CLASS: VII   **SUBJECT: MATHEMATICS**

CH: TRIANGLE AND ITS PROPERTIES
I. CHOOSE THE CORRECT OPTION:

1. If one angle of a triangle is obtuse, the triangle is called
   (a) acute-angled (b) right-angled (c) scalene (d) obtuse-angled
2. How many medians can a triangle have?
   (a) 1   (b) 2   (c) 3   (d) 6
3. In a right triangle, if hypotenuse is H, perpendicular is P and base is B then
   (a) $B^2 = H^2 + P^2$ (b) $H^2 = P^2 + B^2$ (c) $H^2 = P^2 - B^2$ (d) $P^2 = B^2 + H^2$
4. Find the angle x in the given figure.
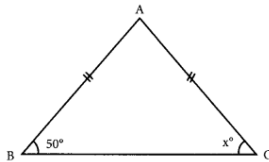
   (a) 40°   (b) 45°   (c) 50°   (d) 60°
5. In the given figure, find 'x'
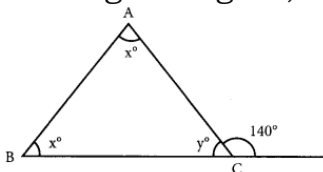
   (a) 60° (b) 70° (c) 80°   (d) 75°
6. Least number of possible acute angles in a triangle is:
   (a) 0   (b) 1   (c) 2   (d) 3
7. In a triangle, the sum of the lengths of any two sides can never be ……………. than the length of third side.
   (a) Greater   (b) equal   (c) smaller   (d) none of the above
8. The perpendicular line segment drawn from a vertex of a triangle to its opposite side is called
   (a) Median   (b) altitude (c) centroid   (d) circumcircle
9. Which of the following statements is true?
   a) A triangle can have all the three angles equal to 60°
   b) A triangle can have all the three angles greater than 60°
   c) The sum of any two angles of a triangle is greater than the third angle
   d) The difference between the lengths of any two sides of a triangle is greater than the length of the third side
10. The ratio of the measures of three angles of a triangle is 2:3:4. What is the measure of largest angle?
    a) 80   b) 120   c) 60   d) 40

II. CASE STUDY QUESTION:

1. Raju planted two neem seeds on his third birthday. And they both started growing into plants soon. There was a river flowing between these plants. After 25 years, when Raju visited that place, he saw two big neem trees. The two trees were 7m and 4 m standing upright on the ground. The distance between their roots is 4m apart.
   a) Which property can be used to find the distance between the top of the trees?
      i) Angle sum property of triangle
      ii) Exterior angle property of triangle
      Iii) Pythagoras property

b) Find the distance between the top of the trees?

2. Points A and B are on the opposite edges of a pond as shown in below figure. To find the distance between the two points, Ali makes a right angled triangle using rope connecting B with another point C at a distance of 12 m, connecting C to point D at a distance of 40 m from point C and then connecting D to the point A which is at a distance of 30 m from D such that angle ADC=90°.

    a) Which property will be used to find the distance AC?
    b) What is the distance AC?
    c) Find the length AB.
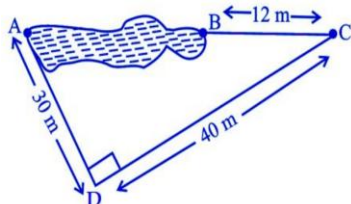
III. ASSERTION REASONING QUESTIONS:

1. **Assertion: A triangle can have two obtuse angles.**
   Reason: Sum of the three angles in a triangle is always 180°

(a) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion
(b) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
(c) Assertion is true but the reason is false.
(d) Assertion is false but reason is true.

2. **Assertion: ABC is an equilateral triangle, then each angle equals to 60°**
   Reason: Equilateral triangle has all its sides equal and each angle measures 60°.

a) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion
b) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
c) Assertion is true but the reason is false.
d) Assertion is false but reason is true.

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IV

1) Which of the following cannot be the sides of a triangle?
   (i) 4.5 cm, 3.5 cm, 6.4 cm
   (ii) 2.5 cm, 3.5 cm, 6.0 cm
   (iii) 2.5 cm, 4.2 cm, 8 cm
2) A 15 m long ladder reached a window 12 m high from the ground on placing it against a wall at a distance a. Find the distance of the foot of the ladder from the wall
3) Two sides of a triangle are 4 cm and 7 cm. What can be the length of its third side to make the triangle possible?

4) In ∆ABC, AC = BC and ∠C = 110°. Find ∠A and ∠B.
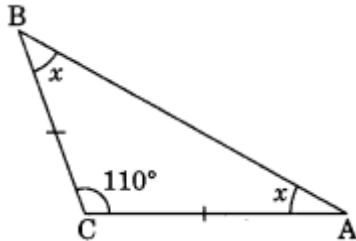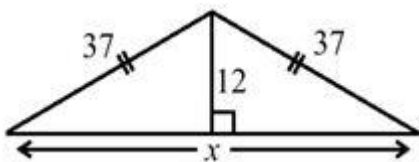

5) I have three sides. One of my angle measure 15°. Another has a measure of 60°. What kind of a polygon am I? If I am a triangle, then what kind of triangle am I?

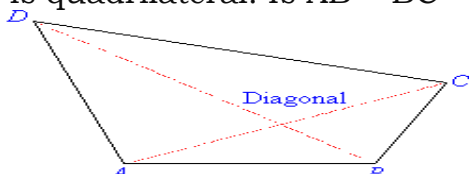6) If one angle of a triangle is 100° and the other two angles are in the ratio 2: 3. Find the angles.

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7) Find the value of x and y in the following figures.

[A]   [B]
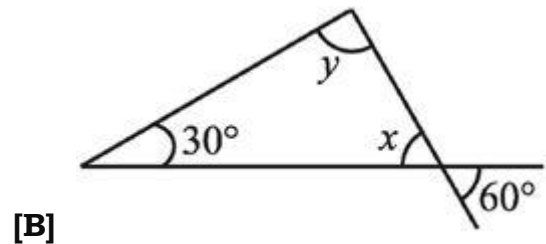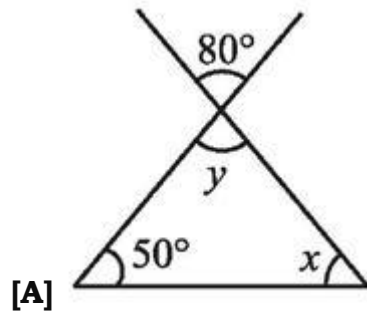
8. Find the value of x in the below figure

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9. ABCD is quadrilateral. Is AB + BC + CD + DA < 2 (AC + BD)?

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COMPARING QUANTITIES:
CHOOSE THE CORRECT OPTION:

1) Out of 25 students, 5 are absent what percent of students are absent?
   a) 10%   b) 20 %   c) 25%   d) 30%

2) If 10 is 10% of a number, then the number is
   a) 10   b) 100   c) 1   d) 1000

3) The angles of a triangle are in the ratio 2: 3: 4. What is the largest angle?
   a) 30°   b) 40°   c) 60°   d) 80°

4) 15% of _____ is 450.
   a) 5000   b) 3000   c) 4500   d) 6000

5) SP= CP + _____
   a) Profit   b) loss   c) 0   d) None of these

6) Convert 0.09 in to percent.
   a) 9%   b) 90%   c) 900%   d) 100%

7) Sana bought a bicycle for Rs.9000 and sold it at a loss of Rs.900.The selling price of the bicycle is _____
   a) 9900   b) 90900   c) 8100   d) 8900

8) $12\frac{1}{2}$% of Rs. 5000 = Rs._____
   a) 500   b) 600   c) 625   d) 2500

9) Price of an item decreased from Rs.120 to 90.Find the percentage of decrease in the price.
   a) 25%   b) 30%   c) 33.5%   d) 90%

10) What rate gives Rs.540 as interest on a sum of Rs.4500 in 2 years?
   a) 5%   b) 6%   c) 8%   d) 9%

II. ASSERTION REASONING QUESTIONS

11) **Assertion:** $\frac{3}{4}$ = **75%**

   **Reason: To convert a fraction into percent, we multiply the fraction by 100 and write % sign**.
   a) Both A and R are true and R is the correct explanation of A
   b) Both A and R are true but R is not the correct explanation of A
   c) A is true but R is false
   d) A is false but R is true

12) **Assertion: Interest is the amount of money paid for a loan or an investment.**
      Reason: The principal is the amount of money borrowed or invested.
   a) Both A and R are true and R is the correct explanation of A
   b) Both A and R are true but R is not the correct explanation of A
   c) A is true but R is false
   d) A is false but R is true

III. CASE BASED STUDY:

13) Nutrition for children is based on the same principles as nutrition for adults. Everyone needs the same types of nutrients - such as vitamins, minerals, carbohydrates, protein and fat. Children have greater needs for energy, water and oxygen as they go through growth processes. Balance diet of a child should contain 10% of proteins, 25% of fats, 63% of carbohydrates and rest minerals and vitamins. If a child needs 2600 calories in his daily food. Based on this information answer the following questions:
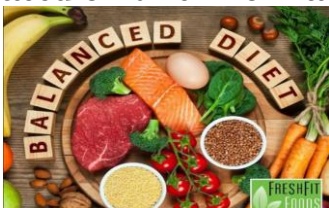
(i) Find the calories of amount of each of nutrients in a diet.
(ii) Find the amount of minerals and vitamins in each calories.

14) Aman owns an Electronics Goods shop. He sold a Microwave for 20,700 thus making a profit of   15% on it. He sold a Refrigerator for the same price but incurred a loss of 25% on that.

Based on this information answer the following questions:
i) Find the total selling price of the Microwave and the Refrigerator?
ii) Find the cost price of the Microwave?
iii) Find the cost price of the Refrigerator?
iv) Find the total cost price of the Microwave and the Refrigerator?

15) Rs.5000 is invested at a rate of 5% p.a. simple interest for 5 years. After 5 years whole amount
    is again invested for 2 years at a rate of 3% p.a.
  i) Find simple interest in 5 years.
   (a) 1000   (b) 1200   (c) 1250   (d) 1300
  ii) How much money is invested after 5 years?
  (a) 6000   (b) 7000   (c) 6500   (d) 6250
  iii) Find total interest in 7 years.
  (a) 1625   (b) 1600   (c) 1750   (d) 1550
  iv) What will be the total amount after 7 years?
  (a) 8000   (b) 9000   (c) 6625   (d) 7000

  16. The rent of an apartment building was increased from Rs 42500 to Rs 45000. What was the percent of increase?
  17. Bhumika purchased an article for Rs 400 and sold it for Rs 470. Find her profit and profit percent.
  18. Mrs. Rai saves Rs 4000 every month from her salary. If her saving is 16% of her salary, find her salary.
  19. Find the simple interest on Rs 4500 at 8% per annum for 2 years. Also find the amount.
  20. In how many years will Rs 600 yield an interest of Rs 324 at 12% p.a simple interest?
  21. A refrigerator is purchased for Rs 22500 and sold at a loss of 20%. What is its selling price?
  22. If Rs 75000 is divided among A, B and C in the ratio of 6:5:4, then find how much the share of each is.   Also find the percentages.
  22. (i)Caustic Soda contains sodium, oxygen and hydrogen in the ratio 23:16:1
  a) Find the percentage of oxygen in the Caustic Soda
  b) What weight of Caustic Soda will contain 10g of hydrogen?
      ii) Express 0.075 in percent.

23.a) Divide 20 sweets between Madhav and John so that they get 40% and 60% of them respectively.

b) Out of 18000 voters in a constituency, 70% voted. Find the percentage of voters who did not vote. Also find how many actually did not vote?

c) Find the whole quantity if 20% of it is Rs 750.

CH:9.   RATIONAL NUMBERS:
I.Choose the correct answer:

1) The denominator of the rational number $\frac{7}{13}$ is
   a) 13   b) 7   c) 6   d) 9

2) Which of the following rational numbers -2 is equivalent to $\frac{-2}{5}$?
   a) $\frac{-4}{10}$ b) $\frac{-2}{10}$ c) $\frac{-4}{5}$ d) $\frac{-6}{25}$

3) Which of the following is correct?
   a) $\frac{1}{-2} > \frac{-1}{3}$ b) $\frac{1}{-2} < \frac{-1}{3}$ c) $\frac{1}{-2} = \frac{-1}{3}$ d) None of these

4) If $\frac{4}{-5} = \frac{12}{?}$ Then ? =
   a) -5   b) 10   c) -15   d) 25

5) The reciprocal of $\frac{-2}{5}$ is
   a) $\frac{-5}{2}$ b) $\frac{5}{2}$ c) $\frac{2}{5}$ d) $\frac{-2}{5}$

6) The sum $\frac{5}{4} + (-\frac{25}{4})=$
   a) -5   b) 5   c) 4   d) -4

7) $\frac{17}{11} - \frac{6}{11} =$
   a) 1   b) -1   c) 6   d) 3

8) $\frac{2}{9}$ X $\frac{27}{8} =$
   a) $\frac{4}{3}$ b) $\frac{3}{4}$ c) 3   d) 4

9) $\frac{7}{12}$ ÷ $(-\frac{7}{12})$
   a) 1   b) -1   c) 7   d) -7

10) Which of the following is a negative rational number?
   a) $\frac{1}{12}$ b) $\frac{3}{4}$ c) $\frac{-4}{-5}$ d) $\frac{2}{-3}$

11) The rational number $\frac{-21}{28}$ in standard form is
   a) $\frac{-3}{4}$ b) $\frac{3}{4}$ c) $\frac{3}{7}$ d) $\frac{-3}{7}$

12) Which of the following rational numbers is not equivalent to $\frac{3}{5}$?
   a) $\frac{6}{10}$ b) $\frac{-3}{-5}$ c) $\frac{9}{15}$ d) $\frac{12}{24}$

II) II. ASSERTION REASONING QUESTIONS

13**) Assertion (A)** : Multiplication of $\frac{-7}{8}$ and $\frac{2}{3}$ is $\frac{-7}{12}$

   Reason (R): To multiply two rational numbers, we multiply their numerators and denominators separately, and write the product as,

Product of numerators

Product of denominators

A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A) .

B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A) .

C) Assertion (A) is true but Reason (R) is false.

D) Assertion (A) is false but Reason (R) is true.

14) **Assertion (A)**: $\frac{-3}{9}$ x $\frac{1}{0}$ is a rational number.

   Reason (R): A number that can be expressed in the form p/q, where p and q are integers and , q ǂ 0 is called a rational number.

A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A).

C) Assertion (A) is true but Reason (R) is false.

D) Assertion (A) is false but Reason (R) is true.

15) Assertion (A): $\frac{-63}{147}$ and $\frac{-21}{-49}$ are equivalent rational numbers.

Reason (R): If the numerator and denominator of a rational number are multiplied or divide by a same non-zero integer, we get a rational number which is said to be equivalent to the given rational number.

A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A) .

C) Assertion (A) is true but Reason (R) is false.

D) Assertion (A) is false but Reason (R) is true.

16) Assertion (A): −1,0,3,14/93 all are examples of rational numbers.

Reason (R): All integers and fractions are rational numbers.

A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

B) Both Assertion (A) and Reason (R) are true but Reason (R) is not the correct explanation of Assertion (A) .

C) Assertion (A) is true but Reason (R) is false.

D) Assertion (A) is false but Reason (R) is true.

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17. Find five rational numbers between (i) $-\frac{3}{4}$ and $-\frac{4}{5}$ (ii) -2 and -1.

18. Represent the following rational numbers on the number line, $-\frac{3}{4}, -\frac{1}{4}, \frac{5}{4}, \frac{7}{4}$

19. Write two more rational numbers in the pattern given $-\frac{2}{6}, -\frac{4}{12}, -\frac{6}{18}, \underline{\hspace{1cm}}, \underline{\hspace{1.5cm}}.$

20. Do $-\frac{9}{27}$ and $-\frac{5}{15}$ represent the same rational number?

21. Write the standard form of $\frac{9}{-27}$ and $-\frac{21}{70}$

22. Arrange the following rational numbers in the ascending order $\frac{6}{5}, \frac{7}{-10}, \frac{12}{30}, -\frac{3}{15}.$

23. Evaluate:

(a) $-\frac{3}{5} - \frac{-15}{7}$

(b) $\frac{-4}{3} + \frac{-6}{9}$

(c) $\frac{11}{4} X \frac{2}{5}$

(d) $(-6) \div \frac{3}{4}$

CH.11 PERIMETER AND AREA:
CHOOSE THE CORRECT ANSWERS:

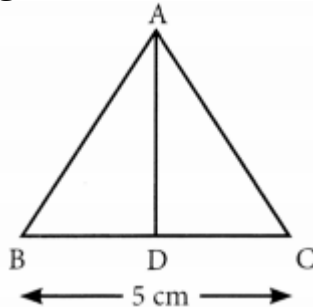1. The distance around a circular region is known as

   [a] area [b] circumference [c] radius [d] diameter

2. Find the area of the following parallelogram
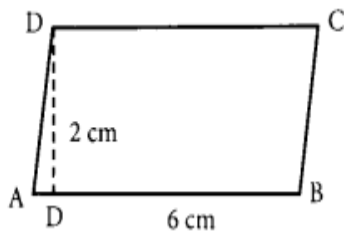
   (a) 6 cm² (b) 8 cm² (c) 12 cm² (d) 24 cm²

3. Find AD in the following figure, if area of ∆ABC is 6 cm².

   (a) 3 cm (b) 4 cm (c) 5 cm (d) 2.4 cm

4. The diameter of a circle is 7 cm, its area is ....
   (a) 154 cm² b) 38.465 cm² (c) 22 cm² (d) 11 cm²

5. Raju divides a circular disc of radius 7 cm into two equal parts. The perimeter of each semicircular shape disc is ------   -[use π= 22/7]
   [a] 36 cm [b] 30 cm [c] 22 cm [d] 20 cm

6. The base and corresponding height of a triangle are 5cm. and 4.2 cm respectively. Its area is
   [a] 9.2 sq. cm [b] 10.5 sq. cm [c] 20 sq.cm [d] 22 sq.cm

7. The radius of a circle is 10 cm. its circumference is
    [a] 31.4 cm [b] 100 cm [c] 110 cm [d] 62.8

8. How many times will a wheel of radius 35 cm. be rotated to travel 660 m. ?
    [a] 3 [b] 2 [c] 5 [d] 6

9. The cost of fencing around a circular garden of diameter 28 m , if 1m of fencing costs Rs. 400. Is
    [a] 35200 [b] 36000 [c] 40000 [d] 45000

10. Area of parallelogram is
    [a] l×b   [b] l ×b [c] ½ b × h [d] b×h

II. ASSERTION REASONING QUESTIONS:

11. **Assertion: 17.584 is the circumference of circle whose radius is 2.8 m**
    Reason: Circumference of a circle of radius r is 2πr.
  a) Both assertion and reason are correct and reason is correct explanation for assertion
  b) Both assertion and reason are correct but reason is not the correct explanation for assertion
  c) Assertion is correct but reason is false
  d) Assertion is false but Reason is true

12. **Assertion: 20 sq .cm is the area of the triangle if the height and breadth is 8cm and 5cm**
    Reason: Area of the triangle = 2 × b × h
a) Both assertion and reason are correct and reason is correct explanation for assertion
b) Both assertion and reason are correct but reason is not the correct explanation for assertion
c) Assertion is correct but reason is false
d) Assertion is false but Reason is true

CASE STUDY QUESTION:

13. The diameter of a circle is given to be 28 cm. A triangle with base 9 cm. and height half of the diameter of the circle given.
[i] Find the radius of the circle?
[ii] What is the area of the triangle?
[iii] What is the area of the circle [use π = 22/7]

14. △ABC is right angled at B. BD is perpendicular to AC. If AB= 10 cm, BC= 24 cm. AC=26 cm. find the area of △ ABC. Also find the length of BD?
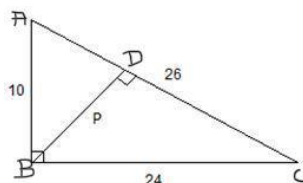
15. The inner circumference of a circular track is 264 cm. and the width of the track is 7 cm. (use π = 22/7)

(a) The radius of the inner track is
   (i) 41 cm (ii) 42 cm (iii) 38 cm (IV) 39 cm
(b) The radius of the outer circumference is
   (i) 45 cm (ii) 51 cm (iii) 52 cm (iv) 49 cm
(c) The length of the outer circumference is
   (i) 308 cm (ii) 307 cm (iii) 309 cm (iv) 310 cm
(d) The cost of fencing the outer circumference at the rate of Rs. 50 per cm is
   (i) 15,100 (ii) 15,200 (iii) 15,400 (iv) 15,300

16. The circumference of a circle is 176 cm, find its radius.
17. One side of a parallelogram is 24 cm, and its area is 432 cm². Find the corresponding altitude.
18. Find the altitude of a triangle whose base is 24 cm and area is 672cm².
19. Two sides of a right triangle containing the right angle are 10 cm and 8.6 cm. Find its area
20. The hour hand of the clock is 4.5 cm long. What distance does its tip cover in 12 hours?
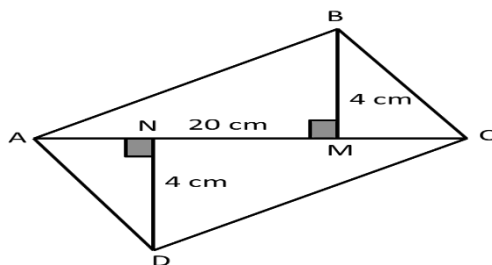21. ΔABC is right angles at A, AD ⊥ BC.
22. If AB = 8 cm, BC = 17 cm, and AC = 15 cm. Find the area of ABC and length of AD.
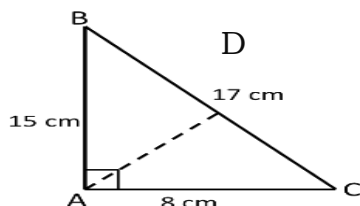
23. Find the area of quadrilateral ABCD here AC = 20 cm, BM = 4 cm, DN = 4 cm and BM ⊥ AC and
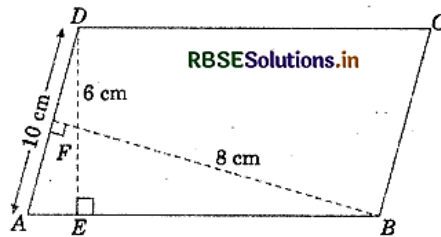   DN ⊥ AC.

24. A wall hanging is of the shape given in the figure. Find its perimeter.
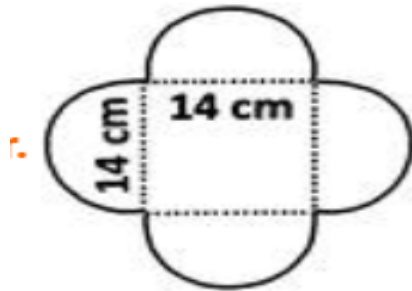
25. In parallelogram ABCD, if DE = 6 cm, FB = 8 cm and AD = 10 cm, then find the length of AB.

CH: 12 ALGEBRAIC EXPRESSIONS:
CHOOSE THE CORRECT ANSWERS:
1. Which of the following pairs of terms is of unlike terms
(a) $-p^2q^2$, $12p^2q^2$ (b) $-4x^2$; $-Axy^2$ (c) 41, 100   (d) qp^2, $13p^2q$

2. The value of $3x^2 + 2x - 7$ at x = -2 is
(a) 1   (b) -1   (c) 9   (d) 23

3. The expression $4a^2b - 5ab^2 + 1$ is a
(a) monomial   (b) binomial   (c) trinomial   (d) None of these

4. The coefficient of x^2 in $-5x^2y + 10x - 7$ is
(a) -5   (b) y   (c) 5y   (d) -5y

5. The value of the expression
$100 - 10x^3 + 5x^2$ at x = 0 is
(a) 10   (b) 100   (c) -10   (d) -100

6. What is the coefficient of x in the expression $5x^3 + 7x^2 - 5$?
(a) 5   (b) 7   (c) -5   (d) 0

7. Write the expression for the statement: the sum of three times x and 11
(a) x+3+11   (b) 3x+11   (c) 3+11x   (d) 3x-11

8. The expression for sum of numbers a and b subtracted from their product is
(a) a+b −ab   (b) ab-a+b   (c) ab-(a+b)   (d) ab + a − b

II. ASSERTION REASONING QUESTIONS:

9. **Assertion: The like terms are 5y, 6y.**
   Reason: like terms are terms that have the same variables and powers
a) Both assertion and reason are correct and reason is correct explanation for assertion
b) Both assertion and reason are correct but reason is not correct explanation for assertion
c) Assertion is correct but reason is false.
d) Assertion is false but Reason is true.

10. Assertion: -4x/5 is a binomial.

Reason: –A binomial is an algebraic expression that has two non-zero terms

a) Both assertion and reason are correct and reason is correct explanation for assertion
b) Both assertion and reason are correct but reason is correct explanation for assertion
c) Assertion is correct but reason is false.
d) Assertion is false but Reason is true.

11. Draw tree diagram for the following expressions:
    a) $4x + 3y^2$ b) $10ab + 4a^2 – b^3$ c) $– x^2 – 3y^2 + 5xy$
12. Find the value of $a^2 – b^2$ when a = 2 and b = 1.
13. Identify the terms and factors of the following expressions:
    a) $x^2y^2 + 3xy – 7x^3y^3$ b) $– pq +3p^2q^2$
14. Identify the numerical coefficient of the terms of the following expressions:
    a) $5x^2 – 3xy + 7y^2$ b) $– ab + 8b^2 – 3a^2$.
15. Identify the terms which contain x and give the coefficient of x:
    a) $5xy + 7xy^2 – 4y^2$ b) $6xy^3 – xy^2 + 8xy$.
16. Identify the like terms from the following:
$3abc, 5a^2, -9b^2, 32, -6ab, -15abc, -11, 8ab, 12a2, 19b^2, 25ab, 16abc, 72, 10a^2, 29b^2, ab.$
17. Simplify the following expressions and find the value, when x = (- 1):
a) $x + 4 + 5(x – 1)$ b) $3(x + 2) + 7x – 11$ c) $4x – 5 – 2x + 10$
18. Find the value of the expression $2n^3 + 5n^2 + 5n – 2$, when n = (- 2).
19. What should be the value of 'a' if $3x^2 + 2x – a =7$, when x = 0.

___

CH: 13 EXPONENTS AND POWERS:
I. CHOOSE THE CORRECT ANSWER:

1. The value of $(-2)^4$ is ………..
(a) -16   (b) 16   (c) 8   (d) – 8
2. If $(–3)^4 × (–3)^6 = (–3)^x$ then x = ………….
(a) -10   (b) 10   (c) – 4   (d) – 6
3. The value of $3° × 4° × 5°$ is ………..
(a) 60   (b) 0   (c) 1   (d) 3
4. If x is a rational number and 'a' and 'b' are whole numbers then the value of $x^a × x^b$ is
(a) x^{a-b} (b) x^{ab} (c) x^{ab} (d) x^{a+b}
5. The value of $3^8 / (3^5 x 3^3)$ is ………….
(a) 1   (b) 3   (c) 5   (d) 8
6. The value of $(-1)^2$ is
(a) 0   (b) -1   (c) 1   (d) none of these
7. $1.2 × 10^{10}$ in the normal form is
(a) 120000000000   (b) 12000000   (c) 12000000   (d) 12000 000 000
8. 3430000 in standard form is
(a) $3.43 × 10^6$ (b) $3.43 × 10^4$ (c) $3.43 × 10$ ^{2}(d) $3.43 × 10°$
9. The value of $(3/4)°$ is
(a) 0   (b) 1   (c) -1   (d) None of these
10. 20,00,000 in standard form is
(a) $0.2 × 10^5$ (b) $2.0 × 10^6$ (c) $10.2 × 10^6$ (d) $10.2 × 10^5$

II. ASSERTION AND REASONING:
1. Assertion: $3^5/3^3=3^2$

Reason: by exponential law, $x^a/x^b=x^{a+b}$
  (e) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion
  (f) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
  (g) Assertion is true but the reason is false.
  (h) Assertion is false but reason are false.

2. Assertion: 5.985×10^3 is the standard form of 5985.
   Reason: Any number can be expressed as a decimal number between 1 to 10 including 1.0 multiplied by a power of 10. Such a form of a number is called its standard form.
  a) Both Assertion and Reason are correct and Reason is the correct explanation for Assertion
  b) Both Assertion and Reason are correct and Reason is not the correct explanation for Assertion.
  c) Assertion is true but the reason is false.
  d) Assertion is false but Reason is true

III. CASE STUDY:

1. Mohan divided a sum of rupees into two parts 5^x and 4^x and distributed it between his two sons, Parth and Ankur respectively. The product of $5^x and 4^x$ is 8000
Question (1) - The amount of money received by Parth a) Rs 1,000 b) Rs 625 c) Rs 500 d) Rs 125
Question (2)-The amount of money received by Ankur a) Rs 16 b) Rs 64 c) Rs 256 d) Rs 512

2.

The mass of the earth is 5,976,000,000,000,000,000,000,000 Kg and the radius of the earth is 6.37 x 106m. Moon is the natural satellite of earth which revolves around the sun due to strong gravitational force of the earth. The mass of moon is 7.36 x 1022Kg. The radius of the moon is 1.74 x 106m. The distance between the earth and moon is 3.84 x 10 5 km.
Q1. Write the mass of earth in standard form?
Q2. Express the distance between earth and moon in m and find its square. Write your answer in standard form?
 Q3. Express the difference of radius of earth and moon in standard form.
3. A Teacher shows four articles of different lengths (ball, cube, bucket and book) in a class room of standard VII. The difficulty is that the lengths are in exponents form. The lengths of the articles are as following
(i) 3x $(2)^3$ (ii) 4^1 x 4^2 (iii) 7^0 x8^2 (iv) 6 x 9^2 x 3^0
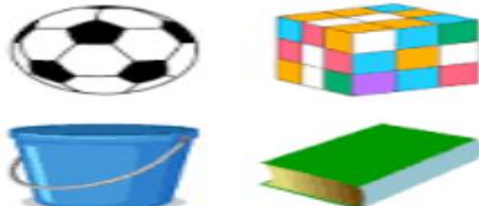
The teacher asks the following questions from the students
1. The length of the ball is
    a) 6 b) 12 c) 24 d) none of the above
2. Sum of the lengths of all the articles
    a) 48 b) 58 c) 68 d) none of the above
3. The products of the lengths of 1st and 3rd article
    a) 192 b) 144 c) 324 d) none of the above
4. Which two articles have same length?
    a) 1st and 2nd b) 2nd and 3rd c) 2nd and 4th d) 1st and 3rd

1. (i) Simplify $(-11/49)^2$ x $(-7)^2$ and express in exponential form
   (ii) Which power of 9 is equal to 3^8 ?

2. (i) Write exponential form for 9 x 9 x 9 taking base as 3.
   (ii) Write 1024 as a power of 2

3. Express the following numbers in the standard form
   (i) 3908.78
   (ii) 5, 00, 00,000

4. Using laws of exponents find the value of
   (i) $(3^{15} \div 3^{10})$ X 3^2 (ii) $((3^3)^2$ X $3^2) \div 3^7$

5. Express each of the following as product of power of prime factors in exponential form
   (i) 1296   (ii) 4096   (iii) 3125

6. Write the following numbers in the expanded exponential forms:
   (i) 20068   (ii) 420719   (iii) 7805192

7. Evaluate   (i) $\dfrac{7^8 \times a^{10} b^7 c^{12}}{7^6 \times a^8 b^4 c^{12}}$ (ii) $\dfrac{3^4 \times 12^3 \times 36}{2^5 \times 6^3}$

8) Find value of 'n' in each of the following
   (i) $(-7)^9$ X $(-7)^7$ = $(-7)^{n+6}$ (ii) $5^{2n+1} \div 125 = 5^4$

9) Express each of the following as a product of prime factors only in exponential form
   (i) 1024×216   (ii) 729×625

Chapter -13 VISUALISING SOLID SHAPES:
Dimensions
Dimension is a measurable length along a direction.
Dimensions are length, breadth (or width) or height (or depth).

A point is dimensionless.
2D Figures
Two-dimensional figures have length and breadth or width
They are usually plane figures, like squares, rectangles, and circles.
3D or three-dimensional shapes
Solid shapes have length, breadth or width and depth or height.,
 They are called 3D or three-dimensional shapes.
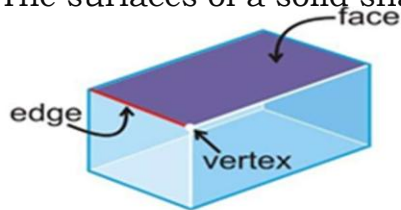 Example: Cuboids, Cylinders, Spheres and Pyramids
Faces, edges, and vertices
The corners of a solid shape are called its vertices.
The line segment joining two vertices is called an edge, or when two planes of a solid meet it forms an edge.
The surfaces of a solid shape are called its face.

The table below shows the number of faces, edges, and vertices some solid shapes

Name of the shape	Number of surfaces	Number of plane surfaces	Number of curved surfaces	Number of edges	Number of vertices
Cube	6	6	0	12	8
Cuboid	6	6	0	12	8
Cylinder	3	2	1	2	0
Cone	2	1	1	0	1
Sphere	1	0	1	0	0

Nets for Building 3-D Shapes
   A net is a skeleton outline of a solid that can be folded to make it. The same solid can have several types of nets.
   Example: A net for a cube box

Drawing Solids on a Flat Surfac Solid shapes can be drawn on a flat surface (like paper) realistically. We call this 2-D representation of a 3-D solid

Oblique Sketches
An oblique sketch does not have proportional lengths. Still, it conveys all important aspects of the appearance of the solid.
Isometric Sketches

An isometric sketch is drawn on isometric dot paper. In an isometric sketch of the solid, the measurements are kept proportional.

Visualising Solid Objects

Visualizing solid shapes is a very useful skill. For this, the ability to see 'hidden' parts of the
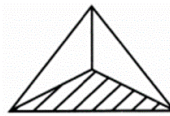Solid shape is required

I. CHOOSE THE CORRECT OPTION:

1. Rakesh has 10 one-rupee coins of similar kind. He puts them exactly one on the other. What shape will he get it finally?
    (a) Cone   (b) Cylinder   (c) Sphere   (d) Pyramid

2. The number of vertices of the solid shape is

a) 1   (b) 2   (c) 3   (d) 4

3. Which of the following solids has only one face?
    (a) Cone   (b) Cylinder   (c) Sphere   (d) Pyramid

4 .Two cubes of edge length 2 cm are placed side by side. The length of the resulting cuboid is
    (a) 2 cm   (b) 4 cm   (c) 1 cm   (d) none

5. What cross-sections do you get when you give a: horizontal cut to a die?
    (a) Square   (b) Rectangle   (c) Triangle   (d) Circle

6. What cross-sections do you get when you give a: vertical cut to a round apple?
    (a) Square   (b) Rectangle   (c) Triangle   (d) Circle

7. The number of faces of a triangular pyramid or tetrahedron is _____.

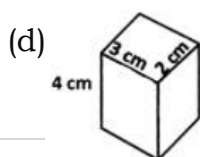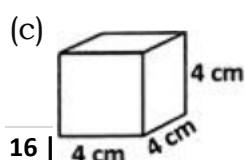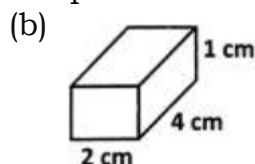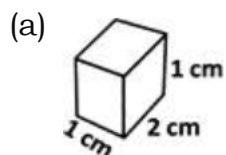   (a) 4   (b) 6   (c) 5   (d) 1

8. Identify the false statement
(a) A sphere has one flat surface.   (b) A cone has one flat face.
(c) A cylinder has two circular faces.   (d) A sphere has one curved face.

9. Which of the following is the number of vertices of sphere?
    (a) 0   (b) 1   (c) 2   (d) 4

10. Which of the following is an oblique sketch of a cube of edge 4 cm?
(a)   (b)

(c)   (d)

11. What is the total on the face opposite to 4+3 on the dice given?
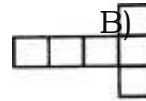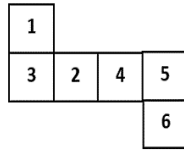   (a) 3   (b) 12   (c) 5   (d) 7

12. The number of triangular faces of a triangular prism is _____.
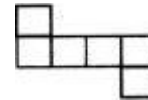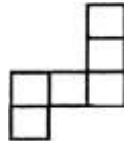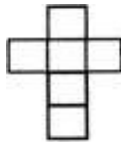   (a) 2   (b) 1   (c) 4   (d) None of these.

13. Can this be a net for a die? A)

1			

3	2	4	5

B)

C)   D)   E)

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