



GROW *With* MATHS

Part

6



Grow with Maths – 6

Chapter – 1 Numbers

Exercise – 1.1

1. Complete the numbers and put > or < in the box:

- a) < h) < b) < i) <
 c) < j) > d) > k) >
 e) > l) < g) <

2. Find the greatest and the smallest number in each row:

- a) Greatest 90425 Smallest 105
 b) Greatest 50785 Smallest 19
 c) Greatest 76205 Smallest 112
 d) Greatest 4890 Smallest 4370
 e) Greatest 12005 Smallest 128
 f) Greatest 15900 Smallest 15076
 g) Greatest 24668 Smallest 6797
 h) Greatest 25270 Smallest 25215

3. Arrange the following numbers in ascending order:

- a) 1008, 12650, 50602, 55010
 b) 15576, 55722, 66129, 82156
 c) 1076, 10996, 19576, 56196
 d) 35829, 38935, 45927, 90209

4. Arrange the following numbers in descending order:

- a) 56018, 55217, 29364, 13007
 b) 29852, 25196, 19603, 15218
 c) 46033, 3526, 3525, 3347
 d) 53176, 53167, 51178, 50768

Exercise – 1.2

1. Write all possible 3-digit numbers using 8, 0, 9 (only once) and arrange them in descending order:

809, 890, 908, 980; 980, 908, 890, 809

2. Write all possible 3-digit numbers using 5, 3, 4 (only once) and then arrange them in ascending order:

345, 354, 435, 453, 534, 543 345, 354, 435, 453, 534, 543

3. Using the given digits without repetition, form the greatest and the smallest 4-digit numbers:

- a) Greatest 9310 Smallest 1039
 b) Greatest 7542 Smallest 2457
 c) Greatest 8742 Smallest 2478
 d) Greatest 9741 Smallest 1479
 e) Greatest 5430 Smallest 3045
 f) Greatest 7540 Smallest 4057
 g) Greatest 9831 Smallest 1389
 h) Greatest 9761 Smallest 1679

4. Write the greatest and the smallest 5-digit numbers using all of the following digits, you may repeat the digits.

- a) Greatest 88731 Smallest 11378
 b) Greatest 99743 Smallest 33479
 c) Greatest 77510 Smallest 10057
 d) Greatest 99410 Smallest 10049
 e) Greatest 88752 Smallest 22578

5. Form the greatest and the smallest 4-digit numbers by using any one digit twice:

- a) Greatest 6651 Smallest 1156
 b) Greatest 9980 Smallest 8009
 c) Greatest 7731 Smallest 1137
 d) Greatest 9950 Smallest 5009
 e) Greatest 8850 Smallest 5008

6. Write the greatest and the smallest 4-digit numbers using any four different digits with conditions as given:

- a) Greatest 3987 Smallest 3012
 b) Greatest 9876 Smallest 1082
 c) Greatest 9847 Smallest 1042
 d) Greatest 9867 Smallest 1027

7. Shift the digit 6 towards right from its place in 6130 and compare the new numbers so formed with the given number:

6130 > 1630

Exercise – 1.3

1. Prepare a place-value chart with nine places. Enter in it the digits of the numbers given

below:

	TC	C	TL	L	T-Th	Th	H	T	O
a.					8	4	2	5	6
b.				2	2	8	2	0	5
c.				3	6	2	1	2	5
d.				6	0	0	0	0	5
e.			2	5	2	0	2	9	5
f.	5	9	4	8	3	7	1	3	9
g.		3	8	5	7	3	8	2	1
h.		9	2	5	8	0	0	1	6
i.	3	9	2	5	3	8	0	6	8
j.			8	0	1	2	2	3	7
k.	3	0	0	0	0	8	4	9	5
l.	4	0	6	5	2	8	9	2	7

1. Insert commas suitably and write the names according to Indian system of numeration:

- 5,76, 395 = Five lakh seventy six thousand three hundred ninety-five
- 8,03,075 = Eight lakh three thousand seventy five.
- 6,74,200 = Six lakh seventy four thousand two hundred
- 28,39,20 = Twenty eight lakh thirty nine thousand two hundred one
- 68,36,92 = Sixty eight lakh thirty six thousand nine hundred twenty one
- 80,70,05,093 = Eight crore seventy lakh five thousand ninety three
- 6,00,30,106 = Six crore thirty thousand one hundred six
- 75,30,00,824 = Seventy five crore thirty lakh eight hundred twenty four
- 83,25,10,201 = Eighty three crore twenty five lakh ten thousand two hundred one
- 5,30,01,925 = Five crore thirty lakh one thousand nine hundred twenty five
- 83,54,26,193 = Eighty three crore fifty four lakh twenty six thousand one hundred ninety three
- 80,00,00,005 = Eighty crore five

2. Place commas correctly and write the number in figures:

- 4,00,813
- 5,09,201
- 16,00,12,366
- 34,51,05,708

- 9,00,005
- 7,00,509
- 9,00,12,008
- 12,07,803
- 95,06,009
- 3,05,04,845

Exercise – 1.4

1. Write the face-value of:

- 5
- 8
- 3
- 4
- 7
- 5

2. Find the place-value of:

- 40
- 10
- 0
- 60
- 300000
- 20000
- 800000
- 500000
- 600
- 0
- 9000
- 500

3. Find the place-value of 6 in each of the following numbers:

- 6
- 600000
- 600000
- 600000

4. Find the sum of the place-value of 4 in:

- 4004
- 400040
- 40040
- 40400

5. Find the difference of the place-value of 9 in:

- 8910
- 89991
- 89991
- 899991

6. Write the following numbers in an expanded form:

- $500000 + 20000 + 9000 + 300 + 40 + 7$
- $300000000 + 70000000 + 2000000 + 400000 + 9000 + 500 + 70 + 8$
- $800000000 + 90000000 + 3000000 + 10000 + 6000 + 800 + 70$
- $100000000 + 30000000 + 600000 + 10000 + 9000 + 800 + 4$
- $2000000 + 300000 + 9000 + 500 + 10 + 9$
- $90000000 + 7000000 + 200000 + 30000 + 4000 + 20 + 6$

7. Write the following in standard form:

- 2,02, 02,202
- 6,80,30,484
- 37,69,076
- 4,00,00,017
- 50,00,05,055
- 90,09,00,909
- 73,02,84,069

8. Fill each of the following boxes with appropriate symbol > or <:

- <
- <
- >
- >
- >
- <
- >
- <

9. Arrange the following numbers in descending order:

- a) 24,53,70,119; 24,53,68,009; 9,32.16,723; 5,37,91,325; 4,56,39,918
- b) 12,96,54,503; 2,12,45,603; 1,29,65,784; 30,76,879; 27,89,988
- c) 62,79,05,480; 62,79,05,623; 6,27,91,023; 6,27,90,931; 6,27,90,568
- d) 6,30,82,318; 5,06,43,701; 3,07,28,510; 2,71,69,237; 79,87,689

10. Arrange the following numbers in ascending order:

- a) 93,67,839; 93,68,516; 1,05,40,603; 1,05,41,201; 9,10,32,401
- b) 27,86,789; 28,76,879; 1,48,65,710; 2,05,07,106; 3,00,08,215
- c) 25,37,926; 1,40,35,710; 2,05,47,946; 10,05,15,602; 10,10,02,301
- d) 78,76,589; 3,87,15,206; 6,97,21,656; 7,36,78,314; 12,94,05,817

11. How many 5-digit numbers are there in all?

90,000

12. How many 9-digit numbers are there in all?

90,00,00,000

13. How many 7-digit numbers are there in all?

90,00,000

Exercise – 1.5

1. Fill in the blanks:

- a) 10 e) 10 b) 1 f) 50
- c) 1 g) 100 d) 10 h) 5

2. Insert commas suitably and write the names according to International System of Numeration:

- a) 45,684,129 = Forty five million six hundred eighty four thousand one hundred twenty nine
- b) 50,968,302 = Fifty million nine hundred sixty eight thousand three hundred two
- c) 203,854,197 = Two hundred three million eight hundred fifty four thousand one hundred ninety seven
- d) 42,560,247 = Forty two million five hundred sixty thousand two hundred forty seven
- e) 100,006,001 = One hundred million six thousand one.

f) 793,654,182 = Seven hundred ninety three million six hundred fifty four thousand one hundred eighty two.

g) 300,700,006 = Three hundred million seven thousand six.

h) 491,560,543 = Four hundred ninety one million five hundred sixty thousand five hundred forty three.

i) 80,007,010 = Eighty million seven thousand ten.

3. Write the following in figures:

- a) 24,119,018 e) 401,200,031
- b) 289,069,048 f) 10,003,036
- c) 105,108,077 g) 19,000,019
- d) 716,000,605 h) 60,044,064

Exercise – 1.6

1. Write the smallest number of 7 digits by using the digits 2, 0, 3, 1 and 5. Divide this number by 819 and find the number:

136

2. Kavya multiplied 5,684 by 98 instead of 89. How much was her answer greater than the correct answer?

$$\begin{aligned} 5,684 \times 98 &= 5,57,032 \\ 5,684 \times 89 &= 5,05,876 \\ &= 51,156 \end{aligned}$$

Her answer was greater by 51,156 than correct answer.

3. The population of City M is 368509, the population of City N is 4857329 and the population of City S is 3095864. What is the total population of the three cities together?

Population of City M	:	3,68,509
population of City N	:	+ 48,57,329
population of City S	:	+ 30,95,864
Total population	:	83,21,702

4. The population of a city is 20932714. Out of these 9047314 are men, 8435784 are women and the rest are children. Find the number of children in the city.

$$\begin{aligned} \text{Total population} &: 2,09,32,714 \\ \text{Men} &: + 90,47,314 \\ \text{Women} &: + 84,35,784 \\ \text{Men + Women} &: 1,74,83,098 \end{aligned}$$

No. of Children : 2,09,32,714 – 1,74,83,098
 = 34,49,616 children

5. **Three years ago, the population of a town was 3502914. Now the population is 4857346. What is the increase in population during the last three years?**

Present population : 48,57,346
 Three years ago : (–) 35,02,914
 Increase in population : 13,54,432

6. **A tank has 9751800 ml water. Find the maximum number of jugs that can be filled if each jug can hold 31500 ml water?**

Total water : 97,51,800 ml
 One jug contains : 31,500 ml
 No. of jugs can be filled : $97,51,800 \div 31,500$
 = 309 nos.

7. **The distance between two cities is 42 km 875 m. A bus makes 6 trips everyday. How much distance does it in the month of May?**

Distance between 2 cities : 42 km 875 m (42.875 km)
 No. of trips bus makes : 6 trips
 Distance in One Day : 42.875×6
 = 257.25 km
 Total distance in May (31 days) : 257.25×31
 = 7974 km 75m

8. **A cloth merchant has an order to supply 13000 m cloth. He has 145 rolls of cloth each measuring 85 m 50 cm. How much more cloth does he need to buy?**

Total cloth to be supplied : 13000 m
 One Roll contains : 85m50cm (85.5 m)
 Total Rolls : 145 rolls
 Total cloth he has : $145 \times 85.5 = 12397.5$ m
 Balance cloth needed : $13,000 - 12397.5$
 = 602.5 m

9. **A leading newspaper has 38 pages and 12870 copies are printed everyday. How many pages in all are printed in the month of April?**

One Newspaper contains : 38 pages
 Newspapers printed in one day : 12870 copies
 Total pages printed in one day : 489060 pages (38×12870)

Total pages printed in April (30 days) :
 14671800 pages (489060×30)

10. **Rohan has 1200 mango trees in his garden. In one year he estimated that 720 mangoes were produced by each tree. He packed 500 mangoes in a box. How many boxes did he use for packing all the mangoes? If he loaded 432 boxes in a truck, how many trucks did he hire?**

Total mango trees : 1200
 One tree produced : 720 mangoes
 Mangoes produces by 1200 trees :
 864000 mangoes (1200×720)
 One box contains : 500 mangoes
 Total boxes needed : 1728 boxes ($864000 \div 500$)
 One truck contains : 432 boxes
 Total trucks needed : 4 trucks ($1728 \div 432$)

Exercise – 1.7

1. **Round off each of the following numbers to the nearest ten:**

a) 630 c) 830
 b) 540 d) 2510

2. **Round off each of the following numbers to the nearest ten:**

(i) hundred (ii) thousand
 a) (i) 3600 (ii) 4000
 b) (i) 2400 (ii) 2000
 c) (i) 2500 (ii) 3000

3. **Estimate:**

a) 1100 c) 25000
 b) 1200 d) 180000

4. **Give a rough estimate and also a closer estimate:**

a) 5200; 5300 b) 260000; 7000

5. **Estimate:**

a) 60 c) 5300
 b) 2000 d) 70000

6. **Give a rough estimate and also closer estimate:**

a) 3800; 3900 b) 300000; 350000

7. **Estimate the following products:**

a) 8000 d) 3500
 b) 40000 e) 120000
 c) 28000 f) 320000

8. Estimate the following quotients:

- | | |
|-------|-------|
| a) 10 | d) 30 |
| b) 4 | e) 10 |
| c) 10 | f) 30 |

Exercise – 1.8

1. Write the following in Roman numerals:

- | | |
|------------|--------------|
| a) LXXXVII | e) CCCXXXV |
| b) CXXXIX | f) CCCLXXXIX |
| c) CLXXIII | g) CCCV |
| d) CCI | h) CCCCXXXVI |

2. Write the following in Hindu-Arabic numerals:

- | | |
|--------|--------|
| a) 55 | f) 344 |
| b) 64 | g) 417 |
| c) 92 | h) 282 |
| d) 261 | i) 364 |
| e) 159 | j) 439 |

3. Write the following Roman numerals:

- | | |
|-----------|-------------|
| a) CCXXIX | c) CCCLXXXI |
| b) CCLXIV | d) CDXLIX |

4. Match the correct numbers:

- | | |
|----------|---------|
| a) (iv) | c) (i) |
| b) (iii) | d) (ii) |

Revision Exercise

1. Write the number names of the following numbers in International System:

- Three hundred forty one million six.
- Five million eight hundred sixty thousand four.
- Seven hundred twenty one million seven hundred thousand four hundred fifty one.

2. Write following numbers in expanded notation:

- $6000000 + 300000 + 10000 + 700 + 40 + 8$
- $5000000 + 10000 + 800 + 400 + 8$
- $7000000 + 800000 + 40000 + 6$

3. Write the place value of the coloured digit:

- | | |
|------------|------------|
| a) 6000 | c) 300000 |
| b) 7000000 | d) 2000000 |

4. Which one is smaller?

- | | |
|----------|--------|
| a) 4,295 | b) 995 |
|----------|--------|

5. Which one is smaller?

- | | |
|----------|-----------|
| a) 5,794 | b) 65,438 |
|----------|-----------|

6. Arrange the following in ascending order:

- a) 85,608; 85,739; 91,715; 1,03,215

- b) 69,987; 2,12,513; 2,21,315; 4,00,306

7. Arrange the following in descending order:

- 2,32,091; 2,25,918; 95,783; 95,698
- 1,98,109; 1,89,910; 1,89,901; 1,89,019

8. Using the digits 6, 5, 3, 0 and 4, make any four 8-digit numbers and arrange them in ascending order:

60530040, 53603004, 33065454, 60350453

9. How many 8-digit numbers are there in all?

90000000

10. Exchange the digit 2 and 7 of the following numbers and compare the new number with the previous one:

- $2,738 < 7,238$
- $92,467 < 97,462$

11. Put commas suitably and write the names according to Indian System of Numeration:

- 50,30,769 = Fifty lakh thirty thousand seven hundred sixty nine
- 30,00,186 = Thirty lakh one hundred eighty six.
- 83,70,192 = Eighty three lakh seventy thousand one hundred ninety two.

12. Put commas suitably and write the names according to International System of Numeration:

- 7,628,194 = Seven million six hundred twenty eight thousand one hundred ninety four.
- 65,053,271 = Sixty five million fifty three thousand two hundred seventy one.
- 36,162,528 = Thirty six million one hundred sixty two thousand five hundred twenty eight.

13. Write the place-value of 6 in each of the following:

- | | | |
|------|----------|------------|
| a) 6 | b) 60000 | c) 6000000 |
|------|----------|------------|

14. Round off:

- | | |
|-----------|-------------|
| a) 73,300 | b) 1,50,000 |
|-----------|-------------|

15. A bookseller sold books worth Rs. 7,85,691 in the first week of a month. The bookseller sold books worth Rs. 8,00,329 in the second week of the month. How much was the sale for the two weeks together? In which week the sale was greater and by how much?

Books sold in 1st week : Rs. 7,85,691

Books sold in 2nd week : Rs. 8,00,329
 Total books sold in 2 weeks : Rs. 15,86,020
 Sale was greater in 2nd week by Rs. 14,638
 (8,00,329 – 7,85,691)

16. Estimate the following:

- | | |
|---------|----------|
| a) 2100 | e) 4000 |
| b) 4200 | f) 80000 |
| c) 900 | g) 100 |
| d) 7000 | h) 571 |

Chapter – 2 Playing with Numbers

Exercise – 2.1

1. Find all the factors of the following:

- 10 = 1, 2, 5, 10
- 12 = 1, 2, 3, 4, 6
- 36 = 1, 2, 3, 4, 6, 9, 12, 18, 36
- 39 = 1, 3, 13, 39
- 169 = 1, 13, 169
- 47 = 1, 47
- 256 = 1, 2, 4, 8, 16, 32, 64, 128, 256
- 441 = 1, 3, 7, 9, 63, 441
- 986 = 1, 2, 17, 29, 34, 58, 986
- 729 = 1, 3, 9, 27, 81, 243, 729
- 545 = 1, 5, 109, 545
- 586 = 1, 2, 293, 586

2. Find if 23 is a factor of 287408?

Yes, 23 is a factor of 287408 because it divides the number completely.

3. Find if 125451 is a multiple of 53?

Yes, 125451 is a multiple of 53 because it is divided completely by 53.

4. Write down first six multiples of the following:

- 3 = 3, 6, 9, 12, 15, 18
- 7 = 7, 14, 21, 28, 35, 42
- 11 = 11, 22, 33, 44, 55, 66
- 19 = 19, 38, 57, 76, 95, 114
- 21 = 21, 42, 63, 84, 105, 126
- 25 = 25, 50, 75, 100, 125, 150
- 57 = 57, 114, 171, 228, 285, 342
- 81 = 81, 162, 243, 324, 405, 486
- 93 = 93, 186, 279, 372, 465, 558
- 43 = 43, 86, 129, 172, 215, 258
- 86 = 86, 172, 258, 344, 430, 516
- 27 = 27, 54, 81, 108, 135, 162

5. a) Find the eleventh multiple of 71:

781

b) Find multiples of 7 between 36 and 58:

42, 49, 56

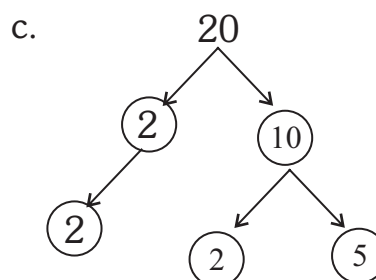
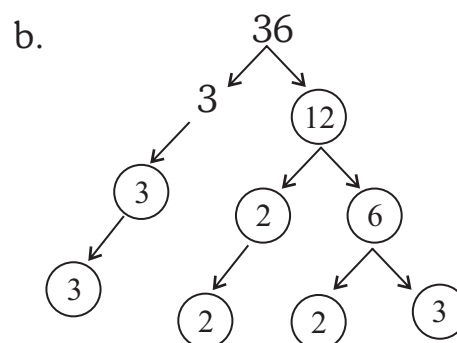
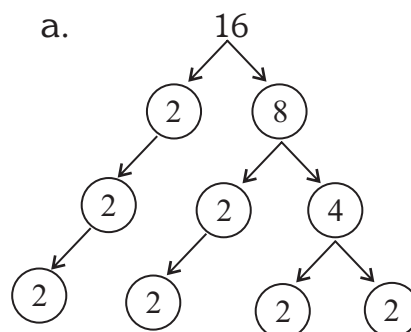
6. State if the following statements are true or false:

- | | | |
|---------|----------|----------|
| a) True | b) False | c) True |
| d) True | e) False | f) False |

7. Find the composite numbers among the following:

4, 21, 18

8. Fill up the factors tree using prime numbers:



Exercise – 2.2

1. Check which number is divisible by 2?

216, 9926, 10308, 90

2. Which of the following is divisible by 4?

228524, 37260, 13520

3. Using the divisibility test, state which of the following numbers are divisible by 5 or 10?
48980, 21335, 34300
4. Using the divisibility test, state which of the following numbers are divisible by 3 or 9?
a, d, e by 3 and b, c by 9
5. Which of the following is divisible by 6?
99864
6. Which of the following is divisible by 7?
343, 4578, 69111, 3087
7. Which of the following is divisible by 8?
33000, 32520, 96720, 16777216
8. Which of the following numbers are divisible by 11?
3784, 103081, 61831, 769483
9. Give an example of a number which is:
a) 10 b) 15 c) 6
10. Which of the following are prime numbers?
137, 139, 167, 323, 101, 133, 391

Exercise – 2.3

1. Find the prime factors of the following numbers:
 - a) 34 = 2×17
 - b) 48 = $2 \times 2 \times 2 \times 2 \times 3$
 - c) 52 = $2 \times 2 \times 13$
 - d) 98 = $2 \times 7 \times 7$
 - e) 216 = $2 \times 2 \times 2 \times 3 \times 3 \times 3$
 - f) 390 = $2 \times 5 \times 3 \times 13$
 - g) 468 = $2 \times 2 \times 3 \times 3 \times 13$
 - h) 540 = $2 \times 2 \times 3 \times 3 \times 3 \times 5$
 - i) 9000 = $2 \times 2 \times 2 \times 3 \times 3 \times 5 \times 5 \times 5$
 - j) 1260 = $2 \times 2 \times 3 \times 3 \times 5 \times 7$
 - k) 1729 = $7 \times 13 \times 19$
 - l) 8790 = $2 \times 3 \times 5 \times 293$
 - m) 152 = $2 \times 2 \times 2 \times 19$
 - n) 475 = $5 \times 5 \times 19$
 - o) 1425 = $3 \times 5 \times 5 \times 19$
 - p) 100 = $2 \times 2 \times 5 \times 5$
 - q) 1026 = $2 \times 3 \times 3 \times 3 \times 19$
 - r) 66 = $2 \times 3 \times 11$
 - s) 20570 = $2 \times 5 \times 11 \times 11 \times 17$
 - t) 1790 = $2 \times 5 \times 179$
 - u) 2907 = $3 \times 3 \times 17 \times 19$
 - v) 4641 = $3 \times 7 \times 13 \times 17$

$$\begin{array}{lcl} \text{w)} & 3525 & = 3 \times 5 \times 5 \times 47 \\ \text{x)} & 9962 & = 2 \times 1 \times 7 \times 293 \end{array}$$

Revision Exercise

1. Tick (✓) the correct option:
 - a) (i) 0
 - b) (i) xy
 - c) (iii) 2
 - d) (iii) 630040
2. Use the test of divisibility to supply the smallest possible digit in place * so that:
 - a) 0 b) 7 c) 8
 - d) 1 e) 0
2. Find all the factors of:
 - a) 14 = 1, 2, 7
 - b) 100 = 1, 2, 4, 5, 10, 20, 25, 100
 - c) 325 = 1, 5, 13, 25, 65, 325
3. Find 7th multiple of 63.
441
4. Find prime factors of the following:
 - a) 480 = $2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 5$
 - b) 1530 = $2 \times 3 \times 3 \times 5 \times 17$
 - c) 59375 = $5 \times 5 \times 5 \times 5 \times 5 \times 19$

Chapter – 3 HCF and LCM

Exercise – 3.1

1. Find the common factors of the following pairs:
 - a) 1, 2
 - b) 1, 2, 3, 4, 6, 9, 12, 18, 36
 - c) 1, 2, 3, 4, 6, 12
 - d) 1, 2, 17
 - e) 1, 2
 - f) 1, 2, 3, 4, 6, 12, 24, 48
2. Find the HCF of the following by listing the factors and also by prime factorization:
 - a) 18, 60
Listing Method: $\text{HCF} = 2 \times 3 = 6$
Prime Factorization: $\text{HCF} = 2 \times 3 = 6$

2	18, 60
3	9, 30
	3, 10

$$\begin{array}{l} 18 = 2 \times 3 \times 3 \\ 60 = 2 \times 2 \times 3 \times 5 \end{array}$$

b) 34, 102

Listing Method: $HCF = 2 \times 17 = 34$

Prime Factorization:

$$\begin{array}{r|l} 2 & 34, 102 \\ 17 & 17, 51 \\ \hline & 1, 3 \end{array}$$

$HCF = 2 \times 17 = 34$
 $34 = 2 \times 17$,
 $102 = 2 \times 17 \times 3$

c) 96, 124, 196

Listing Method:

$$\begin{array}{r|l} 2 & 96, 124, 196 \\ 2 & 48, 62, 98 \\ \hline & 24, 31, 49 \end{array}$$

Prime Factorization:

$HCF = 2 \times 2 = 4$
 $96 = 2 \times 2 \times 2 \times 2 \times 2 \times 3$
 $124 = 2 \times 2 \times 31$, $196 = 2 \times 2 \times 7 \times 7$

d) 18, 48, 432

Listing Method:

$$\begin{array}{r|l} 2 & 18, 48, 432 \\ 3 & 9, 24, 216 \\ \hline & 3, 8, 72 \end{array}$$

$HCF = 2 \times 3 = 6$
 $18 = 2 \times 3 \times 3$, $48 = 2 \times 2 \times 2 \times 2 \times 3$
 $432 = 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3$

e) 256, 512, 216

Listing Method: $HCF = 2 \times 2 \times 2 = 8$

$$\begin{array}{r|l} 2 & 256, 512, 216 \\ 2 & 128, 256, 108 \\ 2 & 64, 128, 54 \\ \hline & 32, 64, 27 \end{array}$$

Prime Factorization: $HCF = 2 \times 2 \times 2 = 8$

$256 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
 $512 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
 $216 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$

f) 1024, 512, 2048 Listing Method:

$HCF = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 512$

$$\begin{array}{r|l} 2 & 1024, 512, 2048 \\ 2 & 512, 256, 1024, \\ 2 & 256, 128, 512 \\ 2 & 128, 64, 256 \\ 2 & 64, 32, 128 \\ 2 & 32, 16, 64 \\ 2 & 16, 8, 32 \\ 2 & 8, 4, 16 \\ 2 & 4, 2, 8 \\ \hline & 2, 1, 4 \end{array}$$

Prime Factorization:

$1024 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
 $512 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
 $2048 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$
 $HCF = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 512$

Exercise – 3.2

1. Find LCM of following numbers by listing multiples:

- a) $6 = 6, 12, 18, 24$
 $8 = 8, 16, 24$
 LCM of 6 and 8 is 24.
- b) $2 = 2, 4, 6, 8$
 $4 = 4, 8$
 LCM of 2 and 4 is 4.
- c) $10 = 10, 20, 30, 40, 50, 60, 70$
 $12 = 12, 24, 36, 48, 60, 72$
 LCM of 10 and 12 is 60.
- d) $12 = 12, 24, 36, 48, 60, 72$
 $15 = 15, 30, 45, 60, 75$
 LCM of 12 and 15 is 60.
- e) $12 = 12, 24, 36, 48, 60, 72, 84$
 $36 = 36, 72$
 LCM of 12 and 36 is 72.
- f) $9 = 9, 18, 27, 36, 45$
 $12 = 12, 24, 36, 48$
 LCM of 9 and 12 is 36.

2. Find the LCM of the following numbers by using prime factorization:

- a) $62 = 2 \times 31$
 $94 = 2 \times 47$
 LCM of 62 and 94 = $2 \times 31 \times 47 = 2914$.
- b) $6 = 2 \times 3$
 $18 = 2 \times 3 \times 3$
 $20 = 2 \times 2 \times 5$
 LCM of 6, 18 and 20 = $2 \times 3 \times 2 \times 3 \times 5 = 270$.
- c) $12 = 2 \times 2 \times 3$
 $26 = 2 \times 13$
 $39 = 3 \times 13$
 LCM of 12, 26, 39 = $2 \times 2 \times 3 \times 13 = 156$.
- d) $14 = 2 \times 7$
 $28 = 2 \times 2 \times 7$
 $24 = 2 \times 2 \times 2 \times 3$
 LCM of 14, 28, 24 = $2 \times 2 \times 2 \times 3 \times 7 = 168$.

e) $16 = 2 \times 2 \times 2 \times 2$
 $30 = 2 \times 3 \times 5$
 $42 = 2 \times 3 \times 7$
LCM of 16, 30, 42 = $2 \times 2 \times 2 \times 2 \times 3 \times 5 \times 7 = 1680$.

f) $72 = 2 \times 2 \times 2 \times 3 \times 3$
 $90 = 2 \times 3 \times 3 \times 5$
LCM of 72 and 90 = $2 \times 2 \times 2 \times 3 \times 3 \times 5 = 360$.

3. Find the LCM of the following groups of numbers:

a) 16, 28, 40, 70

2	16, 28, 40, 70
2	8, 14, 20, 35
2	4, 7, 10, 35
5	2, 7, 5, 35
7	2, 7, 1, 7
2	2, 1, 1, 1
	1, 1, 1, 1

LCM of 16, 28, 40, 70 = $2 \times 2 \times 2 \times 2 \times 5 \times 7 = 560$.

b) 28, 36, 45, 60

2	28, 36, 45, 60
2	14, 18, 45, 30
7	7, 9, 45, 15
5	1, 9, 45, 15
3	1, 9, 9, 3
3	1, 3, 3, 1
	1, 1, 1, 1

LCM of 28, 36, 45, 60 = $2 \times 2 \times 3 \times 3 \times 5 \times 7 = 1260$.

c) 63, 84, 147

7	63, 84, 147
7	9, 12, 21
3	9, 12, 3
3	3, 4, 1
2	1, 4, 1
2	1, 2, 1
	1, 1, 1

LCM of 63, 84, 147 = $2 \times 2 \times 3 \times 3 \times 7 \times 7 = 1764$.

d) 162, 135, 108

2	162, 135, 108
2	81, 135, 54
3	81, 135, 27
3	27, 45, 9
3	9, 15, 3
5	3, 5, 1
3	3, 1, 1
	1, 1, 1

LCM of 162, 135, 108 = $2 \times 2 \times 3 \times 3 \times 3 \times 3 \times 5 = 1620$.

e) 108, 96, 72, 54, 36

2	108, 96, 72, 54, 36
2	54, 48, 36, 27, 18
2	27, 24, 18, 27, 9
2	27, 12, 9, 27, 9
2	27, 6, 9, 27, 9
3	27, 3, 9, 27, 9
3	9, 1, 3, 9, 3
3	3, 1, 1, 3, 1
	1, 1, 1, 1, 1

LCM of 108, 96, 72, 54, 36 = $2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 864$.

f) 660, 420, 240

2	660, 420, 240
2	330, 210, 120
5	165, 105, 60
3	33, 21, 12
2	11, 7, 4
2	11, 7, 2
11	11, 7, 1
7	1, 7, 1
	1, 1, 1

LCM of 660, 420, 240 = $2 \times 2 \times 2 \times 2 \times 11 \times 7 = 18480$.

g) 48, 64, 72, 96, 108

2	48, 64, 72, 96, 108
2	24, 32, 36, 48, 54
2	12, 16, 18, 24, 27
2	6, 8, 9, 12, 27
2	3, 4, 9, 6, 27
2	3, 2, 9, 3, 27
3	3, 1, 9, 3, 27
3	1, 1, 3, 1, 9
3	1, 1, 1, 1, 3
	1, 1, 1, 1, 1

LCM of 48, 64, 72, 96, 108 = $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 1728$

h) 3, 12, 24, 36, 56, 84

3	3, 12, 24, 36, 56, 84
3	1, 4, 8, 12, 56, 28
2	1, 4, 8, 4, 56, 28
2	1, 2, 4, 2, 28, 14
2	1, 1, 2, 1, 14, 7
7	1, 1, 1, 1, 7, 7
	1, 1, 1, 1, 1, 1

LCM of 3, 12, 24, 36, 56, 84 = $2 \times 2 \times 2 \times 3 \times 3 \times 7 = 504$.

i) 144, 180, 384

2	144, 180, 384
2	72, 90, 192
2	36, 45, 96
2	18, 45, 48
2	9, 45, 24
2	9, 45, 12
2	9, 45, 6
3	9, 45, 3
3	3, 15, 1
5	1, 5, 1
	1, 1, 1

LCM of 144, 180, 384 = $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 5760$.

Exercise – 3.3

1. The HCF of two numbers is 23 and their LCM is 1449. If one of the numbers is 161, find the other:

Let 2 numbers be a and b.

As per Rule: $a \times b = \text{HCF} \times \text{LCM}$

$$\frac{\text{HCF} \times \text{LCM}}{a} = \frac{23 \times 1449}{161}$$

$$= 207$$

So, other number is 207.

2. The product of two numbers is 1392. If their LCM is 696. Find their HCF:

Let 2 numbers be a and b.

As per Rule: $a \times b = \text{HCF} \times \text{LCM}$

$$\text{HCF} = \frac{a \times b}{\text{LCM}} = \frac{1392}{696}$$

$$= 2$$

So, HCF of two numbers = 207.

3. The product of two numbers is 3072. If their HCF is 16. Find their LCM:

Let 2 numbers be a and b.

As per Rule: $a \times b = \text{HCF} \times \text{LCM}$

$$\text{LCM} = \frac{a \times b}{\text{HCF}} = \frac{3072}{16}$$

$$= 192$$

So, LCM of two numbers = 192.

4. Can 2 numbers have 24 as their HCF and 1344 as their LCM? Give reason.

Yes, because 1344 is exactly divisible by 24

5. Find HCF of 40 and 56 and verify that HCF is the factor of (56 + 40) and (56 - 40)

Factors of 40 = $2 \times 2 \times 2 \times 5$

56 = $2 \times 2 \times 2 \times 7$

HCF of 40 and 56 = 8 [2 × 2 × 2]

(i) (56 + 40) = 96 : 96 is divisible by 8. So, HCF 8 is a factor of (56 + 40).

(ii) (56 - 40) = 16 : 16 is divisible by 8. So, HCF 8 is a factor of (56 - 40).

6. Can two numbers have 16 as their HCF and 204 as their LCM? Give reason.

No, because 204 is not exactly divisible by 16.

7. Verify that product of two numbers = their HCF × their LCM

a) 23, 69: Let 2 numbers be a and b. a = 23, b = 69

$$\begin{aligned}
 \text{Factors of 23} &= 23 \\
 69 &= 3 \times 23 \\
 \text{HCF of 23 and 69} &= 23 \\
 \text{LCM of 23 and 69} &= 69 \\
 \text{As per question : } a \times b &= \text{HCF} \times \text{LCM} \\
 \text{i.e. } 23 \times 69 &= 23 \times 69 \\
 \text{LHS} &= \text{RHS}
 \end{aligned}$$

- b) 86, 154: Let 2 numbers be a and b. $a = 86$, $b = 154$

$$\begin{aligned}
 \text{Factors of 86} &= 2 \times 43 \\
 154 &= 2 \times 77 \\
 \text{HCF} &= 2 \\
 \text{LCM} &= 2 \times 43 \times 77 = 6622 \\
 \text{As per question : } a \times b &= \text{HCF} \times \text{LCM} \\
 86 \times 154 &= 2 \times 6622 \\
 13244 &= 13244 \\
 \text{LHS} &= \text{RHS}
 \end{aligned}$$

- c) 25, 225: Let 2 numbers be a and b. $a = 25$, $b = 225$

$$\begin{aligned}
 \text{Factors of 25} &= 5 \times 5 \\
 225 &= 3 \times 3 \times 5 \times 5 \\
 \text{HCF} &= 25 \quad [5 \times 5] \\
 \text{LCM} &= 5 \times 5 \times 3 \times 3 = 225 \\
 \text{As per question : } a \times b &= \text{HCF} \times \text{LCM} \\
 25 \times 225 &= 25 \times 225 \\
 \text{LHS} &= \text{RHS}
 \end{aligned}$$

- d) 115, 575: Let 2 numbers be a and b. $a = 115$, $b = 575$

$$\begin{aligned}
 \text{Factors of 115} &= 5 \times 23 \\
 575 &= 5 \times 5 \times 23 \\
 \text{HCF} &= 115 \quad [5 \times 23] \\
 \text{LCM} &= 575 \quad [5 \times 5 \times 23] \\
 \text{As per question : } a \times b &= \text{HCF} \times \text{LCM} \\
 115 \times 575 &= 115 \times 575 \\
 \text{LHS} &= \text{RHS}
 \end{aligned}$$

8. Complete the following table:

- 1, 29, 435, 435
- 32, No, 64, 2048
- 4, No, 112, 448, 448
- 36, No, 720, 25920, 25920
- 64, 4, No, 1728, 6912

Exercise–3.4

- 1. Find smallest number which when divided by 15, 25 and 35 leaves a remainder 7 in each case.**

5	15, 25, 35
5	3, 5, 7
3	3, 1, 7
7	1, 1, 7
	1, 1, 1

LCM of 15, 25, 35 = $3 \times 5 \times 5 \times 7 = 525$.

So, $525 + 7 = 532$ is smallest number which when divided by 15, 25, 35 leaves a remainder 7 in each case.

- 2. Find the least number which on adding 5 to it becomes exactly divisible by 15, 25, 30 and 45.**

5	15, 25, 30, 45
5	3, 5, 6, 9
3	3, 1, 6, 9
3	1, 1, 2, 3
2	1, 1, 2, 1
	1, 1, 1, 1

LCM of 15, 25, 30, 45 = $2 \times 3 \times 3 \times 5 \times 5 = 450$.

So, $450 - 5 = 445$ least number which on adding 5 to it becomes exactly divisible.

- 3. Four bells ring at intervals of 6, 8, 12 and 20 minutes. They ring simultaneously at 8 a.m. At what time will they ring together again?**

2	6, 8, 12, 20
2	3, 4, 6, 10
2	3, 2, 3, 5
3	3, 1, 3, 5
5	1, 1, 1, 5
	1, 1, 1, 1

LCM of 6, 8, 12, 20 = $2 \times 2 \times 2 \times 3 \times 5 = 120$. (2 hours).

So, the 4 bells, which rang at 8 a.m., will now ring after 2 hours at 10 a.m. again.

- 4. At 3 different road crossing, the traffic lights change after every 48, 72 and 108 seconds. If they change simultaneously at 7 a.m., at what time will they change again?**

2	48, 72, 108
2	24, 36, 54
2	12, 18, 27
2	6, 9, 27
3	3, 9, 27
3	1, 3, 9
3	1, 1, 3
	1, 1, 1

LCM of 48, 72, 108 = $2 \times 2 \times 2 \times 2 \times 3 \times 3 \times 3 = 432$.
[7 min : (432/60)]

The 3 traffic lights, which changed last at 7 am, will now change again at 7:7 a.m.

5. Find least 4-digit number which on dividing by 4, 12, 20, and 24 leaves remainder 3 in each case.

2	4, 12, 20, 24
2	2, 6, 10, 12
2	1, 3, 5, 6
3	1, 3, 5, 3
5	1, 1, 5, 1
	1, 1, 1, 1

LCM of 4, 12, 20, 24 = $2 \times 2 \times 2 \times 3 \times 5 = 120$.

First 4-digit number which is multiple of LCM 120 is 1080.

So, $1080 + 3 = 1083$ is least 4-digit number divisible by 4, 12, 20, 24 leaves a remainder 3.

6. The length of a rectangular field is 122 m and breadth 92 m. A wall 1 m thick is built around the field inside the boundary. What is the length of the largest tape that can measure the inside dimensions of the field exactly?

Inner Length of rectangular field

$$= 122 - 2 = 120 \text{ m}$$

Inner Breadth of rectangular field

$$= 92 - 2 = 90 \text{ m}$$

Length of largest tape to measure inside dimensions of field = HCF of 120 & 90

$$\text{HCF of 120 and 90} = 30$$

$$\text{So, Length of largest tape} = 30 \text{ m}$$

7. Find number which will divide 398, 436, leaving remainders 11 and 15 respectively.

Kindly consult your teacher.

8. A rectangular courtyard of length 20 m and 16 cm and breadth 15 m and 60 cm is to be paved

with same sized square tiles. Find the maximum possible number of such tiles.

Kindly consult your teacher.

9. Two tankers have the capacity of 850 litres and 680 litres of petrol. Find maximum capacity of a container which can measure the petrol of either tanker in exact number of times.

$$\text{Factors of 850} = 2 \times 5 \times 5 \times 17$$

$$680 = 2 \times 2 \times 2 \times 5 \times 17$$

$$\text{HCF} = 170 [2 \times 5 \times 17]$$

So, the container which can measure the petrol of either tanker exactly is 170 litres.

Revision Exercise

1. Tick (✓) the correct option:

a) (i) 2

b) (ii) 1

c) (i) 25

2. Find HCF by prime factorization:

a) 38, 42, 66

$$38 = 2 \times 19$$

$$42 = 2 \times 3 \times 7$$

$$66 = 2 \times 3 \times 11$$

$$\text{HCF} = 2$$

b) 64, 128, 256

$$64 = 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$128 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$256 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$\text{HCF} = 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$$

c) 256, 324, 156

$$256 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$$

$$434 = 2 \times 7 \times 31$$

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

$$\text{HCF} = 4$$

3. Find HCF by long division method:

a) 144, 441

$$\begin{array}{r} 144 \overline{) 441} 3 \\ \underline{-432} \\ 9 \overline{) 144} 16 \\ \underline{-144} \\ 0 \end{array}$$

So, 9 is HCF of 144 and 441.

b) 28, 36, 48

$$\begin{array}{r}
 28 \overline{) 36} 1 \\
 \underline{-36} \\
 8 \overline{) 28} 3 \\
 \underline{-24} \\
 4 \overline{) 8} 2 \\
 \underline{-8} \\
 0
 \end{array}$$

HCF of 28, 36 is 4.

Now, HCF of 36 and 48:

$$\begin{array}{r}
 4 \overline{) 48} 12 \\
 \underline{-48} \\
 00
 \end{array}$$

HCF of 36 and 48 is 4.

So, HCF of 28, 36 and 48 is 4.

c) 234, 572

$$\begin{array}{r}
 234 \overline{) 572} 2 \\
 \underline{-468} \\
 104 \overline{) 234} 2 \\
 \underline{-208} \\
 26 \overline{) 104} 4 \\
 \underline{-104} \\
 0
 \end{array}$$

HCF of 234, 572 is 26.

4. Find LCM by prime factorization:

a) 24, 36, 40

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

$$36 = 2 \times 2 \times 3 \times 3$$

$$40 = 2 \times 2 \times 2 \times 5$$

$$\text{LCM} = 2 \times 2 \times 2 \times 3 \times 3 \times 5 = 360$$

b) 16, 36, 48

$$16 = 2 \times 2 \times 2 \times 2$$

$$36 = 2 \times 2 \times 3 \times 3$$

$$48 = 2 \times 2 \times 2 \times 2 \times 3$$

$$\text{LCM} = 2 \times 2 \times 2 \times 2 \times 3 \times 3 = 144$$

c) 12, 15, 20, 27

$$12 = 2 \times 2 \times 3$$

$$15 = 3 \times 5$$

$$20 = 2 \times 2 \times 5$$

$$27 = 3 \times 3 \times 3$$

$$\text{LCM} = 2 \times 2 \times 3 \times 3 \times 3 \times 5 = 540$$

5. Find HCF and LCM of 231 and 273. Also find the product of the HCF and LCM of the numbers. Check how the above product is

related to the product 231×273 :

$$\text{Factors of } 231 = 11 \times 21$$

$$273 = 13 \times 21$$

$$\text{HCF} = 21$$

$$\text{LCM} = 3003 [11 \times 13 \times 21]$$

$$\text{Product of HCF \& LCM} = 63063 [21 \times 3003]$$

$$\text{Product of two numbers} = 63063 [231 \times 273]$$

6. Three bells toll at interval of 9, 12, 15 minutes respectively. If they start tolling together, after what time will they next toll together?

3	9, 12, 15
3	3, 4, 5
2	1, 4, 5
2	1, 2, 5
5	1, 1, 5
	1, 1, 1

LCM of 9, 12, 15 = $2 \times 2 \times 3 \times 3 \times 5 = 180$ minutes
= 3 hours.

So, the 3 bells will toll together after 3 hours.

7. An electric device makes a beep after every 15 minutes. Another device makes a beep after every 20 minutes. They beeped together at 6 am. At what time will they next beep together?

5	15, 20
3	3, 4
2	1, 4
2	1, 2
	1, 1

LCM of 15 and 20 = 60 [= 60 minutes = 1 hour]

So, electric devices will beep together next after 1 hour at 7 a.m.

8. A room has length, breadth and height of 8m 25cm, 6m 75cm and 4m 50cm. Determine longest tape which can measure 3 dimensions of room exactly.

$$\text{Length of Room} = 825 \text{ cm}$$

$$\text{Breadth of Room} = 675 \text{ cm}$$

$$\text{Height of Room} = 450 \text{ cm}$$

Longest tape to measure 3

$$\text{dimensions of room} = \text{HCF of } 825, 675, 450$$

$$\text{Factors of } 825 = 3 \times 5 \times 5 \times 11$$

$$675 = 3 \times 3 \times 3 \times 5 \times 5$$

$$450 = 2 \times 3 \times 3 \times 5 \times 5$$

7. **Mukesh drives for 14 days driving 20 km each day. Ravish drives for 20 days driving 14 km each day. Who drives more distance?**

Mukesh drives in 1 day = 20 km
 Mukesh drives in 14 days = $20 \times 14 = 280$ km

Ravish drives in 1 day = 14 km
 Ravish drives in 14 days = $14 \times 20 = 280$ km

Both cover equal distance.

8. **State the property involved in each case:**

- Commutative Property
- Multiplication by zero
- Associative Property
- Multiplication Identity
- Closure Property

Exercise – 4.4

1. **Write the missing numbers and state the property involved:**

- 0, multiplication by zero
- 7, 9 distributive property over addition
- 18, 20, 4 distributive property over subtraction
- 0

2. **Using distributive property find the following products:**

- $47 \times 96 = 47(90 + 6)$
 $= (47 \times 90) + (47 \times 6)$
 $= 4230 + 282$
 $= 4512$
- $143 \times 101 = 143(100 + 1)$
 $= (143 \times 100) + (143 \times 1)$
 $= 14300 + 143$
 $= 14443$
- $86 \times 99 = 86(100 - 1)$
 $= (86 \times 100) - (86 \times 1)$
 $= 8600 - 86$
 $= 8514$
- $266 \times 1021 = 266(1000 + 21)$
 $= (266 \times 1000) + (266 \times 21)$
 $= 266000 + 5586$
 $= 271586$
- $451 \times 1003 = 451(1000 + 3)$
 $= (451 \times 1000) + (451 \times 3)$

$$= 451000 + 1353$$

$$= 452353$$

$$\begin{aligned} \text{f) } 394 \times 997 &= 394(1000 - 3) \\ &= (394 \times 1000) - (394 \times 3) \\ &= 394000 - 1182 \\ &= 392818 \end{aligned}$$

3. **Find the value of the following using distributive law:**

- $489 \times 999 + 489 = 489(999 + 1)$
 $= 489 \times 1000$
 $= 489000$
- $656 \times 1001 - 656 = 656(1001 - 1)$
 $= 656 \times 1000$
 $= 656000$
- $73 \times 166 + 73 + 34 = 73(166 + 34)$
 $= 73 \times 200$
 $= 14600$
- $66 \times 88 - 66 \times 8 = 66(88 - 8)$
 $= 66 \times 80$
 $= 5280$
- $148 \times 17 + 148 \times 13 = 148(17 + 13)$
 $= 148 \times 30$
 $= 4440$
- $596 \times 57 + 596 \times 43 = 596(57 + 43)$
 $= 596 \times 100$
 $= 59600$
- $746 \times 132 - 746 \times 32 = 746(132 - 32)$
 $= 746 \times 100$
 $= 74600$
- $139 \times 75 - 139 \times 25 = 139(75 - 25)$
 $= 139 \times 50$
 $= 6950$

Exercise – 4.5

1. **Using the patterns discussed earlier, find:**

- 10435 b) 1724
- 52940 d) 12738

2. **Look at the pattern and write the next 2 steps:**

- 11110 e) 111110

3. **Study the pattern, fill in the blanks and find the reason:**

- 69726972 e) 6509465094

4. **Represent the following numbers as triangles:**
 Do it yourself.

5. **Represent the following numbers as squares:**
 Do it yourself.

Revision Exercise

1. Tick (✓) the correct option:

- a) (i) 0
- b) (i) 0
- c) (ii) Sum of 2 whole numbers is not a whole number.

2. Represent the following on the number line:

Do it yourself.

3. Fill in the blanks:

- a) $9 \times 1 = 9$
- b) $81 + 0 = 81$
- c) $3 \times (4 \times 6) = (3 \times 4) \times 6$
- d) $69 \times 0 = 0$
- e) $18 \times (16 + 15) = (18 \times 16) + (18 \times 15)$
- f) $15 \times (12 - 2) = (15 \times 12) - (15 \times 2)$
- g) $169 \div 13 = 13$
- h) $396 \div 0 = 0$
- i) $65 \times 0 = 0$
- j) $13 \div 1 = 13$

4. Verify the closure property of addition in whole numbers for:

Do it yourself.

5. Verify the closure property of addition in whole numbers for:

Do it yourself.

6. Mohak cycles for 10 days, cycling 13 km in a day. Arnav cycles for 15 days, cycling 6 km in a day. Who cycles more?

Mohak covered distance in 1 day = 13 km
No. of days Mohak cycled = 10 days
Distance covered by Mohak = 130 km
[13×10]

Arnav covered distance in 1 day = 6 km
No. of days Mohak cycled = 15 days
Distance covered by Mohak = 90 km
[6×15]

Mohak cycles more.

7. Hari has 5 boxes with 12 marbles in each box, while Kunal has 8 boxes with 10 marbles in each box. Who has more number of marbles?

Hari has marbles in 1 box = 12 marbles
No. of boxes Hari has = 5 boxes
Total marbles Hari has = 60 marbles
[12×5]
Kunal has marbles in 1 box = 10 marbles

No. of boxes Kunal has = 8 boxes
Total marbles Kunal has = 80 marbles
[10×8]

Kunal has more marbles.

8. Kavya has 320 sweets with her. She wants to divide these sweets equally among 16 students. How many sweets does each student get?

Total sweets Kavya has = 320 sweets

No. of students = 16

Each student will get = 20 sweets [$320 \div 16$]

9. Use distributive law to solve:

- a) $47 \times 51 = 47(50 + 1)$
 $= (47 \times 50) + (47 \times 1)$
 $= 2350 + 47$
 $= 2397$
- b) $63 \times 1998 = 63(2000 - 2)$
 $= (63 \times 2000) - (63 \times 2)$
 $= 126000 - 126$
 $= 125874$
- c) $91 \times 2005 = 91(2000 + 5)$
 $= (91 \times 2000) + (91 \times 5)$
 $= 182000 + 455$
 $= 182455$
- d) $84 \times 193 = 84(200 - 7)$
 $= (84 \times 200) - (84 \times 7)$
 $= 16800 - 588$
 $= 16212$

Chapter-5 Integers

Exercise-5.1

- 1. 0 is an integer. Yes
- 2. -1 is an integer. Yes
- 3. Find a number which is an integer as well as a whole number. 0
- 4. Is every whole number a natural number? No
- 5. Is every whole number a natural number? Yes

Exercise-5.2

1. Represent the following integers on a number line:

Do it yourself.

2. Which number is larger in each of the following pairs:

- a) 0 is larger
- b) -3

- c) 2 d) 8
3. Which number is smaller in each of the following pairs:
 a) -9 is smaller b) -1
 c) -27 d) -26
 e) -603 f) -666
4. Write all integers between:
 a) 1, 2, 3, 4, 5 b) -4, -3, -2, -1
 c) -2, -1, 0, 1, 2 d) -6
5. Fill in the blanks with appropriate symbol $>$ or $<$:
 a) 0 $<$ 18 b) 0 $>$ -3
 c) -5 $<$ 02 d) -15 $<$ 16
 e) -123 $>$ -132 f) -9 $<$ 9
6. Write the following integers in the decreasing order:
 a) -7, -2, 0, 5, 8
 b) -100, -23, -6, -1, 0, 12
 c) -501, -363, -17, -15, -81
 d) -106, -81, -16, -2, 0, 16, 21
7. Write the following integers in the decreasing order:
 a) 51, 0, -2, -8, -53
 b) 36, 7, 0, -3, -9, -132
 c) 36, 0, -5, -71, -81
 d) 413, 102, -7, -365, -515
8. Using the number line, write the integer which is:
 a) 9 b) -2
 c) 4 d) -5
9. Which of the following statements are true?
 (c) True The opposite of zero is zero.
 (f) True 0 is larger than every negative integer.
 (g) True Every negative integer is less than every natural number.
10. Find the value of:
 a) 91 e) 15 b) 36
 f) 10 c) 0 g) 3
 d) 15 h) 1
2. Without using a number line, calculate each of the following:
 a) -12 b) -27 c) 35
 d) -26 e) -60
3. Complete the following addition table:
 Do it yourself.
 Now, from the above table, answer the following:
 a) Yes b) Yes
 c) The sum of zero and any other number is the number itself.
 d) (-4, 4); (-3, 3); (-2, 2); (-1, 1); (0, 0); (1, -1); (2, -2); (3, -3); (4, -4)
4. Add:
 a) -717 e) -728
 b) -6056 f) -1502
 c) -117 g) 5488
 d) 412
5. Add the following pairs of integers:
 a) -205 d) -518
 b) 54 e) 6239
 c) 267 f) -3333
6. Simplify the following:
 a) -119 b) 391
 c) 10 d) -683
7. Fill in the blanks:
 a) (13) + (-25) = -12
 b) 6 + (+7) = 13
 c) 8 + -10 = -2
 d) -4 + (-8) = -12
 e) -6 + 6 = 0
 f) 10 + (-4) = 6
8. A man travelled 54 km to east of Delhi and then 92 km to the west from that point. How far from Delhi was he finally?
 38 km [92 km - 54 km]
9. Ranjan deposited Rs. 5320 in his account on Thursday and then withdrew Rs. 3895 on Friday. Next day he again deposited Rs. 1283. What was his balance on Friday?
 Amount deposited on Thursday (Rs.) = +5,320
 Amount withdrawn on Friday (Rs.) = -3,895
 Balance amount on Friday (Rs.) = 1,425

Exercise - 5.3

1. Using a number line, find the sum of the following pairs of integers:
 a) -9 b) 6 c) 0
 d) -2 e) -6 f) -2

Exercise – 5.4

1. Complete the table given below:

Do it yourself.

Now, from the above table, answer the following:

- No
 - Yes
 - $(-4, -4); (-3, -3); (-2, -2); (-1, -1)$
- 2. Subtract:**
- $16 \text{ from } -31 = -31 - 16 = -47$
 - $-13 \text{ from } 30 = 30 - (-13) = 30 + 13 = 43$
 - $-27 \text{ from } -41 = -41 - (-27) = -41 + 27 = -14$
 - $35 \text{ from } -85 = -85 - 35 = -120$
 - $0 \text{ from } -52 = -52 - 0 = -52$
 - $-76 \text{ from } 0 = 0 - (-76) = 76$
 - $-2010 \text{ from } 3150 = 3150 - (-2010) = 3150 + 2010 = 5160$
 - $1750 \text{ from } -441 = -441 - 1750 = -2191$
 - $-3512 \text{ from } -190 = -190 - (-3512) = -190 + 3512 = 3322$
- 3. The sum of 2 integers is – 337. If one of them is 250, find the other.**
- Suppose $a + b = -337$
 $250 + b = -337$
 $b = -337 - 250$
 $b = -587$
- 4. The sum of 2 integers is 64. If one of them is –13, find the other.**
- Suppose $a + b = 64$
 $-13 + b = 64$
 $b = 64 - (-13)$
 $b = 64 + 13$
 $b = 77$
- 5. Subtract – 21 from 49 and then 49 from – 21.**
- $49 - (-21) = 49 + 21 = 70$
 - $-21 - 49 = -70$
- 6. From the sum of – 38 and – 12, subtract – 18.**
- Sum of -38 and $-12 = -38 + (-12) = -50$
Subtracting -18 from $-50 = -50 - (-18) = -50 + 18 = -32$
- 7. Which integer is equal to its additive inverse?**
- 0 [0 = its additive inverse]

8. Find the value of:

- $(-16) + (-7) = -16 - 7 = -23$
 - $(-23) - (-25) = -23 + 25 = 2$
 - $(-5) - 8 - (-15) = -5 - 8 + 15 = -13 + 15 = 2$
 - $(-12) + 18 - 15 + 3 = -12 + 3 + 3 = -12 + 6 = -6$
 - $25 - [(-13) + 15] = 25 - [-13 + 15] = 25 - [2] = 23$
 - $10 - [(-12) - (-4)] = 10 - [-12 + 4] = 10 - [-8] = 10 + 8 = 18$
- 9. A place is 37 m above sea level and another is 35 m below sea level. What is the different of level between 2 levels?**
- Position of Place 'A' above sea level = 37 m
Position of Place 'B' below sea level = 35 m
Difference of level between 2 levels = 72 m [37 + 35]
- 10. A man gained Rs. 500 in one transaction and lost Rs. 756 in another transaction. What was the final result and how much?**

Gain in 1st transaction (Rs.) = (+) 500
Loss in 2nd transaction (Rs.) = (–) 756
Sum of Gain and Loss (Rs.) = – 256 [–756 + 500]

So, there was a Loss of Rs. 256 in the transaction.

Exercise – 5.5

1. Multiply:

- 102
- 144
- 429
- 54
- 672
- 0
- 3725
- 33320

2. Find the product:

- 90
- 60
- 2912
- 2730

3. Complete the multiplication table:

Do it yourself.

We find following special feature in the table:

- It's symmetrical in Diagonal joining Upper Left corner to Lower Right Corner.
- Diagonal is also symmetrical at Centre Point O and consists of only positive integers. But all rows & columns consists of both +ve and –ve integers, equal and opposite.

4. Which of the following statements are True or False (T or F)?

- a) False b) True
c) True d) True

Revision Exercise

1. Tick (✓) the correct option:

- a) (iv) c) (i)
b) (i) d) (i)

2. Write all integers between:

- a) 1, 2, 3, 4
b) -6, -5, -4, -3, -2, -1, 0, 1, 2
c) -103, -104, -105, -106, -107, -108, -109, -110, -111

3. Represent the following integers on the number line:

Do it yourself.

4. Find the value of:

- a) 8 b) 5 c) 11

5. Add:

- a) -13 b) -53 c) 40

6. Subtract:

- a) $12 - (30) = -42$
b) $51 - (-21) = -51 + 21 = -30$
c) $37 - (-37) = 37 + 37 = 74$

7. Simplify:

- a) $4 \times (-5) \times (-7) \times (2) = -20 \times -14 = 280$
b) $(-8) \times (-6) \times 2 = -8 \times -12 = 96$
c) $(-4) \times (-7) = -4 \times -7 = 28$
d) $(-3) \times (-9) \times (-5) = 27 \times -5 = -135$
e) $(-4) \times 1 \times (-7) \times 11 = -4 \times -77 = 308$
f) $(-3) \times (-7) \times (-5) = 21 \times -5 = -105$
g) $1 + 2 + (-3) \times (-8) + (-4) = 3 + 24 + (-4) = 27 - 4 = 23$
h) $(-7) \times (-9) + (-3) \times (-5) = 63 + 15 = 78$
i) $(+2) \times (-1) + (-6) \times (-4) = -2 + 24 = 22$
j) $(-11) \times (+12) + (-15) \times (0) = -132 + 0 = -132$

8. Solve:

- a) $53 = 5 \times 5 \times 5 = 125$
b) $(-3)4 = (-3) \times (-3) \times (-3) \times (-3) = 9 \times 9 = 81$
c) $(-5)2 \times (-2)3 \times (-4)4 = 25 \times (-8) \times 256 = -200 \times 256 = -51200$

9. Solve using BODMAS Rule:

- a) $12 - \{4 - [15 \div (7 + 4 \times 2)]\}$
 $= 12 - \{4 - [15 \div (7 + 8)]\}$
 $= 12 - \{4 - 15 \div 15\}$
 $= 12 - 3$
 $= 9$
b) $-18 \times 3 + [16 \div \{(11 \times 2) - (5 \times 6)\}]$
 $= -54 + [16 \div \{22 - 30\}]$
 $= -54 + [16 \div -8]$
 $= -54 + -2$
 $= -54 - 2$
 $= -56$
c) $(15 - 8) \times [12 + \{15 \div 3 - 3\}]$
 $= 7 \times [12 + 5 - 3]$
 $= 7 \times 14$
 $= 98$

Chapter – 6 Fractions

Exercise – 6.1

1. Represent the following figures in the form of a fraction.

- a) $\frac{4}{8}$ b) $\frac{7}{9}$ c) $\frac{2}{6}$

2. Colour the part according to the given fractions:

Do it yourself.

3. What fraction of a days is 8 hours?

$$\frac{8}{24}$$

4. Show the following figures on a number line:

Do it yourself.

5. Determine $\frac{3}{4}$ of a collection of:

- a) 12 toffees $= 12 \times \frac{3}{4} = \frac{36}{4} = 9$ toffees
b) 20 toffees $= 20 \times \frac{3}{4} = \frac{60}{4} = 15$ toffees
c) 32 toffees $= 32 \times \frac{3}{4} = \frac{96}{4} = 24$ toffees
d) 80 toffees $= 80 \times \frac{3}{4} = \frac{240}{4} = 60$ toffees

6. Write down the Numerator and Denominator in each of the following:

- a) N = 13, D = 17 c) N = 12, D = 42
b) N = 18, D = 20 d) N = 33, D = 81

7. Write down the fraction in which:

a) $\frac{8}{35}$ b) $\frac{28}{73}$

8. Do it yourself.

Exercise – 6.2

1. Tick (✓) the improper fraction:

b, c, e [because numerator is > or = to denominator]

2. Express the following as improper fraction:

a) $\frac{31}{4}$ c) $\frac{103}{6}$
 b) $\frac{82}{7}$ d) $\frac{119}{9}$

3. Convert the following into mixed fractions:

a) $4\frac{3}{6}$ c) $8\frac{7}{12}$
 b) $8\frac{6}{9}$ d) $11\frac{11}{15}$

Exercise – 6.3

1. Fill in the blanks with correct digits:

a) 7 c) 13
 b) 49 d) 1

2. Make the group of equivalent fractions from the following fractions:

$\frac{2}{3}, \frac{4}{6}, \frac{7}{9}, \frac{21}{27}, \frac{17}{20}, \frac{68}{80}$

3. Tick (✓) the equivalent fraction:

(a) $\frac{7}{9} ? \frac{84}{108}$ (b) $\frac{120}{180} ? \frac{24}{36}$

4. Write three equivalent fractions for each given fraction:

a) $\frac{4}{10}, \frac{6}{15}, \frac{8}{20}$ b) $\frac{14}{30}, \frac{21}{45}, \frac{28}{60}$
 c) $\frac{22}{24}, \frac{33}{36}, \frac{44}{48}$ d) $\frac{34}{38}, \frac{51}{57}, \frac{68}{76}$

Exercise – 6.4

1. Fill in the boxes using >, < or = :

a) < b) > c) >
 d) > e) < f) <
 g) > h) >

2. Compare the fractions given below:

a) $\frac{2}{5}$ and $\frac{1}{2}$
 $2 \times 2 = 4$ [on cross-multiplying]
 $5 \times 1 = 5$

As $4 < 5$

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

b) $\frac{7}{8}$ and $\frac{9}{10}$.

$7 \times 10 = 70$ [on cross-multiplying]

$8 \times 9 = 72$

As $70 < 72$

$\frac{7}{8} < \frac{9}{10}$.

c) $\frac{6}{13}$ and $\frac{3}{4}$.

$6 \times 4 = 24$ [on cross-multiplying]

$13 \times 3 = 39$

As $24 < 39$

$\frac{6}{13} < \frac{3}{4}$.

3. Arrange the following in ascending order:

a) $\frac{2}{5} > \frac{1}{2} < \frac{3}{5} < \frac{3}{4}$ b) $\frac{5}{12} > \frac{17}{36} < \frac{11}{18} < \frac{7}{9}$
 c) $\frac{11}{16} > \frac{23}{32} < \frac{3}{4} < \frac{7}{8}$ d) $\frac{8}{15}, \frac{17}{30}, \frac{17}{10}, \frac{4}{5}$

4. Arrange the following in descending order:

a) $\frac{2}{3} \cong \frac{7}{12} > \frac{5}{9} > \frac{1}{6}$ b) $\frac{7}{8} \cong \frac{10}{12} > \frac{3}{4} > \frac{11}{24}$
 c) $\frac{11}{14} \cong \frac{15}{28} > \frac{13}{35} > \frac{2}{7}$ d) $\frac{5}{6} \cong \frac{11}{21} > \frac{7}{16} > \frac{3}{8}$

Exercise – 6.5

1. Which of the following fractions are in their simplest form?

(a) and (d) [because Numerator and Denominator do not have common factor except 1]

2. Convert the following fractions into their simplest form:

a) $\frac{2}{3}$ b) $\frac{2}{3}$ c) $\frac{11}{14}$
 d) $\frac{4}{5}$ e) $\frac{3}{4}$

Exercise – 6.6

1. Add the following:

a) $\frac{19}{9}$ b) $\frac{121}{112}$ c) $\frac{59}{33}$
 d) $\frac{287}{88}$ e) $\frac{213}{70}$ f) $\frac{1463}{240}$

g) $\frac{71}{24}$ h) $\frac{409}{176}$ i) $\frac{59}{48}$

2. Subtract:

a) $\frac{1}{6}$ b) $\frac{1}{2}$ c) $\frac{1}{2}$
d) $\frac{8142}{9405}$ e) $\frac{1}{72}$ f) $\frac{29}{24}$
g) $\frac{13}{8}$ h) $\frac{63}{20}$ i) $\frac{21}{5}$

3. Simplify :

a) $2 + 5\frac{7}{10} - 3\frac{14}{15} = 2 + \frac{57}{10} - \frac{59}{15}$
 $= \frac{60 + 171 - 118}{30} = \frac{113}{30}$

b) $3 + 3\frac{5}{10} - 1\frac{2}{5} = \frac{3}{10} + \frac{35}{10} - \frac{7}{5}$
 $= \frac{3 + 35 - 14}{10} = \frac{24}{10} = \frac{12}{5}$

c) $5\frac{3}{4} - 4\frac{5}{12} + 3\frac{1}{6} = \frac{23}{4} - \frac{53}{12} + \frac{19}{6}$
 $= \frac{69 - 53 + 38}{12} = \frac{54}{12} = \frac{9}{2}$

4. Maya bought $4\frac{1}{2}$ kg of oranges, $3\frac{1}{2}$ kg of apples and $6\frac{1}{4}$ kg of mangoes. How many kg of fruits did she buy in all?

Maya bought Oranges $- 4\frac{1}{2}$ kg + Apples + Mangoes $3\frac{1}{2}$ kg

Total quantity = $4\frac{1}{2} + 3\frac{1}{2} + 6\frac{1}{4}$
 $= \frac{9}{2} + \frac{7}{2} + \frac{25}{4}$
 $= \frac{18 + 14 + 25}{4}$
 $= \frac{57}{4} \text{ kg}$

5. Three boxes weigh $18\frac{2}{4}$ kg, $7\frac{1}{2}$ kg and $10\frac{1}{5}$ kg respectively. A porter carries all the 3 boxes. What is the total weight carried by the porter?

Total quantity = $18\frac{2}{4} + 7\frac{1}{2} + 10\frac{1}{5}$
 $= \frac{74}{4} + \frac{15}{2} + \frac{51}{5}$
 $= \frac{370 + 150 + 204}{20}$
 $\frac{724}{20} = \frac{181}{5} = 36.2 \text{ kg}$

6. What must be added to $3\frac{1}{7}$ to get $4\frac{5}{14}$?

Let x be added to $3\frac{1}{7}$ to get $4\frac{5}{14}$

So, $x + 3\frac{1}{7} = 4\frac{5}{14}$
 $x = 4\frac{5}{14} - 3\frac{1}{7}$
 $x = \frac{61}{14} - \frac{22}{7} = \frac{61 - 44}{14} = \frac{17}{14}$

So, $\frac{17}{14}$ must be added to $3\frac{1}{7}$ to get $4\frac{5}{14}$.

7. Which one is greater between $3\frac{3}{3}$ and $4\frac{2}{3}$ and by how much?

$3\frac{3}{3} = \frac{12}{3}$ and $4\frac{2}{3} = \frac{14}{3}$

$\therefore$ We have $\frac{12}{3}$ and $\frac{14}{3}$

$\therefore \frac{14}{3} > \frac{12}{3}$ [because denominator is same]

Exercise – 6.7

1. Find the product of the following:

a) $\frac{2^{14}}{30}$ b) $\frac{3}{8}$ c) $\frac{18}{25}$

2. Divide :

a) $\frac{3}{20}$ b) 1 c) $3\frac{9}{10}$

Revision Exercise

1. Tick (✓) the correct option:

a) (ii) b) (ii)

2. Write an equivalent fraction of $\frac{7}{11}$ with:

a) $\frac{63}{99}$ b) $\frac{84}{132}$

3. Which of the following is greater among the 2 given fractions:

a) $\frac{7}{10}$ b) $\frac{9}{13}$ c) $\frac{11}{18}$

4. Convert the following into mixed fraction:

a) $3\frac{4}{7}$ c) $33\frac{1}{3}$
b) $6\frac{7}{15}$ d) $4\frac{17}{18}$

5. Which of the following are proper fractions?

(a) $\frac{25}{7}$ (c) $\frac{100}{3}$ (d) $\frac{89}{18}$

6. Express the following into improper fraction:

- a) $\frac{10}{3}$ b) $\frac{70}{9}$
 c) $\frac{125}{12}$ d) $\frac{101}{8}$

7. Reduce $\frac{1692}{2838}$ in the lowest form.
 $\frac{282}{473}$

8. What should be added to $6\frac{7}{15}$ to get $9\frac{3}{10}$?

Let x be added to $6\frac{7}{15}$ to get $9\frac{3}{10}$

$$\text{So, } x + 6\frac{7}{15} = 9\frac{3}{10}$$

$$x = 9\frac{3}{10} - 6\frac{7}{15}$$

$$x = \frac{93}{10} - \frac{97}{15} = \frac{279 - 194}{30} = \frac{85}{30}$$

$$x = \frac{17}{6} = 2\frac{5}{6}$$

So, $2\frac{5}{6}$ should be added to $6\frac{7}{15}$ to get $9\frac{3}{10}$.

9. Manish spent $\frac{1}{4}$ of an hour in painting his toy and $\frac{1}{8}$ of an hour in ironing his dress. How much time did he spend together?

$$\begin{aligned} \text{Time spent in painting} &= \frac{1}{4} \text{ hour} \\ \text{Time spent in ironing} &= \frac{1}{8} \text{ hour} \\ \text{Time spent in ironing} &= \frac{1}{4} + \frac{1}{8} = \frac{2+1}{8} \\ &= \frac{3}{8} \text{ hour} \end{aligned}$$

10. Sagar had $7\frac{1}{2}$ l of juice out of which $5\frac{3}{4}$ l was consumed. How much juice was left with him?

$$\begin{aligned} \text{Total quantity of juice} &= 7\frac{1}{2} \text{ l} \\ \text{Quantity of juice consumed} &= 5\frac{3}{4} \text{ l} \\ \text{Balance quantity of juice left} &= 7\frac{1}{2} - 5\frac{3}{4} \\ &= \frac{15}{2} - \frac{23}{4} \\ &= \frac{30 - 23}{4} = \frac{7}{4} = 1\frac{3}{4} \text{ l} \end{aligned}$$

So, $1\frac{3}{4}$ l of juice was left with Sagar.

Chapter – 7 Decimals

Exercise – 7.1

1. Compare the following by using $>$, $<$ or $=$:

- a) $17.64 < 18.69$
 b) $9.73 < 9.80$
 c) $11.01 < 11.10$
 d) $8.463 > 8.453$
 e) $71.486 = 71.486$
 f) $27.7325 > 27.7323$

2. Write the following decimal numbers in their expanded form:

- a) $20 + 7 + \frac{2}{10} + \frac{7}{100}$
 b) $70 + 1 + \frac{2}{10} + \frac{6}{100} + \frac{4}{1000}$
 c) $100 + 8 + \frac{1}{100} + \frac{5}{1000}$
 d) $8 + \frac{4}{10} + \frac{6}{100} + \frac{7}{1000}$

3. Write decimals for each of the following:

- a) 5.722 c) 452.08
 b) 15.79 d) 5000.007

4. Tick (✓) the correct option:

- (b) 3.761, 5.011, 17.631
 (c) 1.73, 51.60, 1.89

Exercise – 7.2

1. Convert the following as fractions in the lowest form or as mixed fractions:

- a) $\frac{9}{20}$ e) 8
 b) $145\frac{3}{5}$ f) $\frac{5}{8}$
 c) $3\frac{3}{20}$ g) $10\frac{53}{100}$
 d) $50\frac{1}{5}$ h) $9\frac{467}{1000}$

2. Convert the following into decimal form:

- a) 3.25 e) 3.375
 b) 3.8 f) 1.93
 c) 0.151 g) 1.7
 d) 3.85 h) 2.07

Exercise – 7.3

1. Add the following:

- a) $8.056 + 3.14 = 11.196$
- b) $17.640 + 0.364 = 18.004$
- c) $24.641 + 1.714 = 26.355$
- d) $2006.54 + 0.46 = 2007$
- e) $7.364 + 732.10 = 7.728$

2. Subtract the following:

- a) $9.640 - 3.4191 = 6.2209$
- b) $750.05 - 649.98 = 100.07$
- c) $60.00 - 49.50 = 10.5$
- d) $1005.06 - 675.059 = 330.001$
- e) $700.070 - 89.495 = 610.575$

3. Express the following quantities in decimals:

- a) Rs. 7 and 60 paise = Rs. 7.60
- b) 7 km 576 m = 7.576 km
- c) 97 kg 245 g = 97.245 kg

4. Solve:

- a) Rs. 45 and 65 paise + Rs. 10 and 45 paise
$$\begin{array}{r} 45.65 \\ + 10.45 \\ \hline \end{array}$$

Rs. 56.10

- b) 27 km 105 m + 106 km 75 m

$$\begin{array}{r} 27.105 \text{ km} \\ + 106.075 \text{ km} \\ \hline 133.180 \text{ km} \end{array}$$

- c) 105 kg 217 g + 17 kg 960 g

$$\begin{array}{r} 105.217 \text{ kg} \\ + 17.960 \text{ kg} \\ \hline 123.177 \text{ kg} \end{array}$$

- d) Rs. 97 and 50 paise - Rs. 67 and 75 paise

$$\begin{array}{r} 97.50 \\ - 67.75 \\ \hline \end{array}$$

Rs. 29.75

- e) 107 km 76 m - 88 km 749 m

$$\begin{array}{r} 107.760 \text{ km} \\ - 88.749 \text{ km} \\ \hline 19.011 \text{ km} \end{array}$$

- f) 99 kg 105 g - 67 kg 576 g

$$\begin{array}{r} 99.105 \text{ kg} \\ - 67.576 \text{ kg} \\ \hline 31.529 \text{ kg} \end{array}$$

- 5. Avi has Rs. 500 and he spends Rs. 97 and 50 paise. How much money is left with him now?

$$\text{Avi has} = \text{Rs. } 500.00$$

$$\text{He spends} = \text{Rs. } (-) 97.50$$

$$\text{Money left with him} = \text{Rs. } 402.50$$

- 6. How much weight should be added to 67 kg 657 g to make it 100 kg?

Let x be added to 67.657 kg to get 100 kg.

$$\text{So, } x + 67.657 = 100 \text{ kg}$$

$$x = 100 - 67.657$$

$$x = 32.343 \text{ kg}$$

So, 32.343 kg should be added to 67.657 kg to get 100 kg.

- 7. Kamal travelled 512 km 675 m by train and rest by car. If he travelled 1000 km in all, how long he travelled by car?

$$\text{Total distance travelled} = 1000 \text{ km}$$

$$\text{By train} = 512.675 \text{ km}$$

$$\text{By car} = x \text{ km (suppose)}$$

$$\text{So, } x + 512.675 = 1000 \text{ km}$$

$$x = 1000 - 512.675$$

$$x = 487.343 \text{ km}$$

So, he travelled 487.343 km by car.

Revision Exercise

- 1. Convert the following fractions into decimal form:

a) 1.7 c) 0.23

b) 0.08 d) 2.09

- 2. Write the following in expanded form:

a) $10 + 4 + \frac{5}{100}$ b) $7 + \frac{5}{10} + \frac{3}{1000}$

c) $10 + 6 + \frac{3}{10} + \frac{2}{100}$

- 3. Fill in the boxes :

a) $3.69 = 3 + \frac{6}{10} + \frac{9}{100}$

b) $57.906 = 50 + 17 + \frac{9}{10} + \frac{6}{1000}$

c) $123.658 = 100 + 20 + 3 + \frac{6}{10} + \frac{5}{100} + \frac{8}{1000}$

d) $93.708 = 90 + 3 + \frac{7}{10} + \frac{8}{1000}$

4. Write in a short form:

- a) $0.7 + 0.08 + 0.005 = 0.785$
 b) $3 + 0.008 + 0.0002 = 3.0082$
 c) $30 + 9 + 0.004 + 0.0001 = 39.0041$
 d) $10 + 7 + 0.5 + 0.05 = 17.55$

5. Sumit has bought 5 kg 200 g rice, 7 kg 350 g flour and 3 kg 750g of pulses. How much total weight he has to carry?

- Rice = 5.200 kg
 Four = + 7.350 kg
 Pulses = + 3.750 kg
 Total = 16.300 kg

6. Atul covered 7 km 500 m by car and walked to his home which is 10 km from the point he had started. How much distance he covered walking?

- Total distance = 10.0 km
 Distance by car = (-) 7.5 km
 Walking distance = 2.5 km

7. A pea plant measured 6.5 cm on Thursday. It grew another 0.55 cm on Friday. What was its height on Friday?

- Height on Thursday = 6.50 cm
 Growth on Friday = (+) 0.55 cm
 Total height on Friday = 7.05 cm

Chapter – 8 Algebra

Exercise – 8.1

1. Look at the following pattern and complete the series:

- a) 13, 16, 19 d) 26, 37, 50
 b) 243, 729, 2187 e) 64, 128, 256

2. Complete the table using the given formula $n = 5m - 2$:

m	2	13	25	75
n	8	63	123	373

3. For given sequences, find (i) General Rule (ii) nth term & (iii) 100th term:

- a) (i) +4 (ii) $3n + 1$ (iii) 301
 b) (i) 5+ (ii) $5n$ (iii) 500
 c) (i) Square of every number
 (ii) $n^2 + 0$ (iii) 10000
 d) (i) +2 (ii) $2n$ (iii) 200

Exercise – 8.2

1. Write the following into Algebraic expressions:

- a) $12 - 5x$ d) $7x + 4y$
 b) $P = 4a$ e) $A = 1xb$
 c) $8x = 15$

2. Write down the monomials, binomials and trinomials:

- Monomials = x^2
 Binomials = $2x + 5y$, $-5x + y$
 Trinomials = $2x^2 - 7y + 6$, $a + b - c$

3. Write the base and exponential of following algebraic expression:

- | | Base | Exponential |
|--------------|-------|-------------|
| a) x^2 | x | 2 |
| b) y^{-4} | y | 1 |
| c) $(-xy)^2$ | $-xy$ | 2 |
| d) a^5 | a | 5 |
| e) y^7 | y | 7 |

4. Which of the following groups have like terms and which have unlike terms?

- a) unlike c) unlike
 b) like d) unlike

5. Write the following in exponential form:

- a) x^8 b) $6a^3b^2c$ $p^2q^3r^3$

Exercise – 8.3

1. Write equation for each of the following:

- a) $x + 5 = y + 3$ c) $x - \frac{1}{x} = 5$
 b) $x + y = 36$ d) $x \times x = x + 15$
 2. $4b - 6$
 3. $(4x + 3y + 7z) km$
 4. $5x + 7y$
 5. $h = x \text{ cm}$, $l = 5x \text{ cm}$, $b = 5x - 5 \text{ cm}$

Exercise – 8.4

1. Find the solution of equation $7x - 6 = 22$ by trial and error method:

Value of x	L.H.S.	R.H.S.
1	$7 - 6 = 1$	22
2	$14 - 6 = 8$	22
3	$21 - 6 = 15$	22
4	$28 - 6 = 22$	22

So, $x = 4$ is the solution of equation $7x - 6 = 22$.

2. Find the solution of equation $2x + 5 = 19$ by trial and error method:

Value of x	L.H.S.	R.H.S.
1	$2 + 5 = 7$	19
2	$4 + 5 = 9$	19
3	$6 + 5 = 11$	19
4	$8 + 5 = 13$	19
5	$10 + 5 = 15$	19
6	$12 + 5 = 17$	19
7	$14 + 5 = 19$	19

So, $x = 7$ is the solution of equation $2x + 5 = 19$.

3. Solve and verify the result:

- a) $x = 5$ f) $x = 6$
b) $x = -4$ g) $x = 11$
c) $x = 3$ h) $a = 42$
d) $x = 33$ i) $x = 49$
e) $x = 10$ j) $q = 31$

Exercise – 8.5

1. A number when divided by 9 gives 8. Find the number:

Let number be ' x '

$$\frac{x}{9} = 8 \quad [\text{as per question}]$$

$$\text{or } x = 8 \times 9$$

$$\therefore x = 72$$

2. If 7 is subtracted from 5 times a number, the difference is equal to 28. Find the number.

Let number be ' x '

$$5x - 7 = 28 \quad [\text{as per question}]$$

$$\text{or } 5x = 28 + 7$$

$$\text{or } 5x = 35$$

$$\text{or } x = \frac{35}{5} = 7$$

$$x = 7$$

3. What will be the number if one one-third of it is added to 4, the sum becomes 27.

Let number be ' x '

$$\therefore \frac{x}{3} + 4 = 27$$

$$\text{or } \frac{x + 12}{3} = 27 \quad [\text{as per question}]$$

$$\text{or } x + 12 = 27 \times 3$$

$$\text{or } x + 12 = 81$$

$$\text{or } x = 81 - 12$$

$$\therefore x = 69$$

4. If one-fourth of a number is decreased by 4, the number you get is 8. What is the number?

Let number be ' x '

$$\therefore \frac{x}{4} - 4 = 8 \quad [\text{as per question}]$$

$$\text{or } \frac{x - 16}{4} = 8$$

$$\text{or } x - 16 = 8 \times 4$$

$$\text{or } x - 16 = 32$$

$$\text{or } x = 32 + 16$$

$$\therefore x = 48$$

Exercise – 8.6

1. Represent following as the ratio of first number to the second and write in simplest form:

$$\text{a) } \frac{2}{3}$$

$$\text{c) } \frac{27}{4}$$

$$\text{b) } 3$$

$$\text{d) } \frac{1}{7}$$

2. Karan bought some pencils and pens. Pencils were 35 more than pens. If ratio of pencils to the pens was 8 : 3, how many of each type did he buy?

Let pencils be $8x$

Let pens be $3x$

Difference is $5x = 35$ (given)

$$x = \frac{35}{5} = 7$$

No. of pencils be $8x = 8 \times 7 = 56$ pencils

No. of pens be $3x = 3 \times 7 = 21$ pens

3. In 6th A, 5 out of 30 students got 1st division while in 6th B, 8 out of 35 students got 1st division. Which class had a better record of 1st division?

$$\text{Ratio of students in 6}^{\text{th}} \text{ A} = \frac{5}{30} \quad \text{6}^{\text{th}} \text{ B} = \frac{8}{35}$$

LCM of 30 and 35 = 210

$$\therefore \frac{5}{30} = \frac{35}{210} \quad \text{and} \quad \frac{8}{35} = \frac{48}{210}$$

So, 6th B with ratio of 8 : 35 had a better record of 1st division.

4. Two numbers are in ratio 9 : 11 and their sum is 200. Find the numbers.

Let numbers be $9x$ and $11x$

$$\begin{aligned} 9x + 11x &= 200 \text{ [as per question]} \\ 20x &= 200 \end{aligned}$$

$$x = \frac{200}{20} = 10$$

$$1^{\text{st}} \text{ number} = 9x = 9 \times 10 = 90$$

$$2^{\text{nd}} \text{ number} = 11x = 11 \times 10 = 110$$

5. A bus travels 300 km in 6 hrs and another bus travels 300 km in 5 hrs. Find the ratio of their speeds.

$$\text{Speed of Bus 'A'} = \frac{300}{6} = 50$$

$$\text{Speed of Bus 'B'} = \frac{300}{5} = 60$$

$$\text{Ratio of speeds} = \frac{\text{'A'}}{\text{'B'}} = \frac{50}{60} = 5 : 6$$

$$\text{So, Ratio of speeds} = 5 : 6$$

6. The sum of angles of a quadrilateral is 360 degrees and angles of quadrilateral are in ratio of 2 : 2 : 1 : 1. Find the measure of each angle.

Let angle be x

$$\text{So, } 2x + 2x + 1x + 1x = 3600$$

$$6x = 3600$$

$$x = \frac{3600}{6} = 600$$

$$\begin{aligned} \text{Measure of each angle} &= 2x + 2x + 1x + 1x \\ &= 1200, 1200, 600, 600 \end{aligned}$$

7. Divide 30 pens between Tanya and Siya in ratio of 3 : 2.

Let pens be divided in $3x$ and $2x$

$$\therefore 3x + 2x = 30 \text{ [as per question]}$$

$$5x = 30$$

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

$$\text{Tanya will get} = 3x = 3 \times 6 = 18 \text{ pens}$$

$$\text{Siya will get} = 2x = 2 \times 6 = 12 \text{ pens}$$

8. A man divided a sum of Rs. 120 into 2 parts for his 2 children in ratio of 5 : 3. How much does each child get?

Let sum be divided in $5x$ and $3x$

$$5x + 3x = 120 \text{ [as per question]}$$

$$8x = 120$$

$$x = \frac{120}{8} = 15$$

$$1^{\text{st}} \text{ child will get} = 5x = 5 \times 15 = \text{Rs. } 75$$

$$2^{\text{nd}} \text{ child will get} = 3x = 3 \times 15 = \text{Rs. } 45$$

Exercise – 8.7

1. Niyaz scored 42 runs in 6 overs and Nurul scored 63 runs in 7 overs. Who scored more runs per over?

$$\text{Niyaz scored: } \frac{42}{6} = 7 \text{ runs per over}$$

$$\text{Nurul scored: } \frac{63}{7} = 9 \text{ runs per over}$$

Nurul scored more runs per over.

2. In a map, a distance of 55 km between 2 places A and B is represented by 5 cm. What will be the actual distance between C and D which is represented in the map as 8 cm?

$$\frac{55}{5} = \frac{x}{8}$$

$$5x = 55 \times 8 = 440$$

$$x = \frac{440}{5} = 88 \text{ cm}$$

$$x = 88 \text{ cm}$$

8 cm will represent distance of 88 cm between C and D.

3. If 50 mg disinfectant is mixed with 1000 l of a solution, then how much medicine (in mg) should be mixed with 2500 l of the same solution?

$$50 : x :: 1000 : 2500$$

$$\frac{50}{x} = \frac{1000}{2500}$$

$$1000x = 50 \times 2500 = 125000$$

$$x = \frac{125000}{1000} = 125 \text{ mg}$$

$$x = 125 \text{ mg}$$

125 mg medicine should be mixed

4. Azad deposits Rs. 9800 in a Bank and receives Rs. 196 as interest. What sum of money should he deposit to get Rs. 368 as interest provided that rate of interest and the time period of deposit are the same?

$$9800 : x :: 196 : 368$$

$$\frac{9800}{x} = \frac{196}{368}$$

$$196x = 9800 \times 368 = 3606400$$

$$x = \frac{3606400}{196} = 18,400$$

$$x = \text{Rs. 18,400}$$

∴ Rs. 18,400 should be deposited.

5. If 60 kg of wheat is needed for 120 people how much wheat is needed for 40 people?

$$60 : x :: 120 : 40$$

$$\frac{60}{x} = \frac{120}{40}$$

$$120x = 60 \times 40 = 2400$$

$$x = \frac{2400}{120} = 20$$

$$x = 20 \text{ kg}$$

∴ 20 kg wheat is needed for 40 people

6. Are ratios 45 km : 60 km and 12 hours : 15 hours in a proportion?

No [because $ad \neq bc$]

7. Niraj sold articles of Rs. 3600 worth and got a commission of Rs. 600. If he sells articles of worth Rs. 4500 then what will be his commission?

$$3600 : 600 :: 4500 : x$$

$$\frac{3600}{600} = \frac{4500}{x}$$

$$3600x = 4500 \times 600 = 2700000$$

$$x = \frac{2700000}{3600} = 750$$

$$x = \text{Rs. 750}$$

∴ Rs. 750 will be Niraj's commission.

8. Suresh drives his car at a constant speed. If he travels 15 km 500 m in 50 minutes, then what distance Suresh can cover in 1 hour?

[15 km 500 m = 15.5 km, 1 hour = 60 minutes]

$$15.5 : x :: 50 : 60$$

$$\frac{15.5}{x} = \frac{50}{60}$$

$$50x = 15.5 \times 60 = 930$$

$$x = \frac{930}{50} = 18.6$$

$$x = 18.6 \text{ km}$$

∴ 18.6 km distance Suresh can cover in 60 minutes

9. At a particular time, a 2 m high pole gives a shadow of 260 cm. A tall tree in same area, at the same time, gives a shadow of length 15.7 m. What is height of tree?

[2m = 200 cm, 15.7m = 1570cm]

$$200 : x :: 260 : 1570$$

$$\frac{200}{x} = \frac{260}{1570}$$

$$260x = 200 \times 1570 = 314000$$

$$x = \frac{314000}{260} = 1207 \text{ cm} = 12 \text{ m}$$

$$x = 12 \text{ m}$$

∴ 12 m is the height of tree.

10. Are 15, 45, 40 and 120 in proportion?

Yes [because $ad = bc$]

11. If an airliner uses 400 kg of fuel in 15 minutes, then how much time can it be airborne with 540 kg of fuel in the tank?

$$400 : 540 :: 15 : x$$

$$\frac{400}{540} = \frac{15}{x}$$

$$400x = 15 \times 540 = 8100$$

$$x = \frac{8100}{400} = 20.25$$

$$x = 12 \text{ m}$$

∴ Airliner can be airborne for 20 min 25 sec.

Exercise – 8.8

1. The weight of 45 folding chairs is 20 kg. How many chairs be loaded on a truck having a capacity of 6000 kg load?

$$\text{Weight of 45 chairs} = 20 \text{ kg}$$

$$\text{Weight of 1 chair} = \frac{20}{45} = 0.45 \text{ kg}$$

$$\text{No. of chairs in 6000 kg} = \frac{6000}{0.45} = 13,500$$

13,500 chairs can be loaded.

2. The cost of 40 tables is Rs. 62,000. Find cost of 70 such tables.

$$\text{Cost of 40 tables} = \text{Rs. } 62,000$$

$$\text{Cost of 1 table} = \text{Rs. } \frac{62000}{40} = \text{Rs. } 1,550$$

$$\text{Cost of 70 tables} = \text{Rs. } 1,550 \times 70$$

$$= \text{Rs. } 1,08,500$$

3. **25 workers earn Rs. 300 per day. What will be the total earnings of 20 workers per day at the same rate?**

$$\begin{aligned} 25 \text{ workers earn per day} &= \text{Rs. } 300 \\ 1 \text{ worker earns per day} &= \text{Rs. } \frac{300}{25} = \text{Rs. } 12 \\ 20 \text{ workers will earn per day} &= \text{Rs. } 12 \times 20 \\ &= \text{Rs. } 240 \end{aligned}$$

4. **A man earns Rs. 250 per day working 7 hours a day. Find his earnings after he has worked for 5 days, working 5 hours in a day.**

$$\begin{aligned} 7 \text{ hours earning per day} &= \text{Rs. } 250 \\ 1 \text{ hour earning per day} &= \text{Rs. } \frac{250}{7} \\ \text{Rs. } 35.71 \\ 5 \text{ hours earning per day} &= \text{Rs. } 35.71 \times 5 \\ &= \text{Rs. } 178.55 \\ 5 \text{ days earning per day} &= \text{Rs. } 178.55 \times 5 \\ &= \text{Rs. } 892.75 \end{aligned}$$

5. **A car travels 220 km in 5 litres of petrol. How much distance will it cover in 2.5 litres of petrol?**

$$\begin{aligned} \text{Car travels in 5 litre petrol} &= 220 \text{ km} \\ \text{Car travels in 1 litre petrol} &= \frac{220}{5} = 44 \text{ km} \\ \text{Car travels in 2.5 litre petrol} &= 44 \times 2.5 \\ &= 110 \text{ km} \end{aligned}$$

6. **The weight of 81 boxes is 9 kg. What is the weight of 342 such boxes?**

$$\begin{aligned} \text{Weight of 81 boxes} &= 9 \text{ kg} \\ \text{Weight of 1 box} &= \frac{9}{81} = 0.11 \text{ kg} \\ \text{Weight of 342 boxes} &= 342 \times 0.11 = 37.62 \text{ or } 38 \text{ kg} \end{aligned}$$

7. **If 26 biscuits cost Rs. 546, find cost of 60 such biscuits.**

$$\begin{aligned} \text{Cost of 26 biscuits} &= \text{Rs. } 546 \\ \text{Cost of 1 biscuit} &= \frac{546}{26} = \text{Rs. } 21 \\ \text{Cost of 60 biscuits} &= \text{Rs. } 21 \times 60 \\ &= \text{Rs. } 1260 \end{aligned}$$

8. **Rajeev purchases 15 pens for Rs. 300 and Ramu purchases 10 pens for Rs. 200. Who got the pens cheaper?**

$$\begin{aligned} \text{Rajeev buys 15 pens for} &= \text{Rs. } 300 \\ \text{Rajeev buys 1 pen for} &= \frac{300}{15} = \text{Rs. } 20 \\ \text{Ramu buys 10 pens for} &= \text{Rs. } 200 \end{aligned}$$

$$\begin{aligned} \text{Rajeev buys 1 pen for} &= \frac{200}{10} = \text{Rs. } 20 \\ \text{Rajeev and Ramu both buy pen at equal rate.} \end{aligned}$$

9. **15 postcards cost Rs. 2.25. What will be cost of 36 postcards. How many postcards can be purchased for Rs. 452?**

$$\begin{aligned} \text{Cost of 15 postcards} &= \text{Rs. } 2.25 \\ \text{Cost of 1 postcard} &= \frac{2.25}{15} = \text{Rs. } 0.15 \end{aligned}$$

$$\begin{aligned} \text{Cost of 36 postcards} &= \text{Rs. } 0.15 \times 36 = \\ &= \text{Rs. } 5.40 \end{aligned}$$

$$\begin{aligned} \text{Postcards to be purchased in Rs. } 452 &= \frac{4.52}{0.15} \\ &= 3013 \text{ postcards} \end{aligned}$$

10. **Sagar takes 56 minutes to walk 8 km. How many minutes will he take to travel 15 km?**

$$\begin{aligned} \text{Minutes taken to walk 8 km} &= 56 \text{ minutes} \\ \text{Minutes taken to walk 1 km} &= \frac{56}{8} \\ &= 7 \text{ minutes} \\ \text{Minutes taken to travel 15 km} &= 15 \times 7 \\ &= 105 \text{ minutes} \\ \text{Time taken to travel 15 km} &= 105 \text{ minutes} \\ &= 1 \text{ hr } 45 \text{ min} \end{aligned}$$

11. **Garima pays Rs. 12,000 as rent for 4 months. How much does she pay in 1 year?**

$$\begin{aligned} \text{Garima pays for 4 months} &= \text{Rs. } 12,000 \\ \text{Garima pays for 1 month} &= \text{Rs. } \frac{12,000}{4} \\ &= \text{Rs. } 3,000 \\ \text{She pays in 12 months (1 yr.)} &= 3,000 \times 12 = \\ &= \text{Rs. } 36,000 \end{aligned}$$

Revision Exercise

1. Tick (✓) the correct option:
a) i b) ii c) iv
2. Write down terms of following algebraic expressions separately:
a) $2x, 8$ b) $3a, 56, -9$
c) $x^2, 2y^2, -4xy$
3. Convert following into algebraic expressions:
a) $4x + 7y$ b) $xy + 9a$
4. The length of a rectangular hall is 3 metres more than 2 times the breadth of hall. What is the length, if the breadth is x metres:
 $l = 2b + 3$
5. Rohan travelled $5x$ km by car, $2y$ km by cycle and 7 km on foot. Express total distance

- c) Vertices - A, B, C, D, E
- d) Diagonals - AD, EB and AC
- e) Pairs of adjacent sides - AB and BC, BC and CD, CD and DE, DE and EA, EA and AB, AB and BD, BD and DE.

Exercise – 9.3

- How many angles are shown in each of following diagrams?
a) 3 b) 4 c) 8
- Name the angles in each figure:
a) $\angle ABC$, $\angle BCD$, $\angle CDA$, $\angle DAB$
b) $\angle EAB$, $\angle ABC$, $\angle BCD$, $\angle CDE$, $\angle DEA$, $\angle EAC$, $\angle CAB$, $\angle DCA$, $\angle ACB$
- Express the angles in each of the following figures in different ways.
Do it yourself.
- In the figure, list the points which:
a) Points which are in the interior of $\angle APQ$. C, E
b) Points which are in the exterior of $\angle APQ$ B
c) Points which lie on $\angle APQ$. A, P, Q

Exercise – 9.4

- State whether the following triangles are acute, obtuse or right:
a) Right d) Acute
b) Right e) Obtuse
c) Right
- State whether the following triangles are equilateral, isosceles or scalene:
a) Scalene e) Equilateral
b) Isosceles f) Isosceles
c) Equilateral g) Scalene
d) Equilateral
- Name the points that lie in interior and exterior of the figures. Also mention points which lie on the boundary of figures.
a) Interior - P, Q
Exterior - S, P
On the boundary - A, F, T, B, C
b) Interior - E, F, G, H
Exterior - P, Q

On the boundary - A, R, T, C, D, S

4. In the given figure, name:

- a) The quadrilateral. - ABCD
- b) Two points in its interior. - K, L
- c) One point in the exterior. - P
- d) All points on the quadrilateral. - A, B, C, D, N

Exercise – 9.5

1. In the adjoining figure, name:

- a) Radii DO, CO, AO, BO
- b) Chords AB, AC, BC, CD
- c) Diameter CD
- d) Triangle whose vertex is centre of circle. $\triangle AOB$, $\triangle COB$, $\triangle AOC$

2. Find the radius of the circle whose diameter is:

- a) 7 cm d) 14 cm b) 10 cm
- e) 33 cm c) 16 cm

3. Find the diameter of the circle whose radius is:

- a) 8 cm d) 22 cm b) 12 cm
- e) 36 cm c) 18 cm

Revision Exercise

- How many points are marked in the following figures? Name them.
a) A, B, C, D, E, F, G, H, I, J
b) A, B, C, D, E, F, G
- In the figure, name the points lying in the:
a) Interior of $\angle COB$ - P, R, T
b) Exterior of $\angle AOB$ - P, R, T, C, X, S, D
c) Interior of $\angle DOA$ - N, M, B, T, P, R, C, X, S
- Express the following angles in different ways:
a) 1, $\angle YXZ$ b) 2, $\angle RPQ$
- In the given figure, name:
a) $a \parallel b, c \parallel d$ b) a, l; b, l; a, c; a, d; b, c; b, d
c) l, b d) a, c; a, l; c, l
- How many diagonals does a quadrilateral have?
2
- In the figure, name the Chords, Radii and Diameters of the circle:
a) Chords PQ, AB, BR,

b) Radii BO, AO, RO

c) Diameters AB

7. In the given figure, name:

a) $\Delta PQR, \Delta PQS, \Delta PST, \Delta PSR, \Delta STR$

b) PR, SR

c) PQ, QR, RP, QS, SR, ST, RT, TP, PS

d) ΔQPS

Chapter – 10 Elementary Shapes

Exercise – 10.1

1. Write the disadvantage in comparing two line segments by mere observation:

It is difficult to find out which line segment is shorter or greater if there is very little difference in lengths of given line segments.

2. Do it yourself.

3. Do it yourself..

4. 2 cm

5. No

6. If line $l \parallel m$ and $m \parallel n$, then is line $l \parallel n$?

Yes

7. Name the pair of parallel line in following diagram:

$x \parallel y, p \parallel q$

8. Name the pair of perpendicular lines in the following diagrams:

$l \perp q, m \perp r$

9. In following diagram, MN and PQ do not intersect each other. Can you say they are parallel?

No, there is not equal distance between them throughout.

Exercise – 10.2

1. Measure the following angles:

Do it yourself.

2. What angles will be made by hands of a Clock when it shows following time?

a) 90° b) 180°

3. Construct following angles with the help of a protector:

Do it yourself.

Exercise – 10.3

1. If following pairs of angles are complementary angles, find measure of other angle:

a) $\angle N = 55^\circ$ c) $\angle CBA = 20^\circ$

b) $\angle 1 = 30^\circ$ d) $\angle x = 45^\circ$

2. If following pairs of angles are supplementary angles, what will be the value of other angle:

a) $\angle A = 120^\circ, \angle B = 60^\circ$

b) $\angle 2 = 90^\circ, \angle 3 = 90^\circ$

c) $\angle x = 100^\circ, \angle y = 80^\circ$

d) $\angle B = 10^\circ, \angle C = 170^\circ$

3. Fill in the blanks:

a) A straight angle is of 180° .

b) A reflex angle is more than 180° and less than 360° .

c) A complete angle is of 360° .

d) The sum of angles of a linear pair is equal to 180° .

4. Find degree measure of each angle in linear pair in the following figures:

a) $\angle AOC = 120^\circ, \angle BOC = 60^\circ$

b) $\angle PQR = 61^\circ, \angle QOR = 119^\circ$

Exercise – 10.4

1. 2 angles of a triangle are 45° and 60° . Is this triangle an acute angled triangle?

Yes, the triangle is an acute angled triangle.

2. The angles of a triangle are in ratio 2:3:4. Find angles of triangle:

Let 'x' be the measure of angle.

$$\text{Sum of } 2x + 3x + 4x = 180^\circ$$

$$\text{So, } 9x = 180^\circ$$

$$\text{So, } x = \frac{180^\circ}{9} = 20^\circ$$

$$\text{Now, } 2x = 2 \times 20^\circ = 40^\circ$$

$$\text{Now, } 3x = 3 \times 20^\circ = 60^\circ$$

$$\text{Now, } 4x = 4 \times 20^\circ = 80^\circ$$

The angles of triangle are $40^\circ, 60^\circ, 80^\circ$.

3. Can 3, 5 and 3 be the possible lengths of a triangle?

Yes, because $3 + 5 > 3$, $5 + 3 > 3$ and $3 + 3 > 5$

4. If each of 2 equal angles of an isosceles triangle is 4 times of third angle, what will be the

measure of all the 3 angles?

80° , 80° and 20°

5. Classify each of following triangles as Scalene, Isosceles or Equilateral:

- a) Isosceles Triangle
- b) Scalene Triangle
- c) Isosceles Triangle
- d) Scalene Triangle
- e) Equilateral Triangle

Revision Exercise

1. Look at following figure and write:
 - a) Opposite face of ABCD EFGH
 - b) Adjacent faces of DCHG ADHE, BCGF, BCD
 - c) Where do lines FG and GH intersect? A|G
 - d) A line parallel to DC. HG, AB
2. Find measure of $\angle b$ in following figure, if $\angle a = 80^\circ$.
 100°
3. Write 'T' for true and 'F' for false statements:
 - a) True b) True
 - c) False d) True
4. Look at following figure and find measure of $\angle ABC$ and $\angle BAD$ if $\angle ADC = 75^\circ$ and $\angle DCA = 40^\circ$:
 75° , 105°
5. Draw net of following figures:
Do it yourself.

Chapter – 11 Symmetry

Exercise – 11.1 Do it yourself.

Exercise – 11.2 Do it yourself.

Revision Exercise

1. Tick (✓) the correct option:
 - a) (i) 4
 - b) (ii) 3
 - c) (iv) All of these
 - d) (iv) 3
2. Do it yourself.
3. Do it yourself.

Chapter – 12 Construction

Exercise – 12.1 Do it yourself.

Exercise – 12.2

1. Name the following perpendicular lines:

- a) AB, QB, PB
- b) PS, SR, RQ, QP

2. How many lines can be drawn which are perpendicular to a given line and pass through a given point lying on it?

One

3. Do it yourself.
4. Do it yourself.

Exercise – 12.3 Do it yourself.

Exercise – 12.4 Do it yourself.

Exercise – 12.5

1. Find radius of circle when its diameter is 6 cm:

$$\begin{aligned}\text{Diameter} : d &= 2r && [2 \times \text{Radius}] \\ \text{Radius} &= \frac{d}{2} = \frac{6}{2} = 3 \text{ cm}\end{aligned}$$

2. Find diameter of circle when its radius is 6.7 cm:

$$\begin{aligned}\text{Diameter} : d &= 2r && [2 \times \text{Radius}] \\ \text{Diameter} &= 2 \times 6.7 = 13.4 \text{ cm}\end{aligned}$$

3. Do it yourself.
4. Do it yourself.

Revision Exercise

Do it yourself.

Chapter – 13 Mensuration

Exercise – 13.1

1. If perimeter of a rectangle is 500 m and its length is 125 m, then find its area.

$$\begin{aligned}\text{Perimeter of Rectangle} &= 2(1 + b) = 500 \text{ m} \\ 125 + b &= \frac{500}{2} = 250 \text{ m}\end{aligned}$$

$$\text{Breadth } b = 250 - 125 = 125 \text{ m}$$

$$\text{Area of Rectangle} = 1 \times b = 125 \times 125 = 15,625 \text{ m}^2$$

2. A room is 20m 50 cm long and 10 m 30 cm wide. Find the area of carpet needed to cover the

floor:

$$\begin{aligned}\text{Length} &= 20 \text{ m } 50 \text{ cm} = 20.5 \text{ m} \\ \text{Breadth} &= 10 \text{ m } 30 \text{ cm} = 10.3 \text{ m} \\ \text{Area of Room's floor} &= l \times b = 20.5 \times 10.3 \\ &= 211.15 \text{ m}^2\end{aligned}$$

3. The perimeter of a rectangular field is 244 m and length of field is twice the breadth. Find area of field.

$$\begin{aligned}\text{Breadth of Rectangular field} &= b \text{ [suppose]} \\ \text{Length of Rectangular field} &= 2b \text{ [given]} \\ \text{Perimeter of Rectangle} &= 2(l+b) = 2(2b+b) = 6b \\ \therefore 6b &= 244 \text{ m [given]} \\ \therefore b &= \frac{244}{6} \text{ m} = 40.67 \text{ m}\end{aligned}$$

$$\begin{aligned}\text{Breadth (b)} &= 40.67 \text{ m} \\ \text{Length (l)} &= 2b = 2 \times 40.67 \text{ m} = 81.34 \text{ m} \\ \text{Area of field} &= l \times b = 81.34 \times 40.67 \\ &= 3308 \text{ m}^2\end{aligned}$$

4. A square and rectangle have same perimeter. If side of square is 5 m and breadth of rectangle is 4 m, find difference in area of rectangle and square.

$$\begin{aligned}\text{Perimeter of Square} &= \text{Perimeter of Rectangle [given]} \\ 4l &= 2(l+b) \\ 4l &= 2l+2b \\ 4 \times 5 &= 2l+2 \times 4 \quad \text{[given]} \\ 20 &= 2l+8 \\ 2l &= 12 \quad \text{[20-8]} \\ l &= 6 \quad \text{[12/2]}\end{aligned}$$

$$\text{Area of Square} = l^2 = 5 \times 5 = 25 \text{ m}^2 \text{ [side given]}$$

$$\text{Area of Rectangle} = l \times b = 6 \times 4 = 24 \text{ m}^2 \text{ [b given]}$$

$$\text{Difference in areas} = 1 \text{ m}^2 \text{ [25-24]}$$

5. A footpath is 520.50 m long and 2.50 m wide. It is to be covered with square tiles of size of 0.25 m. find cost of tiles required to cover the footpath if one tile costs Rs. 20.

$$\begin{aligned}\text{Length of footpath} &= 520.50 \text{ m} \\ \text{Breadth of footpath} &= 2.50 \text{ m} \\ \text{Area of footpath} &= l \times b = 520.50 \times 2.50 = 1301.25 \text{ m}^2\end{aligned}$$

$$\text{Area of 1 tile} = l^2 = (0.25)^2 = 0.0625 \text{ m}^2$$

$$\begin{aligned}\text{No. of tiles required} &= \frac{\text{Area of footpath}}{\text{Area of 1 tile}} \\ &= \frac{1301.25 \text{ m}^2}{0.0625 \text{ m}^2}\end{aligned}$$

$$\begin{aligned}\text{Area of 1 tile} &= 0.0625 \text{ m}^2 \\ &= 20820 \text{ tiles}\end{aligned}$$

$$\text{Cost of 1 tile} = \text{Rs. 20}$$

$$\begin{aligned}\text{Cost of 20820 tiles} &= 20820 \times 20 \\ &= \text{Rs. 416400}\end{aligned}$$

6. If cost of white washing a wall is Rs. 9120 @ Rs. 10 per m², then find area of wall to be painted. Also find its length if its breadth is 16 m.

$$\begin{aligned}\text{Area of wall} = l \times b &= \frac{\text{Total Cost Amount}}{\text{Cost Per m}^2}\end{aligned}$$

$$\begin{aligned}\text{Area of wall} &= l \times b = \frac{9120}{10} \text{ m}^2 \\ \text{Length of wall} &= l = \frac{912}{16} \text{ m} = 57 \text{ m}\end{aligned}$$

$$\begin{aligned}\text{Area of wall} &= 912 \text{ m}^2 \\ \text{Length of wall} &= 57 \text{ m}\end{aligned}$$

7. Find area of a rectangle with one side equal to 4 cm and other is half of it.

$$\begin{aligned}\text{Suppose Length} &= 4 \text{ cm [given]} \\ \text{Breadth} &= 2 \text{ cm [given]} \\ \text{Area of Rectangle} &= l \times b = 4 \times 2 \text{ m}^2 \\ &= 8 \text{ m}^2\end{aligned}$$

8. A lawn is rectangular in shape. It 100 m in length and 25 m in breadth. The cost of cutting 50 m² area of grass is Rs. 2.50, what is cost of cutting grass of the whole lawn if there is a small square cemented area of 200 m² in the middle of the lawn?

$$\text{Area of Rectangle} = l \times b = 100 \times 25 = 2500 \text{ m}^2$$

$$\text{Area of Square} = 12 \text{ (given)} = 200 \text{ m}^2$$

$$\text{Area for grass-cutting} = 2300 \text{ m}^2 \text{ (2500 - 200)}$$

$$\text{Cost of 50 m}^2 \text{ area} = \text{Rs. 2.50}$$

$$\text{Cost of 1 m}^2 \text{ area} = \text{Rs. 0.05/m}^2$$

$$\begin{aligned}\text{Cost of 2300 m}^2 \text{ area} &= 2300 \times 0.05 \\ &= \text{Rs. 115}\end{aligned}$$

$$\frac{2.50}{50}$$

Exercise – 13.2

1. What will be length of a rectangle if its breadth and perimeter are 10 cm and 24 cm respectively?

$$\begin{aligned}\text{Breadth (b)} &= 10 \text{ cm} \\ \text{Perimeter of Rectangle} &= 24 \text{ cm} \\ \text{Perimeter of Rectangle} &= 2(l+b) = 2 \\ (1+10) &= 24 \text{ cm} \\ 1+10 &= \frac{24}{2} = 12 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{Length (l)} &= 12 - 10 \\ &= 2 \text{ cm}\end{aligned}$$

2. Find perimeter of a rectangle whose length and breadth are 7 cm and 4 cm respectively.

$$\begin{aligned}\text{Length (l)} &= 7 \text{ cm} \\ \text{Length (b)} &= 4 \text{ cm} \\ \text{Perimeter of Rectangle} &= 2(l+b) \\ &= 2(7+4) \\ &= 2(11) \text{ cm} \\ &= 22 \text{ cm}\end{aligned}$$

3. Find perimeter of a square whose each side is of 11 cm.

$$\begin{aligned}\text{Side (a)} &= 11 \text{ cm} \\ \text{Perimeter of Square} &= 4a \\ &= 4 \times 11 \\ &= 44 \text{ cm}\end{aligned}$$

4. What will be length of 3rd side of triangle whose 2 sides are 12 cm and 15 cm and perimeter is 38 cm?

$$\begin{aligned}\text{Side (a) of triangle} &= 12 \text{ cm} \\ \text{Side (b) of triangle} &= 15 \text{ cm} \\ \text{Side (c) of triangle} &= ? \text{ cm} \\ \text{Perimeter of triangle} &= a + b + c = 38 \text{ cm} \\ &= 12 + 15 + c = 38 \text{ cm} \\ &= 27 + c = 38 \text{ cm} \\ c &= 38 - 27 \\ &= 11 \text{ cm}\end{aligned}$$

$$\text{Length of 3rd side of triangle} = 11 \text{ cm}$$

5. Find perimeter of a square of side 14 cm.

$$\begin{aligned}\text{Side (a)} &= 14 \text{ cm} \\ \text{Perimeter of Square} &= 4a \\ &= 4 \times 14 \\ &= 56 \text{ cm}\end{aligned}$$

Revision Exercise

1. Tick (✓) the correct option:

- a) (ii) 5 m
b) (i) 20 cm

2. Find area and length of a square field if its perimeter is 30 cm:

$$\begin{aligned}\text{Perimeter of Square} &= 4a = 30 \text{ cm} \\ \text{Length (a)} &= 7.5 \text{ cm} \quad [30/4] \\ \text{Area of Square} &= a^2 = 30 \text{ cm} \\ &= (7.5)^2 = 7.5 \times 7.5 \\ &= 56.25 \text{ cm}^2\end{aligned}$$

$$\text{Area of Square} = 56.25 \text{ cm}^2$$

$$\text{Length of Square} = 7.5 \text{ cm}$$

3. Find area and perimeter of a rectangle whose sides are 12 m 2 cm and 5 m 4 cm:

$$\begin{aligned}\text{Length (l)} &= 12 \text{ m } 2 \text{ cm} = 12.02 \text{ m} \\ \text{Length (b)} &= 5 \text{ m } 4 \text{ cm} = 5.04 \text{ m} \\ \text{Area of Rectangle} &= l \times b = 12.02 \times 5.04 \\ &= 60.58 \text{ m}^2\end{aligned}$$

$$\begin{aligned}\text{Perimeter of Rectangle} &= 2(l+b) = 2 \\ (12.02 + 5.04) &= 2(17.06) \\ &= 34.12 \text{ cm}\end{aligned}$$

$$\text{Area of Rectangle} = 60.58 \text{ m}^2$$

$$\text{Perimeter of Rectangle} = 34.12 \text{ cm}$$

4. If square of side 50 cm has same area as that of a rectangle of length 100 cm. Then which perimeter is greater and by how much?

$$\begin{aligned}\text{Perimeter of Square} &= 4a \\ &= 4 \times 50 \text{ cm} = 200 \text{ cm} \\ \text{Area of Square} &= a^2 = 50 \times 50 = 2500 \text{ cm}^2 \\ \text{Area of Rectangle} &= \text{Area of Square} = 2500 \text{ cm}^2\end{aligned}$$

$$\begin{aligned}\text{Area of Rectangle} &= l \times b = 2500 \text{ cm}^2 \\ &= 100 \times b = 2500 \text{ cm}^2 \\ b &= \frac{2500}{100} \\ b &= 25 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{Perimeter of Rectangle} &= 2(l+b) \\ &= (100 + 25) = 250 \text{ cm}\end{aligned}$$

Perimeter of Rectangle is greater than Square 50 cm (250 – 200).

5. A rectangular lawn has dimensions 200 m × 75 m. It has 5 cemented square surfaces of each of side 5 m. Find area of lawn covered with grass:

$$\text{Area of Rectangular Lawn} = l \times b$$

$$= 200 \times 75 = 15,000 \text{ m}^2$$

$$\text{Area of 1 cemented squares} = a^2 = 5 \times 5 = 25 \text{ m}^2$$

$$\text{Area of 5 cemented squares} = 5 \times 25 = 125 \text{ m}^2$$

$$\text{Area of Lawn with grass} = \text{Lawn Area} - \text{Squares Area}$$

$$= 15,000 \text{ m}^2 - 125 \text{ m}^2 = 14,875 \text{ m}^2$$

6. If length of a rectangle is twice of its breadth, find the perimeter if its area is 200 cm^2 :

$$\text{Breadth of Rectangle} = b \quad [\text{suppose}]$$

$$\text{Length of Rectangle} = 2b \quad [\text{given}]$$

$$\text{Area of Rectangle} = l \times b = 200 \text{ cm}^2 \quad [\text{given}]$$

$$= 2b \times b = 200 \text{ cm}^2$$

$$= 2b^2 = 200 \text{ cm}^2$$

$$= b^2 = 100 \text{ cm}^2$$

$$= b = 10 \text{ cm}$$

$$\text{Perimeter of Rectangle} = 2(l + b) = 2(2b + b)$$

$$= 6b$$

$$= 6b = 6 \times 10 = 60 \text{ cm}$$

7. Find cost of fencing a square of area 625 m^2 at the rate of Rs. 20 per m^2 :

$$\text{Cost of } 1 \text{ m}^2 \text{ area} = \text{Rs. } 20$$

$$\text{Cost of } 625 \text{ m}^2 \text{ area} = 625 \times 20$$

$$= \text{Rs. } 12,500$$

8. If cost of fencing a rectangular field of length 24 cm and area 216 cm^2 is Rs. 228.80. Find rate of fencing in per cm^2 :

$$\text{Breadth for Rectangle} =$$

$$= 9 \text{ cm}$$

$$\text{Perimeter of Rectangle} = 2(\text{length}) = 2(24 + 9)$$

$$= 2 \times 33 = 66 \text{ cm}$$

$$\text{Let rate of fencing be } x =$$

$$= \text{Rs. } 3.47 \text{ per cm}$$

9. If perimeter of side of a wall is 240 m, and its length is 80 m. Find cost of painting it at the rate of Rs. 2 per m^2 :

$$\text{Length of wall} = (l) = 80 \text{ m} \quad [\text{given}]$$

$$\text{Breadth of wall} = b = ?$$

$$\text{Perimeter of wall} = 2(l + b) = 240 \text{ m} \quad [\text{given}]$$

$$= 2(80 + b) = 240 \text{ m}$$

$$= 80 + b = 120$$

$$= b = 40 \text{ m}$$

$$\text{Area of wall} = l \times b = 80 \times 40 = 3200 \text{ m}^2$$

$$\text{Cost of painting at the rate of @ Rs. 2 per m}^2 =$$

$$3200 \times 2 = \text{Rs. } 6400$$

Chapter – 14 Data Handling

Exercise – 14.1

1. Do it yourself. 2. Do it yourself.

Exercise – 14.2

1. Read the bar graph shown and answer the following:

- a) Manish b) 38 c) 5
d) Sumit e) 158

2. Do it yourself.

3. Read the graph and answer the following questions:

- a) Snowfall in an area b) January
c) 30 cm d) 70 cm
e) January

4. Do it yourself. 5. Do it yourself.

Exercise – 14.3

1. Do it yourself. 2. Do it yourself.

3. Do it yourself. 4. Do it yourself.

5. Do it yourself.

6. Read following pictograph and answer following questions:

- a) (iv) b) (vii)
c) 50 books d) 125 books
e) 200 books,

Revision Exercise

1. In a village, 6 carpenters sold following number of chairs baskets on a particular day:

- a) (i) Navin d) (iv) 4
b) (iii) Jaya e) (ii) Komal
c) (i) 5

2. Do it yourself. 3. Do it yourself.

4. Do it yourself.

5. Read the bar graph carefully and answer following questions:

- a) Birthday of students in a year
b) October
c) August
d) February, May & June
e) 16 Students

Model Test Paper - 1

1. Complete the number and put > or < in the box:

- | | |
|----------------|----------------|
| a) 652 < 852 | g) 2145 > 2140 |
| b) 1102 < 1105 | h) 6352 < 9523 |
| c) 3652 < 9652 | i) 4586 < 5410 |
| d) 6523 < 7452 | j) 7809 > 7807 |
| e) 1052 < 1063 | k) 9999 > 9990 |
| f) 1111 > 1000 | l) 2003 < 2014 |

2. Find all the factors of the following:

- $56 = 2 \times 2 \times 2 \times 7$
- $14 = 2 \times 7$
- $42 = 2 \times 3 \times 7$
- $50 = 2 \times 5 \times 5$
- $125 = 5 \times 5 \times 5$
- $609 = 3 \times 7 \times 29$
- $752 = 2 \times 2 \times 2 \times 2 \times 47$
- $144 = 2 \times 2 \times 2 \times 2 \times 3 \times 3$
- $999 = 3 \times 3 \times 3 \times 37$
- $723 = 1 \times 723$
- $545 = 5 \times 109$
- $856 = 2 \times 2 \times 2 \times 107$

3. Find LCM of following numbers by listing multiples:

- $6 = 6, 12, 18, 24$
 $8 = 8, 16, 24$
 LCM of 6 and 8 is 24.
- $2 = 2, 4, 6, 8$
 $4 = 4, 8$
 LCM of 2 and 4 is 4.
- $10 = 10, 20, 30, 40, 50, 60, 70$
 $12 = 12, 24, 36, 48, 60, 72$
 LCM of 10 and 12 is 60.
- $12 = 12, 24, 36, 48, 60, 72$
 $15 = 15, 30, 45, 60, 75$
 LCM of 12 and 15 is 60.
- $12 = 12, 24, 36, 48, 60, 72, 84$
 $36 = 36, 72$
 LCM of 12 and 36 is 72.
- $9 = 9, 18, 27, 36, 45$
 $12 = 12, 24, 36, 48$
 LCM of 9 and 12 is 36.

4. Fill in the boxes:

- $65 \times 0 = 0$
- $40 \div 40 = 1$
- $14 \div 1 = 14$
- $75 \div 1 = 75$

e) $6 \times (2 \times 8) = (6 \times 2) \times 8$

f) $0 \div 6 = 0$

5. The HCF of two numbers is 23 and their LCM is 1449. If one of the numbers is 161, find the other:

Let 2 numbers be a and b.

As per Rule: $a \times b = \text{HCF} \times \text{LCM}$

$$b = \frac{\text{HCF} \times \text{LCM}}{a} = \frac{23 \times 1449}{161} = 207$$

So, other number is 207.

6. Find the number which will divide 398 and 436, leaving remainders 11 and 15 respectively.

Do it yourself.

7. A place is 37 m above sea level and another is 35 m below sea level. What is difference of level between two places?

Position of Place 'A' above sea level = 37 m

Position of Place 'B' below sea level = 35 m

Difference of level between 2 levels = 72 m
[37 + 35]

8. Which is greater between $3\frac{2}{3}$ and $4\frac{2}{3}$ and by how much?

$$3\frac{2}{3} = \frac{11}{3} \quad \text{and} \quad 4\frac{2}{3} = \frac{14}{3}$$

$$\therefore \text{We have } \frac{11}{3} \quad \text{and} \quad \frac{14}{3}$$

$$\therefore \frac{14}{3} > \frac{11}{3} \quad [\text{because denominator is same}]$$

9. What should be added to $6\frac{7}{15}$ to get $9\frac{3}{10}$?

Let x be added to $6\frac{7}{15}$ to get $9\frac{3}{10}$

$$\text{So, } x + 6\frac{7}{15} = 9\frac{3}{10}$$

$$x = 9\frac{3}{10} - 6\frac{7}{15}$$

$$x = \frac{93}{10} - \frac{97}{15} = \frac{279 - 194}{30} = \frac{85}{30}$$

$$x = \frac{17}{6} = 2\frac{5}{6}$$

So, $2\frac{5}{6}$ should be added to $6\frac{7}{15}$ to get $9\frac{3}{10}$.

10. **Avi has Rs. 500 and he spends Rs. 97 and 50 paise. How much money is left with him now?**

Avi has = Rs. 500.00
 He spends = Rs. (-) 97.50
 Money left with him = Rs. 402.50

11. **Can two numbers have 16 as their HCF and 204 as their LCM? Give reason.**

No, because 204 is not exactly divisible by 16.

Model Test Paper - 2

1. **Write down monomials, binomials and trinomials:**

- a) Binomials b) Trinomials
 c) Monomials d) Trinomials
 e) Binomials

2. **Find the radius of circle whose diameter is:**

- a) 14 cm
 Diameter (d) = $2r$
 Radius (r) = $\frac{d}{2} = \frac{14}{2} = 7 \text{ cm}$
 b) 20 cm
 Radius (r) = $\frac{d}{2} = \frac{20}{2} = 10 \text{ cm}$
 c) 32 cm
 Radius (r) = $\frac{d}{2} = \frac{32}{2} = 16 \text{ cm}$
 d) 28 cm
 Radius (r) = $\frac{d}{2} = \frac{28}{2} = 14 \text{ cm}$
 e) 66 cm
 Radius (r) = $\frac{d}{2} = \frac{66}{2} = 33 \text{ cm}$

3. **What angle will be made by hands of a clock when clock shows following time:**

- a) 90° b) 180°

4. **If following pairs of angles are supplementary angles, what will be the value of other angle?**

- a) $\angle A = 120^\circ$, $\angle B = 60^\circ$
 b) $\angle 2 = 90^\circ$, $\angle 3 = 90^\circ$
 c) $\angle x = 100^\circ$, $\angle y = 80^\circ$
 d) $\angle B = 10^\circ$, $\angle C = 170^\circ$

5. **State whether the following triangles are Equilateral, Isosceles or Scalene:**

- a) Scalene b) Isosceles
 c) Equilateral d) Equilateral

6. **A rectangular box has height x cm and its length is 5 times the height and breadth is 5 cm less than length. Express its height, length and breadth in an algebraic expression:**

Height h = x cm

Length l = 5x cm

Breadth b = 5x - 5 cm

7. **If each of two equal angles of an isosceles triangle is 4 times of third angle, what will be the measure of all 3 angles?**

$80^\circ, 80^\circ$ and 20°

8. **How many lines can be drawn which are perpendicular to a given line and pass through a given point lying on it?**

One

9. **Draw a line segment AB = 5.5 cm. Take a point C on AB such that AC is 3.5 cm. Draw CD perpendicular to AB.**

Do it yourself.

10. **Draw a circle whose diameter is 9.2 cm.**

Do it yourself.

11. **A square and rectangle have same perimeter. If side of square is 5 m and breadth of rectangle is 4 m, find difference in area of rectangle and square.**

Perimeter of Square = Perimeter of Rectangle [given]

$$4l = 2(l+b) \quad 4l = 2l+2b$$

$$4 \times 5 = 2l + 2 \times 4 \quad [\text{given}]$$

$$20 = 2l + 8$$

$$2l = 12 \quad [20 - 8]$$

$$l = 6 \quad [12 / 2]$$

$$\text{Area of Square} = l^2 = 5 \times 5 = 25 \text{ m}^2 [\text{side given}]$$

$$\text{Area of Rectangle} = l \times b = 6 \times 4 = 24 \text{ m}^2 [b \text{ given}]$$

$$\text{Difference in areas} = \text{m}^2 \quad [25 - 24]$$

12. **Find perimeter of a square whose each side is of 11 cm.**

$$\text{Side (a)} = 11 \text{ cm}$$

$$\text{Perimeter of Square} = 4a$$

$$= 4 \times 11 = 44 \text{ cm}$$

13. **Find cost of fencing a rectangular plot 47 m wide and 82 m long at Rs. 4 per metre.**

$$\text{Length of plot (l)} = 82 \text{ m}$$

$$\text{Breadth of plot (b)} = 47 \text{ m}$$

$$\text{Perimeter of wall} = 2(l+b)$$

$$= 2(82+47)$$

$$= 2(129) = 258 \text{ m}$$

$$\text{Rate of fencing} = \text{Rs. 4 per}$$

$$\text{Cost of fencing} = 258 \times 4 = \text{Rs. 1032}$$

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