(3) $\frac{6}{7}$ or $\frac{6}{11}$ $\frac{6}{11}$

(4) $\frac{9}{21}$ or $\frac{9}{20}$ $\frac{9}{21}$

(5) $\frac{7}{8}$ or $\frac{7}{4}$ $\frac{7}{8}$

(6) $\frac{15}{20}$ or $\frac{15}{16}$ $\frac{15}{20}$

Exercise 7.8

Compare the given fractions by finding their equivalent fractions and fill the circles with "<" or ">".

(1) $\frac{3}{4}$ > $\frac{2}{3}$

$\frac{3}{4}$: $\frac{3}{4} = \frac{6}{8} = \frac{9}{12} = \frac{12}{16} = \frac{15}{20}$

$\frac{2}{3}$: $\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \frac{8}{12} = \frac{10}{15}$

$\frac{6}{8} > \frac{6}{9}$

After converting to lowest from $\frac{3}{4} > \frac{2}{3}$

So, $\frac{3}{4} > \frac{2}{3}$

(2) $\frac{6}{5}$ > $\frac{7}{10}$

$\frac{6}{5}$: $\frac{6}{5} = \frac{12}{10} = \frac{18}{15} = \frac{24}{20} = \frac{30}{25}$

$\frac{7}{10}$: $\frac{7}{10} = \frac{14}{20} = \frac{21}{30} = \frac{28}{40} = \frac{35}{50}$

$\frac{24}{20} > \frac{14}{20}$

So, $\frac{6}{5} > \frac{7}{10}$

(3) $\frac{3}{2} > \frac{4}{5}$

$\frac{3}{2}$: $\frac{3}{2} = \frac{6}{4} = \frac{9}{6} = \frac{12}{8} = \frac{15}{10}$

$\frac{4}{5}$: $\frac{4}{5} = \frac{8}{10} = \frac{12}{15} = \frac{16}{20}$

$\frac{12}{8} > \frac{12}{15}$

So, $\frac{3}{2} > \frac{4}{5}$

(4) $\frac{2}{25} < \frac{3}{20}$

$\frac{2}{25}$: $\frac{2}{25} = \frac{4}{50} = \frac{6}{75} = \frac{8}{100}$

$\frac{3}{20}$: $\frac{3}{20} = \frac{6}{40} = \frac{9}{60} = \frac{12}{80}$

$\frac{6}{75} < \frac{6}{40}$

So, $\frac{2}{25} < \frac{3}{20}$

(5) $\frac{7}{6} > \frac{6}{7}$

$\frac{7}{6}$: $\frac{7}{6} = \frac{14}{12} = \frac{21}{18} = \frac{28}{24} = \frac{35}{30} = \frac{42}{36} = \frac{49}{42} = \frac{56}{48} = \frac{63}{54} = \frac{70}{60}$

$\frac{6}{7}$: $\frac{6}{7} = \frac{12}{14} = \frac{18}{21} = \frac{24}{28} = \frac{30}{35} = \frac{36}{42} = \frac{42}{49} = \frac{48}{56} = \frac{54}{63} = \frac{60}{70}$

$\frac{49}{42} > \frac{36}{42}$

So, $\frac{7}{6} > \frac{6}{7}$

(6) $\frac{2}{5} < \frac{5}{2}$

$\frac{2}{5}$: $\frac{2}{5} = \frac{4}{10} = \frac{6}{15} = \frac{8}{20} = \frac{10}{25} = \frac{12}{30} = \frac{14}{35} = \frac{16}{40} = \frac{18}{45} = \frac{20}{50}$

$\frac{5}{2}$: $\frac{5}{2} = \frac{10}{4} = \frac{15}{6} = \frac{20}{8} = \frac{25}{10} = \frac{30}{12} = \frac{35}{14} = \frac{40}{16} = \frac{45}{18} = \frac{50}{20}$

$\frac{20}{50} < \frac{20}{8}$

So, $\frac{2}{5} < \frac{5}{2}$

(7) $\frac{2}{3} < \frac{5}{6}$

$\frac{2}{3}$: $\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \frac{8}{12} = \frac{10}{15} = \frac{12}{18}$

$\frac{5}{6}$: $\frac{5}{2} = \frac{10}{12} = \frac{15}{18} = \frac{20}{24} = \frac{25}{30} = \frac{30}{36}$

$\frac{10}{15} < \frac{10}{12}$

So, $\frac{2}{3} < \frac{5}{6}$

(8) $\frac{2}{7} > \frac{3}{28}$

$\frac{2}{7}$: $\frac{2}{7} = \frac{4}{14} = \frac{6}{21} = \frac{8}{28} = \frac{10}{35} = \frac{12}{42} = \frac{14}{49} = \frac{16}{56} = \frac{18}{63} = \frac{20}{70}$

$\frac{3}{28}$: $\frac{3}{28} = \frac{6}{56} = \frac{9}{84} = \frac{12}{112} = \frac{15}{140} = \frac{18}{168}$

$\frac{12}{42} > \frac{12}{112}$

So, $\frac{2}{7} > \frac{12}{112}$

Exercise 7.9

Write the following fractions in ascending and descending order.

		Ascending order	Descending order
(1)	$\frac{6}{11}, \frac{2}{11}, \frac{5}{11}, \frac{3}{11}$	$\frac{2}{11}, \frac{3}{11}, \frac{5}{11}, \frac{6}{11}$	$\frac{6}{11}, \frac{5}{11}, \frac{3}{11}, \frac{2}{11}$
(2)	$\frac{3}{7}, \frac{6}{7}, \frac{1}{7}, \frac{5}{7}$	$\frac{1}{7}, \frac{3}{7}, \frac{5}{7}, \frac{6}{7}$	$\frac{6}{7}, \frac{5}{7}, \frac{3}{7}, \frac{1}{7}$
(3)	$\frac{5}{6}, \frac{4}{6}, \frac{1}{6}, \frac{3}{6}$	$\frac{1}{6}, \frac{3}{6}, \frac{4}{6}, \frac{5}{6}$	$\frac{5}{6}, \frac{4}{6}, \frac{3}{6}, \frac{1}{6}$
(4)	$\frac{2}{7}, \frac{6}{7}, \frac{5}{7}, \frac{3}{7}$	$\frac{2}{7}, \frac{3}{7}, \frac{5}{7}, \frac{6}{7}$	$\frac{6}{7}, \frac{5}{7}, \frac{3}{7}, \frac{2}{7}$

Exercise 7.10

1 **Reduce the following fractions to their lowest form.**

1. $\frac{4}{12} = \frac{1}{3}$	**2.** $\frac{22}{30} = \frac{11}{15}$	**3.** $\frac{64}{72} = \frac{8}{9}$	**4.** $\frac{21}{81} = \frac{7}{27}$
5. $\frac{16}{20} = \frac{4}{5}$	**6.** $\frac{14}{16} = \frac{7}{8}$	**7.** $\frac{32}{48} = \frac{2}{3}$	**8.** $\frac{2}{6} = \frac{1}{3}$
9. $\frac{15}{25} = \frac{3}{5}$	**10.** $\frac{26}{30} = \frac{13}{15}$	**11.** $\frac{18}{22} = \frac{9}{11}$	**12.** $\frac{49}{70} = \frac{7}{10}$

2 **Reduce the following fractions and write the lowest forms in given boxes.**

1. $\frac{24}{27} =$ ☐

2. $\frac{5}{15} =$ ☐

3. $\frac{15}{18} =$ ☐

4. $\frac{8}{40} =$ ☐

5. $\frac{24}{36} =$ ☐

6. $\frac{3}{24} =$ ☐

Exercise 7.11

Add the following fractions.

(1) $\frac{3}{7} + \frac{9}{14}$

$= \frac{6 + 9}{14}$

$= \frac{15}{14} = 1\frac{1}{14}$

2	7	–	14
7	7	–	7
	1	–	1

LCM = 2 x 7 = 14

(2) $\frac{5}{6} + \frac{7}{8}$

$= \frac{20 + 21}{24}$

$= \frac{41}{24} = 1\frac{17}{24}$

2	6	–	8
2	3	–	4
2	3	–	2
3	3	–	1
	1	–	1

LCM = 2 x 2 x 2 x 3 = 24

(3) $\frac{3}{15} + \frac{6}{12}$

$= \frac{12 + 30}{60}$

$= \frac{\cancel{42}^{7}}{\cancel{60}_{10}} = \frac{7}{10}$

2	15	–	12
2	15	–	6
3	15	–	3
5	5	–	1
	1	–	1

LCM = 2 x 2 x 3 x 5 = 60

(4) $\frac{1}{3} + \frac{3}{4}$

$= \frac{4 + 9}{14}$

$= \frac{13}{12} = 1\frac{1}{12}$

3	3	–	4
2	1	–	4
2	1	–	2
	1	–	1

LCM = 2 x 2 x 3 = 12

(5) $\frac{45}{85} + \frac{25}{65}$

$= \frac{\overset{585}{\cancel{325}} + \overset{425}{\cancel{765}}}{1105}$

$= \frac{\overset{202}{\cancel{1010}}}{\underset{221}{\cancel{1105}}} = \frac{202}{221}$

5	65	–	85
13	13	–	17
17	1	–	17
	1	–	1

LCM = 5 x 13 x 17 = 1105

(6) $\frac{22}{55} + \frac{45}{90}$

$= \frac{396 + 495}{990}$

$= \frac{\overset{9}{\cancel{891}}}{\underset{10}{\cancel{990}}} = \frac{9}{10}$

5	55	–	90
11	11	–	18
2	1	–	18
3	1	–	9
3	1	–	3
			1

LCM = 5 x 11 x 2 x 3 x 3 = 990

(7) $\frac{77}{98} + \frac{40}{81}$

$= \frac{6237 + 3920}{7938}$

$= \frac{10157}{7938} = 1\frac{2219}{7938}$

2	98 – 81
3	49 – 81
3	49 – 27
3	49 – 9
3	49 – 3
7	49 – 1
7	7 – 1
	1 – 1

LCM = 2 x 3 x 3 x 3 x 7 x 7 = 7938

(8) $\frac{17}{22} + \frac{16}{24}$

$= \frac{204 + 176}{264}$

$= \frac{\cancel{190}^{95}\ \cancel{380}}{\cancel{264}_{\cancel{132}\ 66}} = \frac{95}{66}$

2	22 – 24
2	11 – 12
2	11 – 6
3	11 – 3
11	11 – 1
	1 – 1

LCM = 2 x 2 x 3 x 11 = 264

(9) $\frac{18}{25} + \frac{14}{35}$

$= \frac{126 + 70}{175}$

$= \frac{196}{175} = 1\frac{21}{175}$

5	25 – 35
5	5 – 7
7	1 – 7
	1 – 1

LCM = 5 x 5 x 7 = 175

(10) $\frac{19}{42} + \frac{27}{45}$

$$= \frac{285 + 378}{630}$$

$$= \frac{\cancel{663}^{221}}{\cancel{630}_{210}} = \frac{221}{210}$$

3	42	–	45
3	14	–	15
5	14	–	5
7	14	–	1
2	2	–	1
	1	–	1

LCM = 3 x 3 x 5 x 7 x 2 = 630

(11) $\frac{14}{20} + \frac{15}{29}$

$$= \frac{406 + 300}{580}$$

$$= \frac{\cancel{706}^{353}}{\cancel{580}_{290}} = \frac{353}{290}$$

2	20	–	29
2	10	–	29
5	5	–	29
29	1	–	29
	1	–	1

LCM = 2 x 2 x 5 x 29 = 580

(12) $\frac{13}{24} + \frac{16}{27}$

$$= \frac{117 + 128}{216}$$

$$= \frac{245}{216}$$

3	24	–	27
3	8	–	9
3	8	–	3
2	8	–	1
2	4	–	1
2	2	–	1
	1	–	1

LCM = 3 x 3 x 3 x 2 x 2 x 2 = 216

(13) $\frac{6}{30} + \frac{12}{24}$

$$= \frac{24 + 60}{120}$$

$$= \frac{\cancel{84}^{\,21}}{\cancel{120}_{\,60}_{\,30}} = \frac{7}{10}$$

(7, 10)

2	30 – 24
2	15 – 12
2	15 – 6
3	15 – 3
5	5 – 1
	1 – 1

LCM = 2 x 2 x 2 x 3 x 5 = 120

(14) $\frac{10}{12} + \frac{14}{16}$

$$= \frac{40 + 42}{48}$$

$$= \frac{\cancel{82}^{\,21}}{\cancel{48}_{\,24}_{\,12}} = \frac{7}{4}$$

(7, 4)

2	12 – 16
2	6 – 8
2	3 – 4
2	3 – 2
3	3 – 1
	1 – 1

LCM = 2 x 2 x 2 x 2 x 3 = 48

(15) $\frac{8}{36} + \frac{6}{36}$

$$= \frac{8 + 6}{36}$$

$$= \frac{\cancel{14}^{\,7}}{\cancel{36}_{\,18}} = \frac{7}{18}$$

2	36
2	18
3	9
3	3
	1

LCM = 2 x 2 x 3 x 3 = 36

Exercise 7.12

1 ***Verify the commutative property.***

1. $\frac{4}{11} + \frac{5}{11} = \frac{5}{11} + \frac{4}{11}$

Solution

$$\frac{4}{11} + \frac{5}{11} = \frac{5}{11} + \frac{4}{11}$$

$$\frac{4 + 5}{11} = \frac{5 + 4}{11}$$

$$\frac{9}{11} = \frac{9}{11}$$

So commutative property is verified.

2. $\frac{2}{9} + \frac{5}{9} = \frac{5}{9} + \frac{2}{9}$

Solution

$$\frac{2}{9} + \frac{5}{9} = \frac{5}{9} + \frac{2}{9}$$

$$\frac{2 + 5}{9} = \frac{5 + 2}{9}$$

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

So commutative property is verified.

2 ***Verify the associative property.***

1. $\left(\frac{4}{13} + \frac{3}{13}\right) + \frac{1}{13} = \frac{4}{13} + \left(\frac{3}{13} + \frac{1}{13}\right)$

Solution

$$\left(\frac{4 + 3}{13}\right) + \frac{1}{13} = \frac{4}{13} + \left(\frac{3 + 1}{13}\right)$$

$$\left(\frac{7}{13}\right) + \frac{1}{13} = \frac{4}{13} + \left(\frac{4}{13}\right)$$

$$\frac{7}{13} + \frac{1}{13} = \frac{4}{13} + \frac{4}{13}$$

$$\frac{7 + 1}{13} = \frac{4 + 4}{13}$$

$$\frac{8}{13} = \frac{8}{13}$$

Hence associative property is verified.

2. $\left(\frac{1}{5} + \frac{2}{5}\right) + \frac{3}{5} = \frac{1}{5} + \left(\frac{2}{5} + \frac{3}{5}\right)$

Solution

$$\left(\frac{1 + 2}{5}\right) + \frac{3}{5} = \frac{1}{5} + \left(\frac{2 + 3}{5}\right)$$

$$\left(\frac{3}{5}\right) + \frac{3}{5} = \frac{1}{5} + \left(\frac{5}{5}\right)$$

$$\frac{3 + 3}{5} = \frac{1 + 5}{5}$$

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

Hence associative property is verified.

Exercise 7.13

1 ***Solve the following fractions by method 1.***

(1) $2\frac{1}{3} + 3\frac{1}{6}$

$$= 2 + 3 + \frac{1}{3} + \frac{1}{6}$$

$$= 5 + \frac{2 + 1}{6}$$

$$= 5 + \frac{3}{6}$$

$$= 5 + \frac{\cancel{3}^{\,1}}{\cancel{6}_{\,2}}$$

$$= 5\frac{1}{2}$$

3	3	–	6
2	1	–	2
	1	–	1

$$\begin{array}{r|l} & \ 1 \\ \hline 6 \ ) & \ 9 \\ & \ 6 \\ \hline & \ 3 \end{array}$$

(2) $5\frac{1}{9} + 2\frac{1}{8}$

$= 5 + 2 + \frac{1}{9} + \frac{1}{8}$

$= 7 + \frac{9 + 8}{72}$

$= 7 + \frac{17}{72}$

$= 7\frac{17}{72}$

2	9 – 8
2	9 – 4
2	9 – 2
3	9 – 1
3	3 – 1
	1 – 1

LCM = 2 x 2 x 2 x 3 x 3 = 72

(3) $5\frac{1}{6} + 3\frac{2}{8}$

$= 5 + 3 + \frac{1}{6} + \frac{2}{8}$

$= 8 + \frac{4 + 6}{24}$

$= 8 + \frac{\cancel{10}^{5}}{\cancel{24}_{12}}$

$= 8\frac{5}{12}$

2	6 – 8
2	3 – 4
2	3 – 2
3	3 – 1
	1 – 1

LCM = 2 x 2 x 2 x 3 = 24

(4) $2\frac{4}{5} + 2\frac{1}{2}$

$= 2 + 2 + \frac{4}{5} + \frac{1}{2}$

$= 4 + \frac{8 + 5}{7}$

$= 4 + \frac{13}{7}$

$= 4\frac{13}{7}$

(5) $3\frac{1}{3} + 4\frac{1}{4}$

$= 3 + 4 + \frac{1}{3} + \frac{1}{4}$

$= 7 + \frac{4+3}{12}$

$= 7 + \frac{7}{12}$

$= 7\frac{7}{12}$

(6) $7\frac{1}{2} + 9\frac{1}{4}$

$= 7 + 9 + \frac{1}{2} + \frac{1}{4}$

$= 16 + \frac{2+1}{4}$

$= 16 + \frac{3}{4}$

$= 16\frac{3}{4}$

(7) $6\frac{1}{3} + 5\frac{2}{3}$

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

$= 11 + \frac{1+2}{3}$

$= 11 + \frac{\cancel{3}^{1}}{\cancel{3}}$

$= 11$

(8) $4\frac{1}{4} + 8\frac{4}{9}$

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

$= 12 + \frac{9+16}{36}$

$= 12 + \frac{25}{36}$

$= 12\frac{25}{36}$

2 ***Add the following fractions after converting into improper fractions (method 2).***

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

$= \frac{5}{3} + \frac{13}{2}$

$= \frac{10+39}{6}$

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

$$6\overline{)49}\ 8,\ 48,\ 1$$

2. $3\frac{1}{3} + 1\frac{4}{5}$

$= \frac{10}{3} + \frac{9}{5}$

$= \frac{50 + 27}{15}$

$= \frac{77}{15} = 5\frac{2}{15}$

$$\begin{array}{r} 5 \\ 15\overline{)\,77} \\ \underline{75} \\ 2 \end{array}$$

3. $9\frac{1}{3} + 3\frac{2}{4}$

$= \frac{28}{3} + \frac{14}{4}$

$= \frac{112 + 42}{12}$

$= \frac{\cancel{154}^{77}}{\cancel{12}_{6}}$

$= \frac{77}{6} = 12\frac{5}{6}$

$$\begin{array}{r} 12 \\ 6\overline{)\,77} \\ \underline{6} \\ 17 \\ \underline{12} \\ 5 \end{array}$$

4. $1\frac{1}{4} + 2\frac{2}{3}$

$= \frac{5}{4} + \frac{8}{3}$

$= \frac{15 + 32}{12}$

$= \frac{47}{12} = 3\frac{11}{12}$

$$\begin{array}{r} 3 \\ 12\overline{)\,47} \\ \underline{36} \\ 11 \end{array}$$

5. $2\frac{1}{7} + 1\frac{1}{6}$

$= \frac{15}{7} + \frac{7}{6}$

$= \frac{90 + 49}{42}$

$= \frac{139}{42} = 3\frac{13}{42}$

$$\begin{array}{r} 3 \\ 42\overline{)\,139} \\ \underline{126} \\ 13 \end{array}$$

6. $2\frac{1}{7} + 7\frac{1}{2}$

$= \frac{15}{7} + \frac{15}{2}$

$= \frac{30 + 105}{14}$

$= \frac{135}{14} = 9\frac{9}{14}$

$$\begin{array}{r} 9 \\ 14\overline{)\,135} \\ \underline{126} \\ 9 \end{array}$$

7. $4\frac{1}{5} + 4\frac{1}{3}$

$= \frac{21}{5} + \frac{13}{3}$

$= \frac{63 + 65}{15}$

$= \frac{128}{15} = 8\frac{8}{15}$

$$\begin{array}{r} 8 \\ 15\overline{)\,128} \\ \underline{120} \\ 8 \end{array}$$

8. $4\frac{1}{6} + 2\frac{1}{4}$

$= \frac{25}{6} + \frac{9}{4}$

$= \frac{50 + 27}{12}$

$= \frac{77}{12} = 6\frac{5}{12}$

$$12\overline{)\,77}\quad 6,\ 72,\ 5$$

2	6 – 4
2	3 – 2
3	3 – 1
	1 – 1

Exercise 7.14

Subtract the following fractions.

(1) $\frac{6}{11} - \frac{7}{33}$

$= \frac{18 - 7}{33}$

$= \frac{\cancel{11}^{1}}{\cancel{33}_{3}} = \frac{1}{3}$

11	11 – 33
3	1 – 3
	1 – 1

(2) $\frac{4}{9} - \frac{5}{13}$

$= \frac{52 - 45}{117}$

$= \frac{7}{117}$

(3) $\frac{7}{8} - \frac{2}{7}$

$= \frac{49 - 16}{56}$

$= \frac{33}{56}$

(4) $\frac{7}{4} - \frac{4}{5}$

$= \frac{35 - 16}{20}$

$= \frac{19}{20}$

(5) $\frac{11}{8} - \frac{8}{11}$

$= \frac{121 - 64}{88}$

$= \frac{57}{88}$

(6) $\frac{7}{4} - \frac{4}{7}$

$= \frac{49 - 16}{28}$

$= \frac{33}{28}$

(7) $\frac{4}{5} - \frac{2}{3}$

$= \frac{12 - 10}{15}$

$= \frac{2}{15}$

(8) $\frac{3}{4} - \frac{1}{3}$

$= \frac{9 - 4}{12}$

$= \frac{5}{12}$

(9) $\frac{2}{3} - \frac{2}{7}$

$= \frac{14 - 6}{21}$

$= \frac{8}{21}$

(10) $\frac{7}{8} - \frac{5}{12}$

$= \frac{21 - 10}{24}$

$= \frac{11}{24}$

2	12 – 8
2	6 – 4
2	3 – 2
3	3 – 1
	1 – 1

(11) $\frac{3}{4} - \frac{5}{16}$

$= \frac{12 - 5}{16}$

$= \frac{7}{16}$

2	4 – 16
2	2 – 8
2	1 – 4
2	1 – 2
	1 – 1

(12) $\frac{1}{2} - \frac{2}{5}$

$= \frac{5 - 4}{10}$

$= \frac{1}{10}$

(13) $\frac{5}{7} - \frac{1}{2}$

$= \frac{10 - 7}{14}$

$= \frac{3}{14}$

(14) $\frac{2}{3} - \frac{7}{20}$

$= \frac{40 - 21}{60}$

$= \frac{19}{60}$

(15) $\frac{11}{14} - \frac{3}{9}$

$= \frac{99 - 42}{126}$

$= \frac{57}{126}$

(16) $\frac{7}{10} - \frac{2}{5}$

$= \frac{7 - 4}{10}$

$= \frac{3}{10}$

Exercise 7.15

Subtract the following after converting into improper fractions.

1. $6\frac{3}{10} - 2\frac{1}{4}$

$= \frac{63}{\cancel{10}_4} - \frac{9}{\cancel{4}_2}$

$= \frac{126 - 45}{20}$

$= \frac{81}{20} = 4\frac{1}{20}$

$$\begin{array}{r|l} & 4 \\ \hline 20 & 81 \\ & 80 \\ \hline & 1 \end{array}$$

2	10	–	4
2	5	–	2
5	5	–	1
	1	–	1

2. $7\frac{2}{5} - 3\frac{1}{2}$

$= \frac{37}{5} - \frac{7}{2}$

$= \frac{74 - 35}{10}$

$= \frac{39}{10} = 3\frac{9}{10}$

$$10\overline{)\,39}\quad 3,\ 30,\ 9$$

3. $5\frac{7}{10} - 3\frac{2}{5}$

$= \frac{57}{10} - \frac{17}{5}$

$= \frac{57 - 34}{10}$

$= \frac{56}{10} = 2\frac{3}{10}$

$$10\overline{)\,23}\quad 2,\ 20,\ 3$$

2	10	–	5
5	5	–	5
	1	–	1

4. $12\frac{1}{9} - 11\frac{2}{7}$

$= \frac{109}{9} - \frac{79}{7}$

$= \frac{763 - 711}{63}$

$= \frac{52}{63}$

5. $22\frac{3}{5} - 6\frac{2}{3}$

$= \frac{113}{5} - \frac{20}{3}$

$= \frac{339 - 100}{15}$

$= \frac{239}{15} = 15\frac{14}{15}$

$$\begin{array}{r} 15 \\ 15\overline{)\,239} \\ \underline{15} \\ 89 \\ \underline{75} \\ 14 \end{array}$$

6. $19\frac{2}{4} - 3\frac{3}{5}$

$= \frac{78}{4} - \frac{18}{5}$

$= \frac{390 - 72}{20}$

$= \frac{318}{20} = 15\frac{18}{20}$

$$\begin{array}{r} 15 \\ 20\overline{)\,318} \\ \underline{20} \\ 118 \\ \underline{100} \\ 18 \end{array}$$

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

$= \frac{28}{\cancel{9}_3} - \frac{17}{\cancel{6}_2}$

$= \frac{56 - 51}{18}$

$= \frac{5}{18}$

3	9 – 6
3	3 – 2
2	1 – 2

8. $3\frac{5}{7} - 2\frac{3}{14}$

$= \frac{26}{7} - \frac{31}{14}$

$= \frac{52 - 31}{14}$

$= \frac{\cancel{21}^{3}}{\cancel{14}_{2}} = 1\frac{1}{2}$

$2\overline{)\,3}$ quotient 1, remainder 1

9. $3\frac{8}{9} - 2\frac{1}{4}$

$= \frac{35}{9} - \frac{9}{4}$

$= \frac{140 - 81}{36}$

$= \frac{59}{36} = 1\frac{23}{36}$

$36\overline{)\,59}$ quotient 1, remainder 23

10. $2\frac{2}{9} - 1\frac{2}{4}$

$= \frac{20}{9} - \frac{6}{4}$

$= \frac{80 - 54}{36}$

$= \frac{\cancel{26}^{13}}{\cancel{36}_{18}} = \frac{13}{18}$

11. $5\frac{3}{5} - 4\frac{6}{7}$

$= \frac{28}{5} - \frac{34}{7}$

$= \frac{196 - 170}{35}$

$= \frac{26}{35}$

12. $13\frac{1}{13} - 5\frac{1}{5}$

$= \frac{170}{13} - \frac{26}{5}$

$= \frac{850 - 338}{65}$

$= \frac{512}{65} = 7\frac{57}{65}$

$$65\overline{)512}\quad 7,\ 455,\ 57$$

Word Problems

Exercise 7.16

Solve the following word problems.

(1) Ahmed spent $\frac{3}{4}$ hours in reading and $\frac{1}{4}$ hours doing Mathematics. How much time did he spend in study altogether?

Ahmed spent time in reading = $\frac{3}{4}$

Ahmed spent time doing mathematics = $\frac{1}{4}$

total time = $\frac{3}{4} + \frac{1}{4}$

$= \frac{3 + 1}{4}$

$= \frac{\cancel{4}^{1}}{\cancel{4}} = 1$ hours

(2) The journey from Ali's house to Mall Road is of $1\frac{1}{4}$ hours. The return journey by a different route took $1\frac{1}{2}$ hours. How long did the two journeys take?

Journey to Mall rood = $1\frac{1}{4}$

Return journey by different route = $1\frac{1}{2}$

total journey take = $1\frac{1}{4} + 1\frac{1}{2}$

$= \frac{5}{4} + \frac{2}{3}$

$= \frac{5 + 6}{4}$

$= \frac{11}{6} = 1\frac{5}{6}$ hours

2	4	–	2
2	2	–	1
	1	–	1

$$6\overline{)11}\ 1,\ 6,\ 6$$

(3) A table is $1\frac{1}{3}$ metre long. Another table is $1\frac{1}{6}$ metre long. What is the total length of two tables?

Length of one table = $1\frac{1}{3}$ m

Length pf second table = $1\frac{1}{6}$ m

total length = $1\frac{1}{3} + 1\frac{1}{6}$

$= \frac{4}{3} + \frac{7}{6}$

$= \frac{8 + 7}{6}$

$= \frac{\cancel{15}^{5}}{\cancel{6}_{2}} = \frac{5}{2}$

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

$$8\overline{)21}\ 2,\ 16,\ 5$$

(4) Aqsa bought two pieces of ribbons. One piece is $1\frac{1}{4}$ metre and the other piece is $1\frac{3}{8}$ metre long. How much ribbon did she buy?

Length of one ribbon = $1\frac{1}{4}$ m

Length of other ribbon = $1\frac{3}{8}$ m

total ribbon she buy = $1\frac{1}{4} + 1\frac{3}{8}$

$= \frac{5}{4} + \frac{11}{8}$

$= \frac{10 + 11}{8}$

$= \frac{21}{8} = 2\frac{5}{8}$ m

2	4	–	8
2	2	–	4
2	1	–	2
	1	–	1

$$8\overline{)\,21}\quad 2,\ 16,\ 5$$

(5) A piece of rope is $4\frac{3}{5}$ metre long. It is cut into two parts. One part is $1\frac{2}{5}$ metre long. What is the length of the other part?

Total piece of rope = $4\frac{3}{5}$ m

One piece of the rope = $1\frac{2}{5}$ m

Length of other = $4\frac{3}{5} - 1\frac{2}{5}$

$= \frac{23}{5} - \frac{7}{5}$

$= \frac{23 - 7}{5}$

$= \frac{16}{5} = 3\frac{1}{5}$ m

$$5\overline{)\,16}\quad 3,\ 15,\ 1$$

Length of other rope is $3\frac{1}{5}$ m.

(6) A bucket of sand weighs $12\frac{2}{5}$ kilogram. A bucket of cement weighs $9\frac{1}{4}$ kilogram. How much heavier is the bucket of sand than the bucket of cement?

Weight of sand bucket $= 12\frac{2}{5}$ kg

Weight of cement bucket $= 9\frac{1}{4}$ kg

Difference between weighs $= 12\frac{2}{5} - 9\frac{1}{4}$

$= \frac{62}{5} - \frac{37}{4}$

$= \frac{248 - 185}{20}$

$= \frac{63}{20} = 3\frac{3}{20}$ kg

2	4	–	50
2	2	–	25
5	1	–	25
5	1	–	5
	1	–	1

$$20\overline{)63}\quad 3,\ 60,\ 3$$

The bucket of sand is $3\frac{3}{20}$ kg heavier than bucket of cement.

(7) Iqra's weight is $33\frac{1}{3}$ kilogram. Misha's weight is $25\frac{1}{6}$ kilogram. What is the difference in their weights?

Iqra's weight $= 33\frac{1}{3}$ kg

Misha's weight $= 25\frac{1}{6}$ kg

Difference in weight $= 33\frac{1}{3} - 25\frac{1}{6}$

$= \frac{100}{3} - \frac{151}{6}$

$= \frac{200 - 151}{6}$

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

3	3	–	6
2	1	–	2
	1	–	1

$$6\overline{)49}\quad 8,\ 48,\ 1$$

(8) Ali is $1\frac{1}{6}$ metre tall. His father is $\frac{2}{3}$ metre taller than him. What is his father's height?

Ali's height = $1\frac{1}{6}$ m

His father taller than him = $\frac{2}{3}$ m

Father's height = $1\frac{1}{6} + \frac{2}{3}$

$= \frac{7}{6} + \frac{2}{3}$

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

$= \frac{11}{6} = 1\frac{5}{6}$ m

$$6\overline{)11}\quad 1,\ 6,\ 5$$

(9) Maria used $2\frac{3}{4}$ cup of sugar and $7\frac{1}{2}$ cup of flour for making a cake. How many cups of flour and sugar did she use altogether?

Maria used cup of Sugar = $2\frac{3}{4}$

Maria used cup of flour = $7\frac{1}{2}$

Total use of Sugar and flour = $2\frac{3}{4} + 7\frac{1}{2}$

$= \frac{11}{4} + \frac{15}{2}$

$= \frac{11 + 30}{4}$

$= \frac{41}{4} = 10\frac{1}{4}$

$$4\overline{)41}\quad 10,\ 40,\ 1$$

Exercise 7.17

Multiply.

1. $5 \times \frac{1}{2}$

$= \frac{5 \times 1}{2}$

$= \frac{5}{2}$

2. $6 \times \frac{1}{4}$

$= \frac{\cancel{6}^{3}}{\cancel{4}_{2}}$

$= \frac{3}{2}$

3. $6 \times \frac{1}{5}$

$= \frac{6}{5}$

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

4. $4 \times \frac{1}{3}$

$= \frac{4}{3}$

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

5. $9 \times \frac{1}{8}$

$= \frac{9}{8}$

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

6. $5 \times \frac{1}{5}$

$= \frac{\cancel{5}^{1}}{\cancel{5}}$

$= 1$

7. $5 \times \frac{3}{5}$

$= \frac{\cancel{15}^{3}}{\cancel{5}_{1}}$

$= 3$

8. $4 \times \frac{1}{2}$

$= \frac{\cancel{4}^{2}}{\cancel{2}}$

$= 2$

9. $17 \times \frac{25}{44}$

$= \frac{425}{44}$

$= 9\frac{29}{44}$

$$\begin{array}{r} 9 \\ 44\overline{)\,425} \\ \underline{396} \\ 29 \end{array}$$

10. $26 \times \frac{41}{57}$

$= \frac{1066}{57}$

$= 18\frac{40}{57}$

$$\begin{array}{r} 18 \\ 57\overline{)\,1066} \\ \underline{57} \\ 496 \\ \underline{456} \\ 40 \end{array}$$

11. $15 \times \frac{25}{46}$

$= \frac{375}{46}$

$= 8\frac{7}{46}$

$$\begin{array}{r} 8 \\ 46\overline{)\,375} \\ \underline{368} \\ 7 \end{array}$$

12. $24 \times \frac{28}{54}$

$= \frac{\cancel{672}^{112}}{\cancel{54}_{9}}$

$= 12\frac{4}{9}$

$$\begin{array}{r} 12 \\ 9\overline{)\,112} \\ \underline{9} \\ 22 \\ \underline{18} \\ 4 \end{array}$$

Exercise 7.18

Solve the following fractions and write your answers in the lowest form.

(1) $\frac{13}{25} \times \frac{215}{26}$

$= \frac{13}{25} \times \frac{215}{26}$

$= \frac{\cancel{13} \times \cancel{5} \times 43}{5 \times \cancel{5} \times 2 \times \cancel{13}}$

$= \frac{43}{10} \quad = 4\frac{3}{10}$

5	215
43	43
	1

$$10\overline{)\,43}\;\;4,\quad 40,\quad 3$$

(2) $\frac{18}{35} \times \frac{7}{12}$

$= \frac{18}{35} \times \frac{7}{12}$

$= \frac{\cancel{2} \times \cancel{3} \times 3 \times \cancel{7}}{5 \times \cancel{7} \times \cancel{2} \times 2 \times \cancel{3}}$

$= \frac{3}{10}$

2	18
3	9
3	3
	1

5	35
7	7
	1

2	12
2	6
3	3
	1

(3) $\frac{7}{10} \times \frac{50}{49}$

$= \frac{7}{10} \times \frac{50}{49}$

$= \frac{\cancel{7} \times \cancel{2} \times 5 \times \cancel{5}}{\cancel{2} \times \cancel{5} \times 7 \times \cancel{7}}$

$= \frac{5}{7}$

2	50
5	25
5	5
	1

2	10
5	5
	1

(4) $\frac{219}{13} \times \frac{39}{415}$

$= \frac{219}{13} \times \frac{39}{415}$

$= \frac{3 \times 73 \times 3 \times \cancel{13}}{\cancel{13} \times 5 \times 83}$

$= \frac{657}{415} \quad = 1\frac{242}{415}$

3	219
73	73
	1

5	415
83	83
	1

3	39
13	13
	1

$$415\overline{)\,657}\quad 1,\ 415,\ 242$$

(5) $\frac{18}{45} \times \frac{39}{12} \times \frac{36}{13}$

$= \frac{\cancel{2} \times \cancel{3} \times \cancel{3} \times 3 \times \cancel{13} \times \cancel{2} \times 2 \times \cancel{3} \times 3}{\cancel{3} \times \cancel{3} \times 5 \times \cancel{2} \times \cancel{2} \times \cancel{3} \times \cancel{13}}$

$= \frac{18}{5} \quad = 3\frac{3}{5}$

2	18
3	9
3	3
	1

3	39
13	13
	1

2	36
2	18
3	9
3	3
	1

2	12
2	6
3	3
	1

3	45
3	15
5	5
	1

$$5\overline{)\,18}\quad 3,\ 15,\ 3$$

(6) $\frac{21}{49} \times \frac{60}{63} \times \frac{2}{15}$

$$= \frac{\cancel{3} \times \cancel{7} \times 2 \times 2 \times \cancel{3} \times \cancel{5} \times 2}{\cancel{7} \times 7 \times \cancel{3} \times \cancel{3} \times 7 \times \cancel{3} \times \cancel{5}}$$

$$= \frac{8}{147}$$

3	21
7	7
	1

2	60
2	30
3	15
5	5
	1

7	49
7	7
	1

3	63
3	21
7	7
	1

(7) $\frac{66}{19} \times \frac{57}{32} \times \frac{48}{56}$

$$= \frac{\cancel{2} \times 3 \times 11 \times 3 \times \cancel{19} \times \cancel{2} \times \cancel{2} \times \cancel{2} \times \cancel{2} \times 3}{\cancel{19} \times \cancel{2} \times \cancel{2} \times \cancel{2} \times \cancel{2} \times \cancel{2} \times 2 \times 2 \times 2 \times 7}$$

$$= \frac{297}{56}$$

2	66
3	33
11	11
	1

3	57
19	19
	1

2	48
2	24
2	12
2	6
3	3
	1

2	32
2	16
2	8
2	4
2	2
	1

2	56
2	28
2	14
7	7
	1

Exercise 7.19

Find the missing fraction and verify the commutative property.

(1) $\frac{2}{5} \times \boxed{\frac{1}{4}} = \frac{1}{4} \times \frac{2}{5}$

(2) $\frac{6}{5} \times \frac{2}{3} = \boxed{\frac{2}{3}} \times \frac{6}{5}$

(3) $\frac{4}{3} \times \frac{2}{7} = \frac{2}{7} \times \boxed{\frac{4}{3}}$

(4) $\boxed{\frac{3}{4}} \times \frac{2}{3} = \frac{2}{3} \times \frac{3}{4}$

Exercise 7.20

Verify the associative property.

1. $\left(\frac{5}{6} \times \frac{2}{11}\right) \times \frac{3}{2} = \frac{5}{6} \times \left(\frac{2}{11} \times \frac{3}{2}\right)$

$$\left(\frac{5 \times 2}{6 \times 11}\right) \times \frac{3}{2} = \frac{5}{6} \times \left(\frac{2 \times 3}{11 \times 2}\right)$$

$$\frac{10}{66} \times \frac{3}{2} = \frac{5}{6} \times \frac{6}{22}$$

$$\frac{30}{132} = \frac{30}{132}$$

2. $\left(\frac{6}{5} \times \frac{9}{4}\right) \times \frac{4}{2} = \frac{6}{5} \times \left(\frac{9}{4} \times \frac{4}{2}\right)$

$$\left(\frac{6 \times 9}{5 \times 4}\right) \times \frac{4}{2} = \frac{6}{5} \times \left(\frac{9 \times 4}{4 \times 2}\right)$$

$$\frac{54}{20} \times \frac{4}{2} = \frac{5}{6} \times \frac{36}{8}$$

$$\frac{216}{40} = \frac{216}{40}$$

3. $\left(\frac{8}{3} \times \frac{7}{2}\right) \times \frac{5}{3} = \frac{8}{3} \times \left(\frac{7}{2} \times \frac{5}{3}\right)$

$$\left(\frac{8 \times 7}{3 \times 2}\right) \times \frac{5}{3} = \frac{8}{3} \times \left(\frac{7 \times 5}{2 \times 3}\right)$$

$$\frac{56}{6} \times \frac{5}{3} = \frac{8}{3} \times \frac{35}{6}$$

$$\frac{280}{18} = \frac{280}{18}$$

4. $\left(\frac{2}{11} \times \frac{5}{11}\right) \times \frac{4}{6} = \frac{2}{11} \times \left(\frac{5}{11} \times \frac{4}{6}\right)$

$$\left(\frac{2 \times 5}{11 \times 11}\right) \times \frac{4}{6} = \frac{2}{11} \times \left(\frac{5 \times 4}{11 \times 6}\right)$$

$$\frac{10}{121} \times \frac{4}{6} = \frac{2}{11} \times \frac{20}{66}$$

$$\frac{40}{726} = \frac{40}{726}$$

Exercise 7.21

Multiply the following mixed fractions after converting into improper fractions.

(1) $3\frac{3}{4} \times 2\frac{2}{3}$

$= \frac{15}{4} \times \frac{8}{3}$

$= \frac{\overset{5}{\cancel{15}} \times \overset{2}{\cancel{8}}}{\underset{1}{\cancel{4}} \times \underset{1}{\cancel{3}}}$

$= 10$

(2) $3\frac{1}{5} \times 1\frac{1}{8}$

$= \frac{16}{5} \times \frac{9}{8}$

$= \frac{\overset{2}{\cancel{16}} \times 9}{5 \times \underset{1}{\cancel{8}}}$

$= \frac{18}{5} = 3\frac{3}{5}$

$$\begin{array}{r|l} & \ \ 3 \\ \hline 5 & 18 \\ & 15 \\ \hline & \ \ 3 \end{array}$$

(3) $2\frac{1}{2} \times 3\frac{1}{3}$

$= \frac{5}{2} \times \frac{10}{3}$

$= \frac{5 \times \cancel{10}^{5}}{\cancel{2}_{1} \times 3}$

$= \frac{25}{3} = 8\frac{1}{3}$

$3\overline{)25}$ → 1, 24, 1

(4) $4\frac{3}{5} \times 3\frac{1}{4}$

$= \frac{23}{5} \times \frac{13}{4}$

$= \frac{23 \times 13}{5 \times 4}$

$= \frac{299}{20} = 14\frac{19}{20}$

$20\overline{)299}$ → 14, 20, 99, 80, 19

(5) $2\frac{1}{5} \times 6\frac{2}{7}$

$= \frac{11}{5} \times \frac{44}{7}$

$= \frac{11 \times 44}{5 \times 7}$

$= \frac{484}{35} = 13\frac{29}{35}$

$35\overline{)484}$ → 13, 35, 134, 105, 29

(6) $5\frac{2}{5} \times 3\frac{1}{2}$

$= \frac{27}{5} \times \frac{7}{2}$

$= \frac{27 \times 7}{5 \times 2}$

$= \frac{189}{10} = 8\frac{9}{10}$

$10\overline{)89}$ → 8, 80, 9

(7) $6\frac{1}{4} \times 2\frac{1}{8}$

$= \frac{25}{4} \times \frac{17}{8}$

$= \frac{25 \times 14}{4 \times 8}$

$= \frac{425}{32} = 13\frac{9}{32}$

$32\overline{)425}$ → 13, 32, 105, 96, 9

(8) $4\frac{3}{4} \times 2\frac{2}{5}$

$= \frac{19}{4} \times \frac{12}{5}$

$= \frac{19 \times \cancel{12}^{3}}{\cancel{4} \times 5}$

$= \frac{57}{5} = 11\frac{2}{5}$

$5\overline{)57}$ → 11, 5, 7, 5, 2

Word Problems

Exercise 7.22

Solve the following word problems.

(1) $\frac{3}{4}$ of a garden has grass. $\frac{2}{7}$ of the grassy area has flowers. What part of the garden is covered with flowers?

Garden area = $\frac{3}{4}$

Grassy area has flowers = $\frac{2}{7}$

Part of garden covered with flowers = $\frac{3}{4} \times \frac{2}{7}$

$$= \frac{3 \times \cancel{2}^{1}}{\cancel{4}_{2} \times 7}$$

$$= \frac{3}{14}$$

(2) Samira had $5\frac{2}{3}$ cup of laundry detergent. She used $\frac{1}{4}$ of the detergent. How much detergent does she have left?

Total cup of detergent = $5\frac{2}{3}$

Detergent used = $\frac{1}{4}$

Detergent left = $5\frac{2}{3} \times \frac{1}{4}$

$$= \frac{17}{3} \times \frac{1}{4}$$

$$= \frac{17 \times 1}{3 \times 4}$$

$$= \frac{17}{12} = 1\frac{5}{12}$$

$$\begin{array}{r} 1 \\ 12\overline{)\,17} \\ \underline{12} \\ 5 \end{array}$$

(3) If Islamic Studies book of grade IV is $\frac{4}{5}$ cm thick, how high will a pile of 9 such textbooks be?

Thickness of book = $\frac{4}{5}$

Pile of a such books = $\frac{4}{5} \times 9$

$= \frac{4 \times 9}{5}$

$= \frac{36}{5} = 7\frac{1}{5}$

$$\begin{array}{r|l} & 7 \\ 5 & 36 \\ & 35 \\ \hline & 1 \end{array}$$

(4) $\frac{3}{5}$ of a class of 45 is boys. Find the number of girls in the class.

Total number in class = 45

Boys in a class = $\frac{3}{5}$

Number of girls = $45 \times \frac{3}{5}$

$= \frac{\overset{9}{\cancel{45}} \times 3}{\cancel{5}_1}$

$= 27$

(5) Mother made strawberry jam and raspberry jam. She made enough strawberry jam to fill $\frac{1}{2}$ of a jar. If she made 5 times as much raspberry jam, how many jars would the raspberry jam fill?

Mode strawberry jam to fill jar = $\frac{1}{2}$

5 times much raspberry jam = $5 \times \frac{1}{2}$

$= \frac{5 \times 1}{2}$

$= \frac{5}{2} = 2\frac{1}{2}$

$$\begin{array}{r|l} & 2 \\ 2 & 5 \\ & 4 \\ \hline & 1 \end{array}$$

(6) Hina, Tehseen and Sadia got $3\frac{1}{3}$ of a pizza. They ate $\frac{5}{6}$ of it. How much pizza was left?

Total pizza got = $3\frac{1}{3}$

They ate pizza = $\frac{5}{6}$

Pizza left = $3\frac{1}{3} \times \frac{5}{6}$

$= \frac{\cancel{10}^{5}}{3} \times \frac{5}{\cancel{6}_{3}}$

$= \frac{25}{9} = 2\frac{7}{9}$

$$\begin{array}{r|l} & 2 \\ \hline 9 & 25 \\ & 18 \\ \hline & 7 \end{array}$$

Exercise 7.23

1 **Find the reciprocals of the following fractions.**

(1) 3	(2) $\frac{1}{4}$	(3) $\frac{13}{7}$	(4) $\frac{14}{21}$	(5) $3\frac{8}{9}$
$\frac{1}{3}$	4	$\frac{7}{13}$	$\frac{21}{14}$	$\frac{35}{9} = \frac{9}{35}$

2 **Divide the following fractions by whole numbers.**

(1) $\frac{1}{5}$ by 5	(2) $\frac{3}{8}$ by 6	(3) $1\frac{8}{9}$ by 24	(4) $3\frac{7}{11}$ by 14
$= \frac{1}{5} \div 5$ $= \frac{1}{5} \times \frac{1}{5}$ $= \frac{1}{25}$	$= \frac{3}{8} \div 6$ $= \frac{\cancel{3}^{1}}{8} \times \frac{1}{\cancel{6}_{2}}$ $= \frac{1}{16}$	$= 1\frac{8}{9} \div 24$ $= \frac{17}{9} \times \frac{1}{24}$ $= \frac{17}{216}$	$= 3\frac{7}{11} \div 14$ $= \frac{\cancel{40}^{20}}{11} \times \frac{1}{\cancel{14}_{7}}$ $= \frac{20}{77}$

(5) $\frac{1}{5}$ by 6

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

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

$= \frac{1}{30}$

(6) $\frac{4}{3}$ by 16

$= \frac{4}{3} \div 16$

$= \frac{\cancel{4}^{1}}{3} \times \frac{1}{\cancel{16}_{4}}$

$= \frac{1}{12}$

(7) $5\frac{6}{9}$ by 18

$= \frac{51}{9} \div 18$

$= \frac{\cancel{51}^{17}}{9} \times \frac{1}{\cancel{18}_{6}}$

$= \frac{17}{54}$

(8) $3\frac{5}{4}$ by 17

$= \frac{17}{4} \div 17$

$= \frac{\cancel{17}}{4} \times \frac{1}{\cancel{17}}$

$= \frac{1}{4}$

3 Divide the following whole numbers by fractions.

(1) 3 by $\frac{11}{12}$

$= 3 \div \frac{11}{12}$

$= \frac{3}{1} \times \frac{12}{11}$

$= \frac{36}{11} \quad = 3\frac{3}{11}$

$$\begin{array}{r|l} & 3 \\ 11 & 36 \\ & 33 \\ \hline & 3 \end{array}$$

(2) 4 by $\frac{16}{5}$

$= \frac{4}{1} \div \frac{16}{5}$

$= \frac{\cancel{4}^{1}}{1} \times \frac{5}{\cancel{16}_{4}}$

$= \frac{5}{4} \quad = 1\frac{1}{4}$

$$\begin{array}{r|l} & 1 \\ 4 & 5 \\ & 4 \\ \hline & 1 \end{array}$$

(3) 7 by $6\frac{5}{6}$

$= \frac{7}{1} \div \frac{41}{6}$

$= \frac{7}{1} \times \frac{6}{41}$

$= \frac{42}{41} \quad = 1\frac{1}{41}$

$$\begin{array}{r|l} & 1 \\ 41 & 42 \\ & 41 \\ \hline & 1 \end{array}$$

(4) 10 by $\frac{5}{2}$

$= \frac{10}{1} \div \frac{5}{2}$

$= \frac{\cancel{10}^{2}}{1} \times \frac{2}{\cancel{5}_{1}}$

$= 1$

(5) 12 by $\frac{24}{36}$

$$= \frac{12}{1} \div \frac{24}{36}$$

$$= \frac{\overset{1}{\cancel{12}}}{1} \times \frac{36}{\underset{2}{\cancel{24}}}$$

$$= \frac{\overset{18}{\cancel{36}}}{2} = 18$$

(6) 8 by $\frac{16}{42}$

$$= \frac{8}{1} \div \frac{16}{42}$$

$$= \frac{\overset{1}{\cancel{8}}}{1} \times \frac{42}{\underset{2}{\cancel{16}}}$$

$$= \frac{\overset{21}{\cancel{42}}}{2} = 21$$

(7) 1 by $5\frac{5}{7}$

$$= \frac{1}{1} \div \frac{42}{7}$$

$$= \frac{1}{1} \times \frac{1}{42}$$

$$= \frac{\overset{1}{\cancel{7}}}{\underset{6}{\cancel{42}}} = \frac{1}{6}$$

(8) 11 by $6\frac{5}{6}$

$$= 11 \div \frac{41}{6}$$

$$= \frac{11}{1} \times \frac{6}{41}$$

$$= \frac{66}{41} = 1\frac{25}{41}$$

$$41 \overline{)\,66\,}\ \text{quotient } 1;\quad 66 - 41 = 25$$

Exercise 7.24

Divide the following fractions by fractions.

(1) $\frac{6}{15}$ by $\frac{5}{3}$

$$= \frac{6}{15} \div \frac{5}{3}$$

$$= \frac{6}{15} \times \frac{5}{3}$$

$$= \frac{6}{\underset{5}{\cancel{15}}} = \frac{\overset{1}{\cancel{3}}}{5}$$

$$= \frac{6}{25}$$

(2) $\frac{1}{3}$ by $\frac{4}{12}$

$$= \frac{1}{3} \div \frac{4}{12}$$

$$= \frac{1}{\underset{1}{\cancel{3}}} \times \frac{\cancel{12}^{\cancel{4}}}{\cancel{4}}$$

$$= 1$$

(3) $\frac{5}{6}$ by $\frac{25}{36}$

$$= \frac{5}{6} \div \frac{25}{36}$$

$$= \frac{\overset{1}{\cancel{5}}}{\underset{1}{\cancel{6}}} \times \frac{\overset{6}{\cancel{36}}}{\underset{5}{\cancel{25}}}$$

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

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

$$5 \overline{)\,6\,}\ \text{quotient } 1;\quad 6 - 5 = 1$$

(4) $\frac{4}{7}$ by $1\frac{16}{21}$

$= \frac{4}{7} \div 1\frac{16}{21}$

$= \frac{4}{7} \div \frac{37}{21}$

$= \frac{4}{\cancel{7}_{1}} \times \frac{\cancel{21}^{3}}{37}$

$= \frac{12}{37}$

(5) $\frac{1}{8}$ by $3\frac{2}{8}$

$= \frac{1}{8} \div 3\frac{2}{8}$

$= \frac{1}{8} \div \frac{26}{8}$

$= \frac{1}{\cancel{8}} \times \frac{\cancel{8}^{1}}{26}$

$= \frac{1}{26}$

(6) $\frac{7}{8}$ by $5\frac{5}{7}$

$= \frac{7}{8} \div 5\frac{5}{7}$

$= \frac{7}{8} \div \frac{40}{7}$

$= \frac{7}{8} \times \frac{7}{40}$

$= \frac{49}{320}$

(7) $\frac{2}{9}$ by $\frac{44}{63}$

$= \frac{2}{9} \div \frac{44}{63}$

$= \frac{\cancel{2}^{1}}{\cancel{9}_{1}} \times \frac{\cancel{63}^{7}}{\cancel{44}_{22}}$

$= \frac{7}{22}$

(8) $\frac{6}{4}$ by $4\frac{1}{3}$

$= \frac{6}{4} \div 4\frac{1}{3}$

$= \frac{6}{4} \div \frac{13}{3}$

$= \frac{\cancel{6}^{3}}{\cancel{4}_{2}} \times \frac{3}{13}$

$= \frac{9}{26}$

(9) $\frac{36}{35}$ by $\frac{9}{28}$

$= \frac{36}{35} \div \frac{9}{28}$

$= \frac{\cancel{36}^{9}}{\cancel{35}_{5}} \times \frac{\cancel{28}^{4}}{\cancel{9}_{1}}$

$= \frac{16}{5}$

$= 3\frac{1}{5}$

$5\overline{)16}$ 3, 5, 1

(10) $\frac{7}{10}$ by $\frac{5}{6}$

$= \frac{7}{10} \div \frac{5}{6}$

$= \frac{7}{\cancel{10}_{5}} \times \frac{\cancel{6}^{3}}{5}$

$= \frac{21}{25}$

(11) $\frac{8}{15}$ by $\frac{7}{21}$

$= \frac{8}{15} \div \frac{7}{21}$

$= \frac{8}{\cancel{15}_{5}} \times \frac{\cancel{21}^{3}}{7}$

$= \frac{8}{5}$

$= 1\frac{8}{5}$

$5\overline{)8}$ 1, 5, 3

(12) $\frac{18}{15}$ by $\frac{25}{8}$

$= \frac{18}{15} \div \frac{25}{8}$

$= \frac{\cancel{18}^{6}}{\cancel{15}_{5}} \times \frac{25}{8}$

$= \frac{48}{125}$

Exercise 7.25

Solve the following word problems.

(1) The cost of $5\frac{1}{4}$ kg of potatoes is Rs. 100. Find the cost of 1 kg of potatoes.

Cost of $5\frac{1}{4}$ kg potatoes = 100

Cost 1 kg potatoes = $100 \div 5\frac{4}{5}$

$= 100 \div \frac{21}{4}$

$= 100 \times \frac{4}{21}$

$= \frac{400}{21}$

(2) Sara has $4\frac{1}{2}$ kg of sugar. How many packets of $\frac{1}{2}$ kg can be made out of it.

Total Sugar = $4\frac{1}{2}$ kg

Packet made out = $4\frac{1}{2} \div \frac{1}{2}$

$= \frac{9}{\cancel{2}} \times \frac{\cancel{2}}{1} = 9$ Packets.

(3) Sadia cut off a ribbon of length $6\frac{1}{2}$ m into 5 equal pieces. What is the length of each piece?

Length of ribbon = $6\frac{1}{2}$ m

Cut into pieces = 5

Length of each piece = $6\frac{1}{2} \div 5$

$= \frac{13}{2} \times \frac{1}{5}$

$= \frac{13}{10} = 1\frac{3}{10}$

$$10\overline{)13}\ 1,\quad 10,\quad 3$$

(4) A rope is $12\frac{1}{6}$ m long. Sara cuts it into 3 equal pieces. What is the length of each piece?

Length of rope = $6\frac{1}{2}$ m

Cut into pieces = 3

Length of each piece = $12\frac{1}{6} \div 3$

$= \frac{73}{6} \times \frac{1}{3}$

$= \frac{73}{18} = 4\frac{1}{18}$

(5) The weight of 15 boxes of dates is $5\frac{1}{6}$ kg. What is the weight of each box of dates?

Weight of 15 boxes of dates = $5\frac{1}{6}$ kg

Weight of each box = $5\frac{1}{6} \div 15$

$= \frac{31}{6} \times \frac{1}{15}$

$= \frac{31}{90}$