

# Items for Assessment of Learning Outcomes

## Mathematics Class 6



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## CHAPTER 1

### TOPIC: KNOWING OUR NUMBERS

#### **LEARNING OBJECTIVES:**

##### **Comparing Numbers:**

- Find the place value of the digit and list total numbers.
- List the total numbers which can be made from the given digits and know the place value of the digit in the number.
- Arrange the digits of a given number and make smaller or bigger number.
- Add 1 to the greatest 1 digit, 2-digit, and 3-digit number and so on and get the smallest next digit number.
- Expand the given number and know the place value of a given digit in a particular number.
- Write the 6-digit number in expanded form and write its number name.
- Add and subtract one from number and find predecessor and successor of a given number.
- Add bigger digit numbers and understand the situations dealing with larger numbers.
- Use places of the digits of a particular number and read it easily.

##### **Large Numbers in Practice:**

- Read the given situation and find the approximately estimated number.
- Estimate the number to the nearest tens and round off.
- Estimate the outcome of a number and get a quick round off number.
- Round off the numbers and find their sum and difference easily.
- Round off the numbers and find their product easily.

##### **Using Brackets:**

- Use bracket to solve the problem and make calculation quick and to avoid confusion.

##### **Roman Numerals:**

- Write numbers in the form of roman numerals and represent and interpret the numbers written in a clock, time table etc.
- Apply the rules of roman numbers operations and perform arithmetic operation on them.

## **LEARNING OUTCOME:**

- Applies appropriate operations (addition, subtraction, multiplication and division) in order to solve problems involving large numbers.

## **QUESTIONS:**

**1. What is the sum of 567 and -843?**

- A. -276
- B. 843
- C. -1410
- D. 1500

**2. Solve  $274 + 367 - 540 = \underline{\hspace{2cm}}$ .**

- A. 1181
- B. 987
- C. 447
- D. 101

**3.  $1345656 \underline{\hspace{1cm}} 989456$**

- A. >
- B. <
- C. =
- D. none of these

**4. Arrange the following numbers in descending order: 4000, 8500, 50600, 7235.**

- A. 50600, 8500, 7235, 4000
- B. 50600, 8500, 4000, 7235
- C. 50600, 7235, 8500, 4000
- D. 50600, 7235, 4000, 850

**5. Which of the following numbers comes just before 1000?**

- A. 999
- B. 1001
- C. 990
- D. 909

**6. What is the place value of 6 in 345673498?**

- A. 60000
- B. 600000
- C. 66666
- D. 60

**7. The smallest 4-digit number that can be made using the digits 6, 5, 0, 4 without repetition is \_\_\_\_\_.**

- A. 4560
- B. 4056
- C. 4065
- D. 4506.

**8. 1 crore = how many million?**

- A. 10000
- B. 1000
- C. 100
- D. 10

**9. Insert comma suitably in 67810138 by using International System.**

- A. 67,810,138
- B. 67,81,01,38
- C. 6,78,10,138
- D. 678,10,138

**10. In Roman Numerals L stands for**

- A. 100
- B. 50
- C. 70
- D. 90

**11. 60 in Roman numerals is \_\_\_\_.**

- A. LX
- B. LXX
- C. LXXX
- D. XL

**12. I made an expenditure of ₹2725 in November, 2009 and of ₹2275 in December, 2009. What is the total expenditure made by me in November, 2009 and December, 2009 together?**

- A. 2000
- B. 3000
- C. 4000
- D. 5000

**Answers**

- |      |      |      |       |       |       |
|------|------|------|-------|-------|-------|
| 1. A | 2. D | 3. A | 4. A  | 5. A  | 6. B  |
| 7. B | 8. D | 9. A | 10. B | 11. A | 12. D |

**CHAPTER 2**  
**TOPIC: WHOLE NUMBERS**

**LEARNING OBJECTIVES:**

**Concept of Predecessor:**

Use the understanding of the predecessor of one and know the whole number.

**Whole Numbers:**

Explain the whole number and know the predecessor of 1 and the subtraction of the two-same number.

**The Number Line:**

- Define 'unit distance' and construct the number line.
- Draw the Number line and represent the whole number.
- Draw a number line and find the predecessor and successor of a given number.

**Properties of Whole Numbers:**

Apply properties of whole number and simplify arithmetic expression.

**Patterns in Whole Numbers:**

Form number patterns and verbal calculation and to understand numbers better.

**QUESTIONS:**

**1. The successor of 99999 is \_\_\_\_\_.**

- A. 99998
- B. 100000
- C. 10000
- D. 999999

**2. The natural number that has no predecessor is \_\_\_\_\_.**

- A. 1
- B. 10
- C. 100
- D. 1000

**3. The difference between the predecessor of a number and the number itself is \_\_\_\_.**

- A. 1
- B. -1
- C. 2
- D. -2

**4. Which of the following statement is true?**

- A. All natural numbers are also whole numbers.
- B. All whole numbers are also natural numbers.
- C. There is no smallest whole number.
- D. The greatest whole number is 100.

**5. Which of the following statement is true?**

- A. 1 is the smallest natural number.
- B. 50 is the predecessor of 49.
- C. 1 is the smallest whole number.
- D. 599 is the successor of 600.

**6. 'Whole numbers are closed under addition and multiplication. This property is known as \_\_\_\_\_.**

- A. closure property
- B. commutativity of addition and multiplication
- C. associativity of addition and multiplication
- D. distributive of multiplication over addition.

**7. I purchased 10 liters of milk in the morning and 5 liters of milk in the evening. If the milk costs 30 per liter, how much money will I have to pay to the milkman?**

- A. ₹ 450
- B. ₹ 300
- C. ₹ 150
- D. none of these.

**8. Which of the following is true?**

- A. The number 2 can be arranged as a line.
- B. The number 2 can be arranged as a square.
- C. The number 2 can be arranged as a triangle.
- D. The number 2 can be arranged as a rectangle.

**9.  $2 \times (3 + 4) = (2 \times 3) + (2 \times 4)$**

The above is known as

- A. distributive of multiplication over addition
- B. associativity of addition
- C. associativity of multiplication
- D. none of these.

**Answers:**

1. B   2. A   3. A   4. A   5. A  
6. A   7. A   8. A   9. A



**CHAPTER 3**  
**TOPIC: PLAYING WITH NUMBERS**

**LEARNING OBJECTIVES:**

**Finding the factors of a given number:**

Arrange the numbers in a row and determine the factors of a given number.

**Factors and Multiples:**

Determine the numbers which exactly divide the given number and find the factors.

**Prime and Composite Numbers:**

Write the factors of a given number and determine prime and composite numbers.

**Common Factors and Common Multiples:**

Evaluate the factors of given two or more numbers and find the common factors and multiples.

**Prime Factorization:**

Factorize a number through prime factorization and list the prime factors.

**Highest Common Factor and lowest common factor:**

- List down the common factors of given numbers and determine their HCF.
- List down the common multiples of given numbers and determine their LCM.
- Apply the concept of HCF and solve related real-life problems.
- Apply the concept of LCM and solve related real-life problems.

**LEARNING OUTCOME:**

- Identifies number patterns through factorization in order to recognize and appreciate (through patterns) the broad classification of numbers as even, odd, prime, co-prime, etc.
- Applies the concept of HCF or LCM in order to solve problems in a real-life situation.

**QUESTIONS:**

**1. Which of the following numbers is not a factor of 36?**

- A. 2
- B. 4
- C. 18
- D. 8

- 2. Which of the following number is not a multiple of 3?**
- A. 1
  - B. 3
  - C. 9
  - D. 6
- 3. The smallest prime number is \_\_\_\_.**
- A. 1
  - B. 2
  - C. 3
  - D. 4
- 4. 1 is \_\_\_\_\_.**
- A. a prime number.
  - B. a composite number.
  - C. neither prime nor composite.
  - D. an even number.
- 5. The least prime number between 1 and 10 is \_\_\_\_\_.**
- A. 2
  - B. 5
  - C. 3
  - D. 7
- 6. Which of the following statements is true?**
- A. The product of two even numbers is always even.
  - B. The sum of three odd numbers is even.
  - C. All prime numbers are odd.
  - D. Prime numbers do not have any factors.
- 7. 128 is divisible by \_\_\_\_.**
- A. 2
  - B. 3
  - C. 5
  - D. 10
- 8. The greatest common factor of 8 and 20 is \_\_\_\_.**
- A. 2
  - B. 1
  - C. 4
  - D. 8

9. The HCF of 24 and 36 is \_\_\_\_.

- A. 3
- B. 6
- C. 12
- D. 24

10. The LCM of 9 and 45 is \_\_\_\_.

- A. 3
- B. 9
- C. 5
- D. 45

### Answers

1. D   2. A   3. B   4. C   5. A  
6. A   7. A   8. C   9. C   10. D

**CHAPTER 4**  
**TOPIC: BASIC GEOMETRICAL SHAPES**

**LEARNING OBJECTIVES:**

**About geometrical shapes:**

Give example(s) and explain the importance of a point.

**A line segment and A line:**

Give example(s) and describe a line segment and a line.

**Intersecting Lines and Parallel Lines:**

Examine the given lines and identify intersecting lines and parallel lines among them.

**Ray:**

- Describe a ray and identify it from the give figures.
- Compare the given figures and identify a ray, line, line segment among them.

**Curves:**

- Give example(s) and demonstrate an understanding of a simple curve and a curve that is not simple.
- Describe an open curve and a closed curve and distinguish between the two.

**Polygons:**

- Discuss the parts of a closed curve and determine the position of a point with respect to it.
- Examine the given curves and identify polygons and non-polygons.
- Draw rough sketch of a polygon and label and describe its elements.

**Angles, Triangles, Quadrilaterals and Circles**

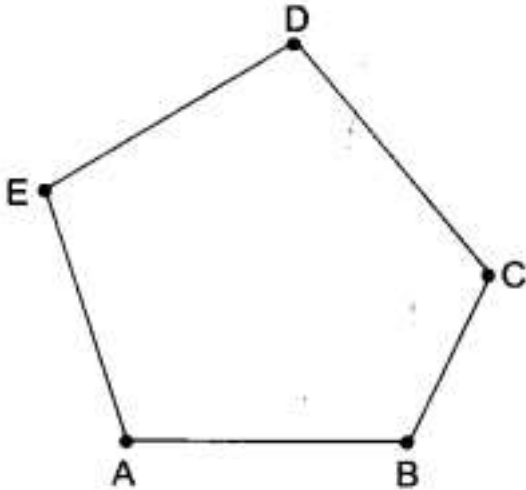
- Identify the elements of an Angle (Vertex, arm, interior and exterior angles) for the given angles.
- Describe the elements of a triangle and identify it among the given figures.
- Describe the elements of a quadrilateral and identify it among the given figures.
- Draw a rough sketch of a circle and label and describe its elements.
- Describe the parts of a circle and identify them in the given circle.
- Draw a rough sketch of a circle and label and describe its elements.
- Determine the parts of closed curves and identify the position of a point with respect to a polygon and a circle.

**LEARNING OUTCOME:**

Provides examples from surround in order to describes geometrical ideas like line, line segment, open and closed figures, angle, triangle, quadrilateral, circle, etc.

**QUESTIONS:**

**1. How many vertices are there in the following figure?**



- A. 5
- B. 3
- C. 2
- D. 4

**2. How many lines can pass through two given points?**

- A. Only one
- B. 2
- C. 4
- D. Countless

**3. How many pairs of adjacent angles are there in a quadrilateral?**

- A. 1
- B. 2
- C. 3
- D. 4

**4. How many pairs of opposite sides are there in a quadrilateral?**

- A. 1
- B. 2
- C. 3
- D. 4

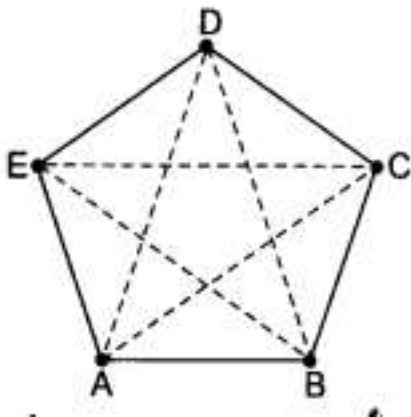
**5. How many angles are there in a triangle?**

- A. 1
- B. 2
- C. 3
- D. 4

**6. How many points are enough to fix a line?**

- A. 1
- B. 2
- C. 3
- D. 4

**7. How many diagonals are there in the following figure?**



- A. 4
- B. 5
- C. 2
- D. 3

**8. A \_\_\_\_\_ of a circle is a line segment joining any two points on the circle.**

- A. Radius
- B. Diameter
- C. Circumference
- D. Chord

**9. Two lines in a plane either intersect exactly at a point or are \_\_\_\_\_.**

- A. Perpendicular
- B. Parallel
- C. Equal
- D. Equidistant

**Answers:**

1. A 2. A 3. D 4. B 5. C 6. B 7. B 8. B 9. B

## CHAPTER 5

### TOPIC: UNDERSTANDING ELEMENTARY SHAPES

#### **LEARNING OBJECTIVES:**

##### **Measuring Line Segments:**

Measure the given line segments and compare them.

##### **Angles– ‘Right’ and ‘Straight’:**

Examine the rotation of angles and classify angles based on the amount of rotation.

##### **Angles– ‘Acute’, ‘Obtuse’ and ‘Reflex’:**

- Examine the rotation of angles and classify angles based on the amount of rotation.
- Compare the given angles and classify them as a right angle, straight angle or a complete angle.
- Compare the given angles and classify them as an acute angle, obtuse angle or a reflex angle according to their measure.
- Use a protractor and measure the given angle and classify its type.
- Use a protractor and draw an angle of the given measure.

##### **Perpendicular Lines**

- Describe perpendicular and a perpendicular bisector and identify the same in the given figure.
- Give example(s) of perpendicular lines and demonstrate an understanding of the same.

##### **Classification of Triangles:**

- Observe the measure of sides of a triangle and classify it into different types (scalene, isosceles, equilateral) based on its sides.
- Observe the measure of angles of a triangle and Classify it into different types (acute, obtuse, and right) based on its angles.

##### **Quadrilaterals:**

Examine the given figures and classify type quadrilaterals based on their properties.

##### **Polygons**

- Examine the given figures and identify polygons.
- Describe polygons and classify them based on their number of sides and angles. (Up to 8 sides)
- Give example(s) and distinguish between regular and irregular polygons.



### **Three dimensional shapes:**

- Describe solid shapes and distinguish them from flat shapes.
- Examine the given solid shapes and identify their type (Cubes, Cuboids, cylinder, sphere, cone, prism, pyramid).
- Describe the faces, edges and vertices of a 3D shape and discuss the various aspects of the given 3D object.

### **LEARNING OUTCOME:**

- And demonstrate an understanding of angles: a) Identifies examples of angles in the surrounding b) Classifies angles according to their measure c) Estimates the measure of angles using  $45^\circ$ ,  $90^\circ$ , and  $180^\circ$  as reference angles.
- Classifies triangles with different measurements in order to show different types of triangle based on their angles and sides.
- Classifies quadrilaterals with different measurements in order to show different types of quadrilaterals based on their sides and internal angles.
- Classifies commonly found 3-d objects from the surroundings in order to find sphere, cube, cuboid, cylinder, cone etc.
- Labels different parts of a 3-d objects in order to explain edges, vertices and faces of the given 3-d object.

### **Questions:**

**1. The angle measure for one-fourth revolution is \_\_\_\_\_.**

- A.  $90^\circ$
- B.  $360^\circ$
- C.  $180^\circ$
- D. none of these.

**2. The angle measure for half a revolution is \_\_\_\_\_.**

- A.  $90^\circ$
- B.  $180^\circ$
- C.  $360^\circ$
- D. none of these.

**3. What part of a revolution have you turned through if you stand facing north and turn clockwise to face west?**

- A.  $1/4$
- B.  $1/2$
- C.  $3/4$
- D. None

**4. Find the number of right angles turned through by the hour hand of a clock when it goes from 12 to 3.**

- A. 1
- B. 2
- C. 3
- D. 4

**5. The measure of a straight angle is \_\_\_\_\_.**

- A.  $45^\circ$
- B.  $90^\circ$
- C.  $60^\circ$
- D.  $180^\circ$

**6. The measure of an acute angle is \_\_\_\_\_.**

- A.  $< 90^\circ$
- B.  $> 90^\circ$
- C.  $= 90^\circ$
- D. none of these.

**7. The measure of an obtuse angle is \_\_\_\_\_.**

- A.  $< 90^\circ$
- B.  $> 90^\circ$  and  $< 180^\circ$
- C.  $= 90^\circ$
- D. none of these.

**8. Which of the following angles is the measure of an obtuse angle?**

- A.  $120^\circ$
- B.  $90^\circ$
- C.  $60^\circ$
- D.  $240^\circ$

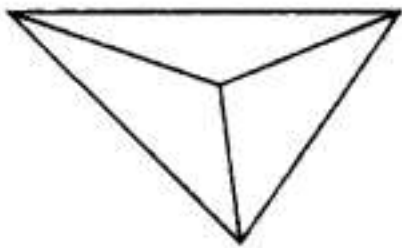
9. A triangle having three unequal sides is called a \_\_\_\_\_.

- A. scalene triangle
- B. isosceles triangle
- C. equilateral triangle
- D. right triangle

10. Which of the following statement is true?

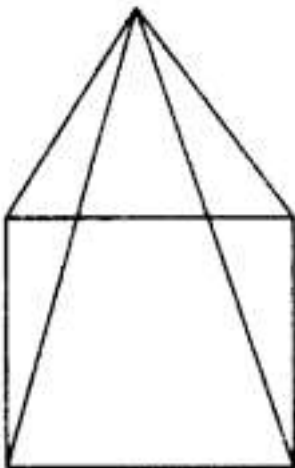
- A. The opposite sides of a trapezium are parallel.
- B. All the sides of a parallelogram are of equal in length.
- C. The diagonals of a square are perpendicular to each other.
- D. All the angles of a rectangle are not equal.

11. The following shape is of a \_\_\_\_\_.



- A. cone
- B. cylinder
- C. sphere
- D. pyramid.

12. The number of faces of the shape is \_\_\_\_\_.



- A. 2
- B. 4
- C. 5
- D. 3

**13. Every flat surface of a cuboid is \_\_\_\_\_.**

- A. rectangular
- B. square
- C. circular
- D. none of these

**Answers:**

- |       |      |      |       |       |       |
|-------|------|------|-------|-------|-------|
| 1. A  | 2. B | 3. C | 4. A  | 5. D  | 6. A  |
| 7. B  | 8. A | 9. A | 10. C | 11. D | 12. C |
| 13. A |      |      |       |       |       |

## CHAPTER 6

### TOPIC: INTEGERS

#### **LEARNING OBJECTIVES:**

##### **Significance of Integers:**

- Represent integers with their signs and differentiate positive number, negative number and zero from each other.
- Denote numbers with their signs and represent real life situations like temperature scale, credit, debit etc.

##### **Integers:**

- Represent the integer on Number Line and determine its position with respect to other integers.
- Determine one more and one less of a given integers and find its predecessor and successor.
- Determine the order of integers and represent them on a number line and draw comparison between them.

##### **Addition of Integer, Subtraction of Integers with the help of a Number Line**

- Represent the integers on number line and perform arithmetic operations on them.
- Use the rules to perform arithmetic operations on integers.

#### **LEARNING OUTCOME:**

Applies addition and subtraction rules involving positive and negative integers and solve real life problems.

##### **Questions:**

**1. The preceding number of the number 0 is \_\_\_\_\_.**

- A. 1
- B. -1
- C. 0
- D. none of these.

**2. Which of the following is true?**

- A.  $0 < -8$
- B.  $0 > -8$
- C.  $4 < -4$
- D.  $0 > 6$ .

**3. Which of the following statements is true?**

- A. Every positive integer is larger than every negative integer.
- B. Zero is greater than every positive integer.
- C. Zero is smaller than every negative integer.
- D. Farther a number from zero to the right, smaller is its value.

**4. Solve  $(+ 1) + (+ 2) = ?$**

- A. + 1
- B. + 2
- C. + 3
- D. - 3

**5. Which of the following statements is true?**

- A. Greatest negative integer is - 1.
- B. - 10 is to the right of - 8 on a number line.
- C. - 50 is to the left of - 100 on a number line.
- D. - 11 is larger than - 10.

**6. The preceding number of the number 6 is \_\_\_\_.**

- A. 2
- B. 3
- C. 4
- D. 5

**7.  $10 + ? = 0$**

- A. -1
- B. -10
- C. 0
- D. 1

**8. The multiplicative inverse of 67 is \_\_\_\_.**

- A. -67
- B. 0
- C.  $1/67$
- D. 67

9. The additive inverse of  $4+3-8$  is \_\_\_\_\_.

- A. 1
- B. 2
- C. 4
- D. 2

**Answers**

1. B 2. B 3. A 4. C 5. A 6. D 7. B 8. C 9. A

**CHAPTER 7**  
**TOPIC: FRACTIONS**

**LEARNING OBJECTIVES:**

**Concept of Fraction:**

Represent a number as a part of the whole and determine the fraction.

**A Fraction:**

Determine part and whole and label numerator and denominator of a fraction.

**Fraction on the Number Line:**

Draw equal parts between the whole numbers and represent fractions on a number line.

**Proper Fractions:**

Write proper fractions and deduce that they are always less than one /numerator is less than denominator.

**Improper and Mixed Fractions:**

- Write fractions where numerator is greater than denominator and determine improper fractions.
- Write the improper fraction in the form of mixed fraction and represent it as combination of whole and a part.

**Equivalent Fractions:**

- Multiply /Divide the numerator and denominator by the same number and find equivalent fractions
- Perform cross multiplication among two fractions and verify their equivalence.

**Simplest Form of a Fraction**

- Reduce the fraction and determine its simplest form

**Like Fractions**

- Check the denominators of the fractions in order distinguish between like and unlike fractions.

**Comparing Fractions:**

- Inspect the numerators of the like fractions and determine larger and smaller fraction(s).
- Determine the LCM of the unlike fractions and compare them.

**Addition and Subtraction of Fractions:**

- Solve (addition /subtraction) the numerator and retain the denominator of the like fractions and perform addition and subtraction on the given fraction.
- Convert the given fractions into its equivalent fractions and perform addition and subtraction on them.

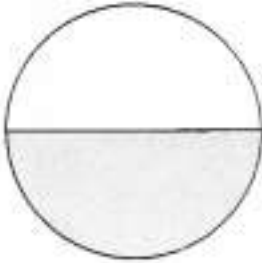


**LEARNING OUTCOME:**

- Calculates fractions and decimals in different real-life situations in order to identify the appropriate quantity of money, length, temperature etc.
- Calculates addition and subtraction of fractions and decimals in order to solve daily life problems involving quantities that measure between two integers.

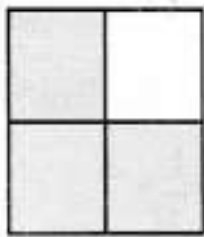
**QUESTIONS:**

1. The fraction representing the shaded portion is \_\_\_\_\_.



- A.  $\frac{1}{4}$
- B.  $\frac{1}{2}$
- C.  $\frac{1}{3}$
- D.  $\frac{1}{8}$

2. The fraction representing the shaded portion is \_\_\_\_\_.



- A.  $\frac{1}{4}$
- B.  $\frac{1}{2}$
- C.  $\frac{3}{4}$
- D. None

3. What fraction of ₹1 is 50 paise?

- A.  $\frac{1}{2}$
- B.  $\frac{1}{3}$
- C.  $\frac{3}{4}$
- D.  $\frac{1}{4}$

**4. Which of the following is a proper fraction?**

- A.  $0/1$
- B.  $5/2$
- C.  $7/4$
- D.  $11/3$

**5. What fraction is 10ml of L?**

- A.  $1/10$
- B.  $1/100$
- C.  $1/1000$
- D. none of these

**6. Which of the following is a proper fraction whose numerator is 1 and denominator is 3?**

- A.  $1/6$
- B.  $1/3$
- C.  $1/12$
- D.  $1/9$

**7. The simplest form of  $12/20$  is \_\_\_\_\_.**

- A.  $3/5$
- B.  $2/3$
- C.  $3/4$
- D.  $4/5$

**8. Apala typed 50 pages of a book containing 100 pages. Meenu typed 25 pages of the same book. Who typed more?**

- A. Apala
- B. Meenu
- C. Both A and B
- D. none of these

**9. Find  $1/4 + 1/4 + 1/4 + 1/4 =$  \_\_\_\_\_.**

- A.  $3/4$
- B.  $2/4$
- C.  $4/5$
- D. 1

**10. Apala bought  $21/2$  kg of potatoes whereas Meenu bought  $11/2$  kg of potatoes. Find the total amount of potatoes purchased by Apala and Meenu both.**

- A. 10 kg
- B. 12 kg
- C. 13 kg
- D. 16 kg

**Answers**

1. B    2. C    3. A    4. A    5. B    6. B    7. A    8. A    9. D    10. D

## CHAPTER 8

### TOPIC: DECIMALS

#### **LEARNING OBJECTIVES:**

##### **Decimal point:**

Write rupees and paisa in decimal form and know the meaning and relevance of dot point.

##### **Tenths:**

- Represent number in its unit and tenth part in order to write it in decimal form.
- Determine the place value of decimal numbers up to tenth and write the number in expanded form.
- Divide the numbers into ten equal parts and represent decimal numbers up to tenth place.

##### **Hundredths:**

- Represent number in its unit and hundredth part and write it in decimal form.
- Determine the place value of decimal numbers up to hundredth and write the number in expanded form.
- Determine the part and whole of a given decimal number and represent it in the form of fractions.
- Determine the place of the digits of a decimal number and write it in words.
- Compare the units and parts of the decimal numbers and compare them as a whole.

##### **Using Decimals:**

Represent /Convert the money, length and weight into smaller units and represent it into decimal form.

##### **Addition of Numbers with Decimals & Subtraction of Decimals:**

Add and subtract the whole and parts of decimal numbers and find their sum and difference.

#### **LEARNING OUTCOME:**

- Calculates fractions and decimals in different real-life situations in order to identify the appropriate quantity of money, length, temperature etc.
- Calculates addition and subtraction of fractions and decimals in order to solve daily life problems involving quantities that measure between two integers.

**QUESTIONS:**

**1. Manu had 35.50 rupees. He bought cake for 20.50 rupees. The balance amount left with Manu is \_\_\_\_\_.**

A. 15 rupees

B. 15.50 rupees

C. 14.50 rupees

D. 15.50 rupees

**2. The value of  $9.765 - 6.25$  is \_\_\_\_\_.**

A. 9.14

B. 3.515

C. 6.515

D. 3.545

**3. Which of the following is the smallest?**

A. 1.05

B. 0.34

C. 0.0098

D. 0.05

**4. Write Four hundred seven and six – hundredths as a decimal.**

A. 407.06

B. 407.6

C. 407.600

D. 407.00

**5. The length of a young gram plant is 65mm. Its length in cm will be \_\_\_\_\_.**

A. 6.5 cm

B. 0.65cm

C. 0.065cm

D. 6.05 cm

**6. Puja is 150 cm tall. What is her height in metres?**

A. 1 metre

B. 1.5 metres

C. 15.0 metres

D. 0.15 metres

**7. What will be value of  $(8.5 \times 5.8 + 8.5 \times 4.2) / (1.7 \times 7.6 - 1.7 \times 6.6)$ ?**

A. 13.56

B. 5.25

C. 10

D. 50

**8. On which side is the place value chart extended to provide place for fractions?**

A. Right side

B. Left side

C. Neither right nor left side

D. Both left & right sides

**ANSWERS:**

1. A 2. B 3. C 4. A 5. A 6. B 7. D 8. A

## **CHAPTER 9**

### **TOPIC: DATA HANDLING**

#### **LEARNING OBJECTIVES:**

##### **Interpretation of a table of data:**

Observe different tables and gather the information recorded in the table of data

##### **Recording Data:**

Group and compare raw data systematically and infer the relevant information quickly

##### **Organization of data:**

Organize raw data into a table using tally marks and organize the given data

##### **Pictograph, interpretation of a Pictograph, Drawing a Pictograph:**

- Observe and understand pictograph representation of data and answer the question on data at a glance
- Analyze pictograph and reason the information Presented
- Draw a pictograph and represent the given information using appropriate symbols

##### **A Bar Graph:**

- Observe bar graph and reason the information presented
- Choose an appropriate scale and represent a given information in the form of a bar graph
- Interpret bar graph and find the relevant information represented by the bar graph

#### **LEARNING OUTCOME:**

Arranges given /collected information such as expenditure on different items in a family in the last six months, in the form of table, pictograph and bar graph in order to interpret them.

## QUESTIONS:

Marks obtained by 6 students in a test are 75, 72, 95, 78, 25. Observe this data and answer the questions 1 and 2

1. The minimum marks obtained by any student is \_\_\_\_.

- A. 95
- B. 78
- C. 75
- D. 25

2. The difference between the maximum and minimum marks obtained is \_\_\_\_.

- A. 60
- B. 50
- C. 70
- D. 80

Observe the following table and answer the related questions: (3 to 10)

<i>Blood groups</i>	<i>Number of students</i>
A	9
B	6
O	12
AB	3
Total	30

3. Which blood group is the most common?

- A. A
- B. B
- C. O
- D. AB

**4. Which blood group is the rarest?**

- A. AB
- B. B
- C. A
- D. O

**5. What is the total number of students?**

- A. 30
- B. 15
- C. 20
- D. 10

**6. The maximum frequency is \_\_\_\_\_.**

- A. 12
- B. 9
- C. 6
- D. 3

**7. The minimum frequency is \_\_\_\_\_.**

- A. 3
- B. 6
- C. 9
- D. 12

**8. The difference between maximum and minimum frequency is \_\_\_\_\_.**

- A. 3
- B. 6
- C. 9
- D. 12

**9. The ratio of the frequencies of blood groups AB and B is \_\_\_\_\_.**

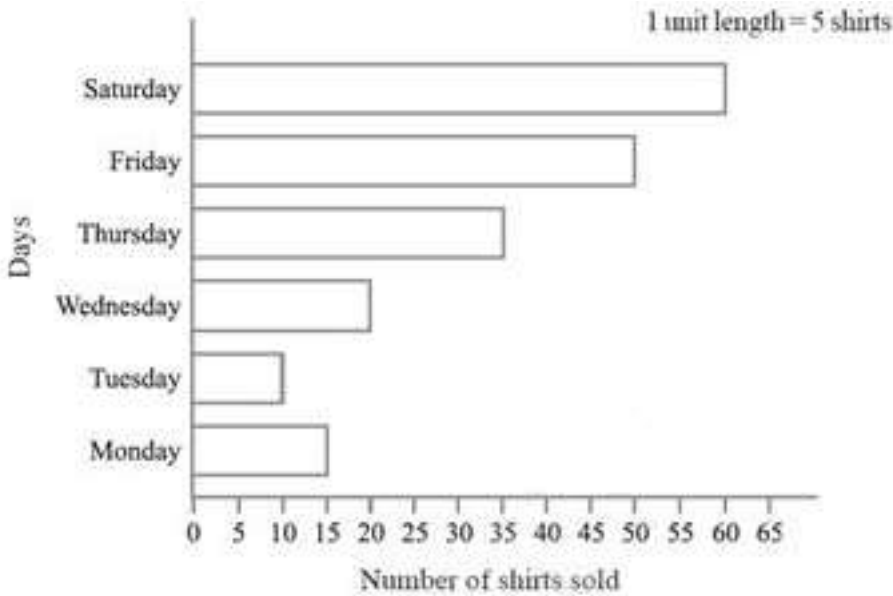
- A. 1:2
- B. 1:3
- C. 2:3
- D. 3:4



10. The ratio of the frequencies of blood groups B and O is \_\_\_\_\_.

- A. 1:3
- B. 2:3
- C. 3:4
- D. 1:2

11. Observe this bar graph which is showing the sale of shirts in a ready-made shop from Monday to Saturday. On which day were the minimum number of shirts sold?



- A. Wednesday
- B. Friday
- C. Tuesday
- D. Monday

**Answers**

- |       |      |      |      |       |
|-------|------|------|------|-------|
| 1. D  | 2. C | 3. C | 4. A | 5. A  |
| 6. A  | 7. A | 8. C | 9. A | 10. D |
| 11. C |      |      |      |       |

**CHAPTER 10**  
**TOPIC: MENSURATION**

**LEARNING OBJECTIVES:**

**Perimeter:**

- Give example(s) and define perimeter of closed figures.
- Deduce and apply the formula to determine the perimeter of a rectangle.
- Deduce and apply the formula to determine the perimeter of a square.
- Deduce and generalize the formula to determine the perimeter of a regular polygon.
- Give examples and defend that different shapes can have the same perimeter.

**Area:**

- Count the squares and estimate the area of the given closed curve in the squares grid sheet
- Deduce and apply the formula and determine the area of a square and rectangle.

**LEARNING OUTCOME:**

- Calculates perimeter and area of rectangular 2-d and 3-d objects to measure them for real life objects
- Finds out the perimeter and area of the rectangular objects in order to calculate them for commonly found objects from the surroundings like floor of the class room, surfaces of a chalk box etc.

**QUESTIONS:**

**1. Perimeter of a rectangle = \_\_\_\_\_.**

- A. Length  $\times$  Breadth
- B. Length + Breadth
- C.  $2 \times (\text{Length} + \text{Breadth})$
- D.  $2 \times (\text{Length} \times \text{Breadth})$ .

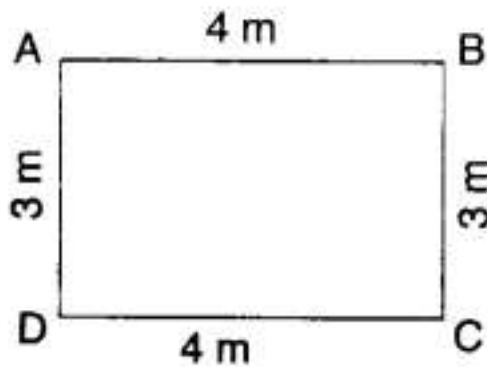
**2. Perimeter of an equilateral triangle is \_\_\_\_\_.**

- A.  $2 \times$  Length of a side
- B.  $3 \times$  Length of a side
- C.  $4 \times$  Length of a side
- D.  $6 \times$  Length of a side.

3. Aman went to a park 20 m long and 10 m wide. She took one complete round of it. The distance covered by her is \_\_\_\_.

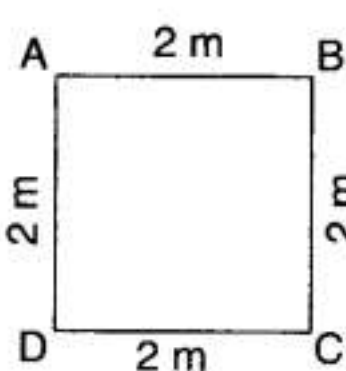
- A. 30 m
- B. 60 m
- C. 20 m
- D. 10 m

4. The area of the figure is \_\_\_\_.



- A. 12 meter square
- B. 14 meter square
- C. 24 meter square
- D. 7 meter square

5. The perimeter of the figure is \_\_\_\_.

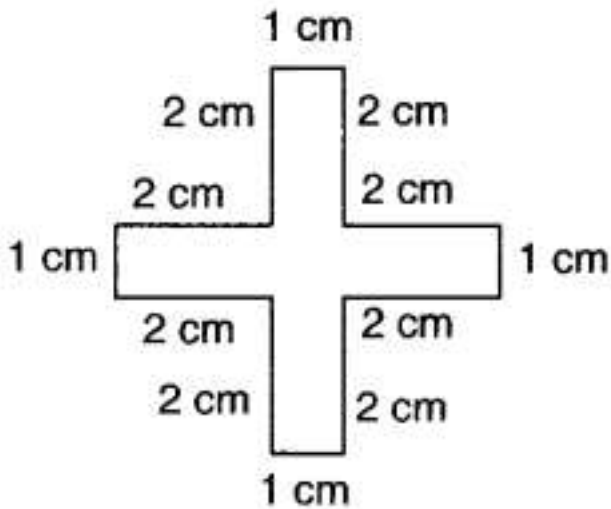


- A. 8m
- B. 16m
- C. 4m
- D. none of these

6. A page is 25 cm long and 20 cm wide. Find the perimeter of this page.

- A. 90 cm
- B. 45 cm
- C. 500 cm
- D. 5 cm

7. The perimeter of the figure is \_\_\_\_\_.



- A. 5 cm
- B. 10 cm
- C. 15 cm
- D. 20 cm

8. Meenu wants to put a lace border all around a rectangle table cover 2 m long and 1 m wide. Find the length of the lace required by Meenu.

- A. 3 m
- B. 4 m
- C. 5 m
- D. 6 m

9. An athlete takes 10 rounds of a rectangular park, 40 m long and 30 m wide. Find the total distance covered by him.

- A. 1400 m
- B. 700 m
- C. 70 m
- D. 2800 m

**10. Find the cost of fencing a rectangular park of length 10 m and breadth 5 m at the rate of 10 per meter.**

- A. ₹300
- B. ₹600
- C. ₹150
- D. ₹1200

**Answers**

1. C    2. B    3. B    4. A    5. A    6. A    7. D    8. D    9. A    10. A

**CHAPTER 11**  
**TOPIC: ALGEBRA**

**LEARNING OBJECTIVES:**

**Algebraic expression and arithmetic expressions:**

Describe algebraic expressions and distinguish them from arithmetic expressions.

**Matchstick Patterns & More Matchstick Patterns**

- Examine patterns and identify relationship in patterns.
- Introduce a variable and form a rule for the given pattern.

**More Examples of Variable:**

- Use variable with different operations and generalize a given situation.

**Use of Variables in Common Rules**

- Use variable(s) and express some mathematical rules and formulae.

**Expressions with Variables**

- Use variable with different operations and form an algebraic expression.

**Using Expressions Practically:**

Change the given algebraic expression in statements and describe the situation in ordinary language.

**What is an Equation?**

- Explain the meaning of an equation and identify equations from the given options.

**Solution of an Equation:**

- Use trial and error and find the solution of the given equation.
- Evaluate the given values of variable as possible solution of the equation

**LEARNING OUTCOME:**

- Involves use of variables with different operations to generalize a given situation and find a solution to a given problem.
- Uses unitary method in problem solving to calculate the quantity for one unit in order to calculate the total quantity for larger quantities.

**Questions:**

1. The rule, which gives the number of matchsticks required to make the matchstick pattern F, is \_\_\_\_\_.

- A.  $2n$
- B.  $3n$
- C.  $4n$
- D.  $5n$

**2. The rule, which gives the number of matchsticks required to make the matchstick pattern C, is \_\_\_\_\_.**

- A.  $2n$
- B.  $3n$
- C.  $4n$
- D.  $5n$

**3. The length of an edge of a cube is  $l$ . The total length of its edges is \_\_\_\_\_.**

- A.  $3l$
- B.  $4l$
- C.  $6l$
- D.  $12l$

**4. Which of the following is an expression is monomial?**

- A.  $x + 1$
- B.  $2x$
- C.  $1 - x$
- D.  $3 + 4x - 2y$

**5. Which of the following is an expression with numbers only?**

- A.  $2(4 - 3) + 5 \times 6$
- B.  $2 \times 3 - 4x$
- C.  $4 \times 5 - 10 \times 2 - 25 + x$
- D.  $x/8$

**6. The expression for '1 added to  $p$ ' is \_\_\_\_\_.**

- A.  $p + 1$
- B.  $p - 1$
- C.  $1 - p$
- D.  $-1 - p$

**7. The expression for '1 added' is '2 times  $x$ ' is added to 1 is \_\_\_\_\_.**

- A.  $2x + 1$
- B.  $x + 2$
- C.  $1 - 2x$
- D.  $2x - 1$

**8. If Aryan's present age is  $x$  years, what will be her age in years after 20 years from now?**

A.  $x + 20$

B.  $x - 20$

C.  $x/20$

D.  $20x$

**Answers**

1. C 2. B 3. D 4. B 5. A 6. A 7. A 8. A



**CHAPTER 12**  
**TOPIC: RATIO AND PROPORTION**

**LEARNING OBJECTIVES:**

**Comparison of two quantities:**

- Represent two quantities in same unit and compare them Compare two quantities and find their ratio
- Compare two quantities and find their ratio

**Ratio:**

Multiply /divide numerator and denominator by same number and find equivalent ratio.

**Proportion:**

- Compare ratio and determine whether they are in proportion.
- Solve the proportion and find out the missing term.

**Unitary Method:**

Solve daily life problems with the help of unitary method and compute the value of one article, given the value of many.

**LEARNING OUTCOME:**

Represents the measurement as ratios in order to compare two quantities in real life.

**Questions:**

**1. The monthly salary of Hari Kishan is Rs.80000. The monthly salary of Manish is Rs.40000. How many times of the salary of Manish is the salary of Hari Kishan?**

- A. 2 times
- B. 4 times
- C. 3 times
- D. 8 times

**2. There are 30 boys and 20 girls in a class. The ratio of the number of girls to the number of boys is \_\_\_\_\_.**

- A. 2:3
- B. 3:2
- C. 2:5
- D. 3:5

3. The cost of a car is ₹3,00,000. The cost of a motorbike is ₹50,000. The ratio of the cost of motorbike to the cost of car is \_\_\_\_\_.

- A. 1:6
- B. 1:5
- C. 1:4
- D. 1:3

4. The speed of Shubham is 6 km per hour. The speed of Yash is 2 km per hour. The ratio of the speed of Shubham to the speed of Yash is \_\_\_\_\_.

- A. 2:3
- B. 3:1
- C. 1:3
- D. 3:2

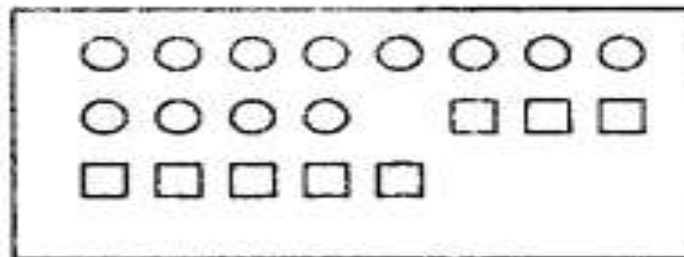
5. The ratio 40 cm to 1 m is \_\_\_\_\_.

- A. 2:5
- B. 1:3
- C. 2:3
- D. 1:2

6. Which of the following ratios is equivalent to 2:3?

- A. 4:8
- B. 4:9
- C. 6:9
- D. 6:12.

7. Find the ratio of number of circles and number of squares inside the following rectangle:



- A. 3:1
- B. 2:1
- C. 2:3
- D. 3:2

**8. Out of 30 students in a class, 20 like cricket and 10 like Hockey. The ratio of the number of students liking Hockey to the total number of students is**

- A. 3:1
- B. 1:3
- C. 2:3
- D. 1:2

**9. If 15:45 then what would be 9:\_\_\_\_\_?**

- A. 45
- B. 27
- C. 15
- D. 18

**10. Rs.100 are divided between Sangeeta and Manish in the ratio 4:1. Find the amount Sangeeta gets.**

- A. Rs. 80
- B. Rs. 20
- C. Rs. 60
- D. Rs. 50

**Answers**

- |      |      |      |      |       |
|------|------|------|------|-------|
| 1. A | 2. A | 3. A | 4. B | 5. A  |
| 6. C | 7. D | 8. D | 9. B | 10. A |

**CHAPTER 13**  
**TOPIC: SYMMETRY**

**LEARNING OBJECTIVES:**

**Concept of Symmetry:**

Explain the meaning of symmetry and identify symmetric figures in our surrounding.

**Making Symmetric Figures: Ink-blot Devils:**

Identify symmetrical 2-Dimensional shapes which are symmetrical along one line and demonstrate an understanding of the same.

**Figures with Multiple (more than two) Lines of Symmetry:**

Draw line(s) of symmetry and classify the given shapes as shapes with no symmetry, one line of symmetry, two lines of symmetry or multiple lines of symmetry.

**Reflection and Symmetry:**

- Draw the mirror image of the given 2D shapes or objects and identify objects with reflection symmetry.
- Give example(s) and discuss the applications of reflection symmetry in real life.

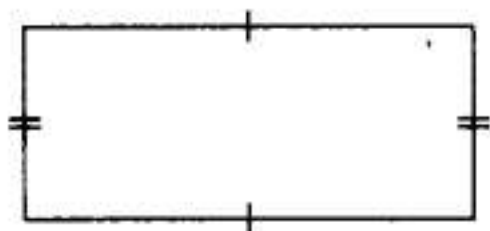
**LEARNING OUTCOME:**

In order to demonstrate an understanding of line symmetry:

- a. Identifies symmetrical 2-dimensional (2-D) shapes which are symmetrical along one or more lines Creates symmetrical 2-D shapes.
- b. Creates symmetrical 2-D shapes.

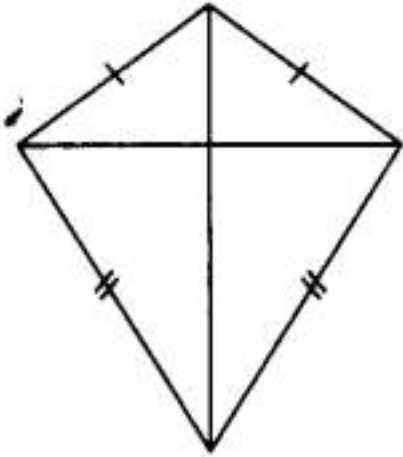
**QUESTIONS:**

**1. How many lines of symmetry does the figure have?**



- A. 1
- B. 2
- C. 3
- D. 4

**2. How many lines of symmetry does the figure have?**



- A. 1
- B. 2
- C. 3
- D. 4

**3. How many lines of symmetry does a circle have?**

- A. one
- B. two
- C. three
- D. many

**4. Which of the following alphabets has many lines of symmetry?**

- A. A
- B. O
- C. Q
- D. B

**5. Which of the following letters has horizontal line of symmetry?**

- A. C
- B. A
- C. J
- D. L

**6. Which of the following letters has Vertical line of symmetry?**

- A. S
- B. W
- C. D
- D. N

**ANSWERS:**

1. B                      2. A                      3. D                      4. B                      5. A                      6. B

**CHAPTER 14**  
**TOPIC: PRACTICAL GEOMETRY**

**LEARNING OBJECTIVES:**

**Construction:**

Discuss the different tools of construction and describe their uses.

**The Circle:**

List and execute steps of construction and construct a circle when its radius is known.

**A line segment:**

- List and execute steps of construction and construct a line segment when its length is known.
- List and execute steps of construction and construct a copy of the given line segment.

**Perpendiculars:**

- List and execute steps of construction in order to construct a perpendicular to a line through a point on it.
- List down and execute steps of construction and construct a perpendicular to a line through a point not on it.

**Angles:**

- Use a protractor and ruler and construct an angle of the given measure.
- List and execute steps of construction and construct a copy of the given angle of unknown measure using a compass.
- List and execute steps of construction and construct the bisector of an angle and construct angles of measures 30-degree, 45 degrees and so on.
- List and execute steps of construction and construct angles of measures 60-degree, 90 degrees and 120 degrees.

**QUESTIONS:**

**1. Which of the following can be drawn on a piece of paper?**

- A. A line
- B. A line segments
- C. A ray
- D. A plane

**2. At 7 a.m. the angle between the Sun's ray and the ground at a point is  $43^\circ$ . What would be the angle at 10 a.m.?**

- A.  $40^\circ$
- B.  $90^\circ$
- C. Between  $43^\circ$  and  $90^\circ$
- D. Greater than  $90^\circ$

**3. Identify the uses of a ruler.**

- A. To draw a line segment of a given length.
- B. To draw a copy of a given segment.
- C. To draw a diameter of a circle.
- D. All the above.

**4. X and Y are two distinct points in a plane. How many lines can be drawn passing through both X and Y?**

- A. 0
- B. 1
- C. Only 2
- D. Infinitely many

**5. Identify the pair of parallel lines.**

- (i) Lines m and n have two points in common.
  - (ii) Lines p and q do not have any point in common.
  - (iii) Lines p and q have a point X in common.
- A. (i) and (ii) only
  - B. (ii) only
  - C. (ii) and (iii) only
  - D. (i), (ii) and (iii)

**6. How do you draw a  $90^\circ$  angle?**

- A. By drawing a perpendicular to a line from a point lying on it.
- B. By bisecting a  $120^\circ$  angle.
- C. By bisecting a  $60^\circ$  angle.
- D. By drawing multiples of  $45^\circ$  angle.

**7. Identify the instruments used to bisect a given line segment.**

- A. A scale and a protractor
- B. Scale and compasses
- C. Scale and set squares
- D. A scale

**8. Two lines are said to be perpendicular to each other when they meet at \_\_\_\_\_ angle.**

- A.  $180^\circ$
- B.  $90^\circ$
- C.  $60^\circ$
- D.  $360^\circ$

**Answers**

1. B 2. C 3. D 4. B 5. B 6. A 7. B 8. B



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*“Live as if you were to die  
tomorrow. Learn as if you were  
to live forever”*

*- Mahatma Gandhi*

**2021**



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