PERIMETER AND AREA

Tick (✓) the correct answer

1. The perimeter of a square field is 200m. The area of the field is
   a. 2,500 sq. m.   c. 2,700 sq. m.
   b. 2,300 sq. m.   d. 2,000 sq. m.

2. Area of a square is 144sq. m. Its side measures
   a. 14 m   c. 12 m
   b. 13 m   d. 11 m

3. The area and perimeter of one of the following squares is numerically same. Which one is it?
   a. A square of side 2 cm   c. A square of side 4 cm
   b. A square of side 3 cm   d. A square of side 5 cm

4. The sides of a 4-sided figure are 4.6 mm, 5.7 mm, 6.7 mm, and 8.3 mm. The perimeter of the figure is
   a. 27.2 mm   c. 25.3 mm
   b. 26.3 mm   d. Not given

5. The area of square whose perimeter is 32 cm is
   a. 32 sq cm   c. 128 sq cm
   b. 64 sq cm   d. 1024 sq cm

6. The perimeter of a rectangle is 66 meter and its length is 18 meter. Find the area of the rectangle.
   a. 270 m   c. 15 m
   b. 275 m   d. 265 m

7. The diameter of a semi circular protractor is 7 cm. Find its circumference.
   a. 22 cm   c. 11 cm
   b. 21 cm   d. 12 cm

8. The circumference of a circular bed is 88 m. Find its area.
   a. 688 sq m   c. 686 sq m
   b. 618 sq m   d. 616 sq m

9. What is the area of a quadrant, if the radius is 7 cm?
   a. 32.5 sq cm   c. 154 sq cm
   b. 38.5 sq cm   d. 77 sq cm

Fill in the blanks

10. _____ is the distance around a plane figure or the length of the boundary of a plane figure.

11. _____ of a shape is the amount of the space it covers.

12. Circumference of a circle $= 2 \times \pi \times$_____

13. The perimeter of a rectangle is 16 cm and the breadth is 3 cm. The length of the rectangle is _____

14. A rope of a length 24 m was used to fence off a square patch of land for a garden. _____ is the length of the square garden.

Write the formulae:

15. Perimeter of a Square - _____

16. Area of a Rectangle - _____

17. Area of a Circle - _____

18. Area of a Square - _____

19. Perimeter of a Rectangle - _____

Calculate the perimeter of the shape using the given dimensions (all in cm).

20.
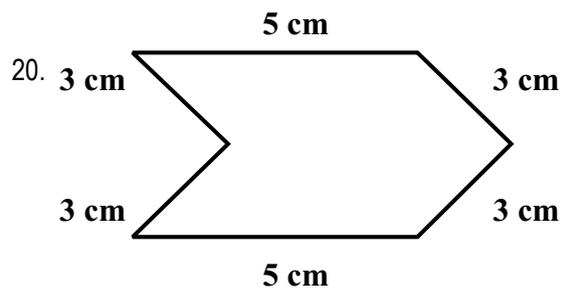
Perimeter - _____cm

VOLUME

Tick (✓) the correct answer

1. **Find the volume of the cube whose one edge measures 3 cm?**
    a. 27 cu. cm.   c. 9 cu. cm.
    b. 23 cu. cm.   d. 12 cu. cm.

2. **A book is 20 cm by 10 cm and 2 cm thick. How many cubic cm of space does the book occupy?**
    a. 200 cu. cm   c. 100 cu. cm
    b. 400 cu. cm   d. 600 cu. cm

3. **How many boxes each of size 10 cm x 8 cm x 5 cm can be packed in a carton of size 1 m x 72 cm x 50 cm?**
    a. 1000   c. 900
    b. 100   d. 800

4. **A box can hold 175 cubic inches of cereal. How tall is the box if it is 7 inches long and 2.5 inches wide?**
    a. 25 inch   c. 10 inch
    b. 17.5 inch   d. 9.5 inch

5. **Ankush built a sandbox that is 8 inch long, 5 inch wide, and $\frac{1}{2}$ inch tall. How many cubic inches of sand does he need to fill the box?**
    a. 20 cubic inches   c. 40 cubic inches
    b. 30 cubic inches   d. 50 cubic inches

Fill in the Blanks

6. _____ **of a solid is the amount of space enclosed by it or the amount of space it takes up.**

7. _____ **is the volume of a cube of edge 1 m.**

8. **The volume of a cube will become _____ times if its edge is doubled.**

9. **The perimeter of a face of cube is 20 cm. Its volume is _____.**

10. **Volume of a cuboid is a 48 cm³, its length is 6 cm, width is 4 cm, and then height is _____ of its width.**

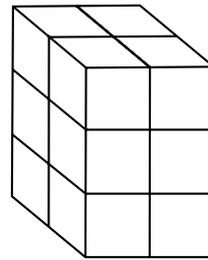**State whether each of the following statements is true or false.**

11. **Two solids having same volume, have same size and shape.** ☐

12. **Cube is a special type of a cubiod, whose length, breadth and height are all same.** ☐
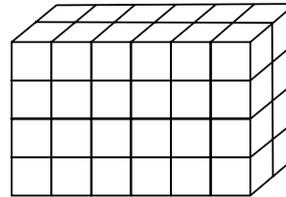
Write the Formulae of following:

13. **Volume of cuboid = _____**

14. **Volume of a cube = _____**

Find how many cubes the prism holds, and tell the volume of the prism.

15.

_____

16.

_____

17.

_____
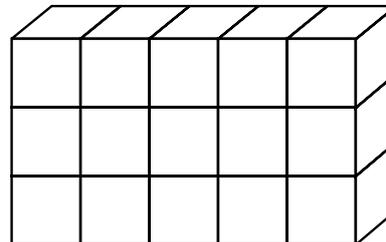
A floor of a class room is shaped as shown: (for Question 18, 19 and 20)
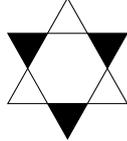
15 m

10 m
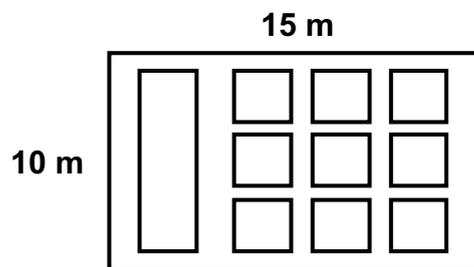
18. **What is the perimeter of the floor?**

19. **What is the floor area of the room?**

20. **If the height of the room is 8 m, how many cubic m of space is in the room?**

SYMMETRY AND PATTERNS

Tick (✓) the correct answer

1. **This star is made up of equilateral triangles:**

   What is the order of rotational symmetry of the star?
   a. 3   c. 6
   b. 4   d. 12

2. **Vikas makes a rubber stamp pattern. What should be the next two shapes in his pattern?**

   a.   b.

   c.   d.

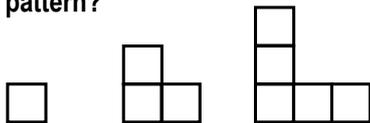3. **Mansi wrote a number pattern. What will be the next number?**
   10, 15, 13, 18, 16, 21, 19
   a. 17   c. 20
   b. 18   d. 24

4. **Ansh wrote a number pattern. The third number in his pattern is 25. He used the rule, subtract 4. What number did Ansh choose as the starting number?**
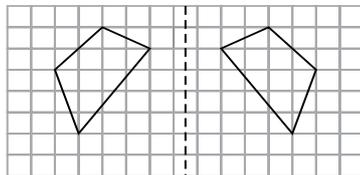   a. 17   c. 33
   b. 21   d. 37

5. **How many total squares will be in the next figure in the pattern?**

   a. 3   c. 7
   b. 6   d. 8

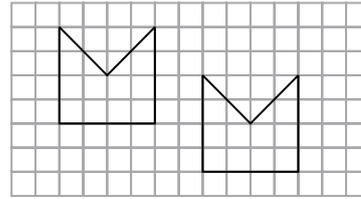6. **Choose the answer that describes the figure.**

   a. Reflection   c. Translation
   b. Rotation

7. **Choose the answer that describes the figure.**

   a. 0º rotation   c. 180º rotation
   b. 90º rotation   d. 270º rotation

8. **Choose the answer that describes the figure.**

   a. Reflection   c. Translation
   b. Rotation

9. **Does the figure have rotational symmetry? Choose yes or no.**
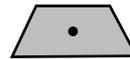
   a. Yes   b. No

10. **Does the dashed line show a line of symmetry? Choose yes or no.**

    a. Yes   b. No

11. **Does the dashed line show a line of symmetry? Choose yes or no.**

    a. Yes   b. No

12. **Does the figure have rotational symmetry? Choose yes or no.**

    a. Yes   b. No

Fill in the Blanks

13. **When a sequence is formed, parts of it are grouped together to form patterns in themselves, and can be called a _____.**

14. **The symmetrical image is also known as _____.**

15. **The only symmetrical numbers are _____ and _____.**

16. **A _____ is formed by repeating a unit, which may be a set of numbers or shapes, according to a rule.**

17. **If a shape can fit exactly onto itself after a certain rotation, then it is said to have a _____.**

18. **When a line on a figure is folded along this line, the two parts match exactly then the line is called as _____.**

State whether each of the following statements is true or false.

19. **A number pattern can be a series of repeating shapes.**

20. **The diameter of a circle is its line of symmetry.**

COLLECTING AND REPRESENTING DATA

Tick (✓) the correct answer
The table shows the results of a survey. Use the table to answer (Q1 to Q4). Choose the best answer.

Ages of Students in Tae Kwon Do		
Age	Tally	Frequency
1	III	3
8	II	2
9	IIII	4
10	IIII I	6
11	III	3
12	I	1

1. **How many students answered the survey in all?**
   a. 20   c. 18
   b. 19   d. 17
2. **How many students over age nine are in Tae Kwon Do?**
   a. 8   c. 10
   b. 9   d. 11
3. **What is the difference between the twelve-year-olds and the ten-year-olds in Tae Kwon Do?**
   a. 5   c. 3
   b. 4   d. 2
4. **How many seven or eight-year-olds are in Tae Kwon Do?**
   a. 2   c. 9
   b. 5   d. 10

Use the pictograph to see the number of glasses of milk Ayush had in the past few weeks and answer the questions below. Note: One milk packet denotes 3 glasses of milk. (Q5 to Q8)

Week	Number of Milk
Week 1	🥛🥛🥛🥛🥛🥛
Week 2	🥛🥛🥛
Week 3	🥛🥛🥛🥛
Week 4	🥛🥛🥛🥛🥛
Week 5	🥛🥛🥛🥛🥛🥛

5. **How many glasses of milk did Ayush have in the 1st week?**
   a. 7   c. 21
   b. 9   d. 28
6. **Which week did Ayush have the least amount of milk?**
   a. Week 1   c. Week 3
   b. Week 2   d. Week 4
7. **How many glasses of milk did he drink in total from week 1 to week 5?**
   a. 75   c. 25
   b. 50   d. 15

8. **How many glasses of milk did Ayush have in week 4?**
   a. 21   c. 15
   b. 18   d. 9

Use the relevant information in the bar graph to answer Q 9 - 12
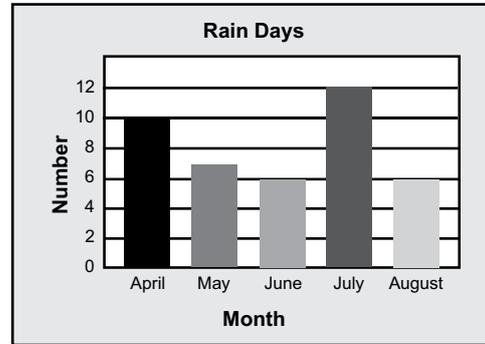
9. **How many days did it rain in April?**
   a. 6   c. 10
   b. 7   d. 12
10. **In September, it rained 3 days more than it rained in August. How many days did it rain in September?**
    a. 6   c. 8
    b. 7   d. 9
11. **How many more days did it rain in July, than in June?**
    a. 6   c. 8
    b. 7   d. 12
12. **How many days did it rain in May?**
    a. 6   c. 8
    b. 7   d. 10
13. **An appropriate graph for the data described 'number of animals seen in the forest each day during April' is**
    a. Pictograph
    b. Bar graph

Fill in the blanks.
14. _____is a collection of numbers gathered to give some information.
15. _____is a way to record data through pictures.
16. A _____is a graph that uses bars to show data.
17. The bars on a bar graph can be_____ or _____.
18. The two lines in a graph are called the _____

State whether each of the following statements is true or false.
19. **Data can be in the form of numbers, words, pictures or digits.** ☐
20. **Pictograph is used to compare sets of data.** ☐

PERCENTAGE

Tick (✓) the correct answer

1. **Per cent means**
   a. per thousand
   b. per hundred
   c. per ten
   d. per one

2. **0.25 as per cent is equal to**
   a. 25%
   b. 2.5%
   c. 0.25%
   d. 0.025%

3. **15% of 300 apples were bad. How many apples were bad?**
   a. 50 apples
   b. 55 apples
   c. 45 apples
   d. 25 apples

4. **The equivalent fraction of 40% in simplest form is**
   a. $\dfrac{1}{5}$
   b. $\dfrac{2}{5}$
   c. $\dfrac{4}{10}$
   d. $\dfrac{6}{15}$

5. **Of all the students who voted for their favourite ice cream, $\dfrac{1}{2}$ chose chocolate and $\dfrac{3}{5}$ chose vanilla. What per cent of all the votes were neither for chocolate nor for vanilla?**
   a. 40%
   b. 10%
   c. 50%
   d. 90%

6. **Soniya correctly answered 76% of the questions on her science test. What fraction of the test questions did she answer correctly? Write your answer in simplest form.**
   a. $\dfrac{76}{100}$
   b. $\dfrac{14}{25}$
   c. $\dfrac{34}{50}$
   d. $\dfrac{19}{25}$

7. **A shopkeeper ordered 300 T-shirts to sell at the school fair. Out of those T-shirts, 40% are white, 25% are black, 20% are blue, 10% are green, and 5% are red. How many black T-shirts did the shopkeeper order? Also, how many red T-shirts did he order?**
   a. 75; 15
   b. 15; 75
   c. 120; 15
   d. 60; 15

8. **In a survey of 800 teenagers, 586 said they earned some of their own money. What per cent of the teenagers surveyed did NOT earn money?**
   a. 25%
   b. 26.75%
   c. 30%
   d. None

Fill in the blanks.

9. _____ are numerators of fractions with denominator 100.

10. **80% of 900 is _____ .**

11. **A per cent can also be expressed as a _____ .**

12. **100% as a decimal and as a fraction is _____ .**

13. **The decimal 0.035 written as a per cent is _____ .**

14. **The 'part' in a per cent problem usually follows the word '_____' .**

State whether the following statements are true or false.

15. **Changing a decimal to a per cent is similar to divide by 100%.** ☐

16. **To change the fraction whose denominator is not 100 to per cent, write an equivalent fraction with a denominator of 100 then write this as per cent.** ☐

17. **125% written as a fraction is $1\dfrac{1}{4}$.** ☐

Complete the following table:

S. No.	Percentage	Fraction	Decimal
18.	75%		
19.		$\dfrac{2}{5}$	
20.			0.35

PROFIT AND LOSS

Tick (✓) the correct answer

1. **In a transaction there is a profit if:**
   a. C.P. > S.P.
   c. C.P. = S.P.
   b. C.P.< S. P.
   d. None

2. Gain % = $\overline{C.P.} \times 100$
   a. C.P. – S.P.
   c. S.P. – C.P.
   b. C.P.+ S.P.
   d. None

3. **Robin buys a room cooler for ₹ 5200 and sells it at a profit of ₹ 640. What was his selling price?**
   a. ₹ 5540
   c. ₹ 5800
   b. ₹ 4560
   d. ₹ 5840

4. **The cost price of 20 articles is the same as the selling price of x articles. If the profit is 25%, then the value of x is:**
   a. 15
   c. 18
   b. 16
   d. 25

5. **A school bookshop sells an outdated biology textbook for Rs. 126, making a 10% loss. What was the cost price of the book?**
   a. Rs. 150
   c. Rs. 155
   b. Rs. 145
   d. Rs. 140

6. **Parul bought a saree for ₹ 5000. But due to some defect she sold it for ₹ 4250. What was her loss per cent?**
   a. 10%
   c. 5%
   b. 15%
   d. 8%

7. **Manish purchased an I-pod in ₹ 4500 and sold it to Kaushal at 10% gain. Kaushal sold it to Anil at 5% loss. Find for how much did Anil purchase this I-Pod.**
   a. Rs. 4702.5
   c. Rs. 4297.5
   b. Rs. 5197.5
   d. None

8. **The shopkeeper _____ these overhead expenses to the cost price before he sells the goods.**
   a. adds
   c. multiply
   b. subtracts
   d. divide

9. **Ankush bought a cycle for ₹ 5200 and also paid ₹ 250 for its golden painting. He sold it at a gain of 10%. What is his profit?**
   a. ₹ 520
   c. ₹ 550
   b. ₹ 250
   d. ₹ 545

10. **A shopkeeper buys scientific calculators in bulk for ₹ 1500 each. He sells them for ₹ 2040 each. Calculate the profit% on each calculator.**
    a. 30%
    c. 45%
    b. 36%
    d. 50%

Fill in the blanks.

11. **The price paid by the purchaser to buy an article is called the _____ of the article for the purchaser.**

12. **The price at which an article is sold to the customer is called the _____ of the article for the seller.**

13. **Cost Price – Selling Price = _____.**

14. **If an item is purchased for some amount and there are additional expenses like transportation, maintenance, commissions, repair, etc, then these expenses are added to the cost price of the article and are called as _____ .**

15. **By selling an article for ₹ 150 a shopkeeper gains ₹ 30. His gain per cent is _____ .**

State whether the following statements are true or false.

16. **If the shopkeeper sells the goods at a price higher than the cost price he gains a profit.** ☐

17. **The shopkeeper adds the overhead expenses to the cost price before he sells the goods at the selling price.** ☐

18. **Profit% or Loss% is always calculated on selling price.** ☐

19. **In a transaction, if there is neither gain nor loss, then cost price is equal to selling price.** ☐

20. **If C.P. = ₹ 150, S.P. = ₹ 120, then there is a loss of ₹ 30.** ☐

SIMPLE INTEREST

Tick (✓) the correct answer

1. **Interest is a percentage of the**
   - a. rate
   - b. time
   - c. amount
   - d. principal

2. **The additional money paid by a borrower to the lender after a specific time period is called**
   - a. interest
   - b. principal
   - c. amount
   - d. rate

3. **When the interest paid after every time period is same, then it is called**
   - a. interest
   - b. simple interest
   - c. amount
   - d. rate of interest

4. **Which of the following is incorrect?**
   - a. $\dfrac{100 \times I}{T \times R}$
   - b. $\dfrac{100 \times I}{}$
   - c. $\dfrac{P \times R \times T}{100}$
   - d. $\dfrac{P \times 100}{R \times I}$

5. **Simple interest on a certain sum for 3 years at 14% per annum is ₹ 235.20. The sum is**
   - a. ₹ 550
   - b. ₹ 600
   - c. ₹ 560
   - d. ₹ 400

6. **A sum amounts to ₹ 702 in 2 years and ₹ 783 in 3 years. The interest rate per cent is**
   - a. 12.46%
   - b. 13.5%
   - c. 12.25%
   - d. 10%

7. **In what time will be ₹ 8500 amount to ₹ 15767.50 at 4.5% per annum?**
   - a. 21 years
   - b. 20 years
   - c. 19 years
   - d. 15 years

8. **Find the simple interest on ₹ 500 for 5 years at 5%.**
   - a. ₹ 100
   - b. ₹ 125
   - c. ₹ 625
   - d. ₹ 500

9. **The rate of interest by which a given amount of money is doubled in 5 years is:**
   - a. 25%
   - b. 10%
   - c. 30%
   - d. 20%

10. **In how many years does a sum of money become four times at simple interest rate of 5% per annum?**
    - a. 20 years
    - b. 40 years
    - c. 60 years
    - d. 50 years

11. **In how much time will the simple interest on ₹ 2500 at 12.5% per annum be Rs. 625?**
    - a. 1 year
    - b. 2 years
    - c. 3 years
    - d. 4 years

Fill in the blanks.

12. **The _____ is the amount of money deposited or borrowed.**

13. **The sum of Principal and interest is known as _____ .**

14. **_____ is often paid over a certain time period.**

15. **The interest paid yearly or per annum on every ₹ 100 is called the _____.**

16. **The three elements used to calculate simple interest are _____, _____ and _____ .**

State whether the following statements are true or false.

17. **Simple interest is a fixed percentage of the original principal.** ☐

18. **Interest rates are usually given as ratios.** ☐

19. **Simple interest can be calculated either by using a formula or by using unitary method.** ☐

20. **If the rate of interest increases on a sum of money then the simple interest will also increase.** ☐

LINES AND ANGLES

Tick (✓) the correct answer

1. **Lines that meet one another are called**
   a. parallel lines
   c. perpendicular lines
   b. intersecting lines
   d. transversal line

2. **If the sum of two angles is 90º, the angles are _____ angles.**
   a. supplementary
   c. complementary
   b. right
   d. vertical

3. **If *l* || m and m || n then**
   a. *l* || n
   c. *l* || m
   b. *l* ^ m
   d. None

4. **Co-interior angles are**
   a. complementary
   c. obtuse
   b. supplementary
   d. acute

5. **The difference in the measure of two complementary angles is 18º. The measure of the angles are**
   a. 45º, 45º
   c. 99º, 81º
   b. 60º, 30º
   d. 54º, 36º

Fill in the blanks.

6. **If the sum of two angles is 180º, the angles are _____ angles.**

7. **A _____ is a line that cuts across two or more lines in distinct points.**

8. **Interior angles that are on opposite sides of the transversal are called _____.**

State whether the following statements are true or false.

9. **The sum of all the angles at a point being adjacent to the next is 180º.** ☐

10. **Angles forming a linear pair are supplementary angles.** ☐

Refer to the figure. Line m is a transversal to lines a and b. Name all angles or pairs of angles of each type:
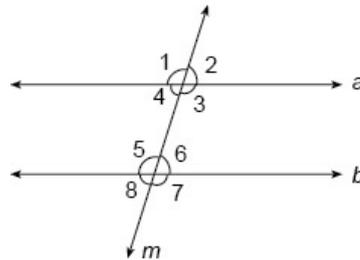
11. **Exterior Angles** _____

12. **Interior Angles** _____

13. **Alternate Angles** _____

14. **Corresponding Angles** _____

15. **Vertical Angles** _____

16. **Adjacent to Ð2** _____

Refer to the figure. In the figure, *l* || m and Line *n* is a transversal to lines *l* and *m*. Find the measure of each angle, if m Ð1 = 130°.

17. **m Ð2 = _____**

18. **m Ð5 = _____**

19. **m Ð7 = _____**
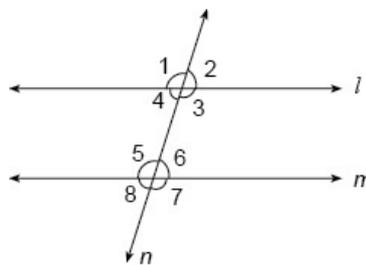
20. **m Ð3 = _____**

LINEAR EQUATIONS
Tick (✓) the correct answer

1. The sum of two numbers is 85. The difference of the two numbers is 13. The numbers are
   a. 72, 13
   b. 36, 49
   c. 71, 14
   d. 50, 35

2. Group the terms with variables on one side of the equal sign, and simplify. $-10p - 8 + 3p = 2p - 3p + 4$
   Select your answer.
   a. $p = -2$
   b. $p = 2$
   c. $p = 1$
   d. $p = -1$

3. The ratio of two numbers is 5:6. If the first number is increased by 8 and second number is decreased by 4 their ratio becomes 7:5. The numbers are
   a. 25, 30
   b. 20, 24
   c. 14 : 10
   d. 21 : 15

4. The sum of two consecutive even numbers is 434. What are the two numbers?
   a. 212, 212
   b. 202, 222
   c. 218, 220
   d. 216, 218

5. The present age of Karan's mother is three times the present age of Karan. After 4 years their ages will add to 76 years. Find their present ages.
   a. Karan's age = 17 years; mother's age = 51 years
   b. Karan's age = 18 years; mother's age = 50 years
   c. Karan's age = 21 years; mother's age = 51 years
   d. Karan's age = 17 years; mother's age = 55 years

6. The difference between two whole numbers is 33. The ratio of the two numbers is 2:5. What are the two numbers?
   a. 20, 53
   b. 25, 58
   c. 22, 55
   d. 28, 61

Fill in the blanks.

7. An _____ is a mathematical sentence that says that two quantities are equal.

8. The value of the variable which satisfies the equation is called the _____.

9. A _____ in one variable is an equation in which the higher exponents or power of the variable is one.

10. If any term of an equation is taken from one side to the other i.e., from the left-hand side to right-hand side or vice versa), then the sign changes. This is known as _____.

State whether the following statements are true or false.

11. In an equation the values of the expressions on the LHS is greater than RHS. ☐

12. To solve an equation, you need to get the variable alone on one side of the equal sign. ☐

13. An algebraic equation is an equality involving variables. ☐

14. An equation remains same, if the same quantity is subtracted from one side of the equation. ☐

Match the equations in column 'A' to its solution in column 'B

Column A	Column B
15. $42 + 3x = -4x - 14$	a. $x = -\dfrac{1}{3}$
16. $5x + 2(x - 3) = 3(3 + 2x)$	b. $x = 25$
17. $\dfrac{3x-1}{4} = \dfrac{x}{2} - \dfrac{1}{3}$	c. $x = -23$
18. $3(x - 3) - 2(x + 5) = 6$	d. $x =$
19. $\dfrac{3x-1}{4} = \dfrac{x}{2} - \dfrac{1}{3}$	e. $x = 15$
20. $8x + 11 - 2x = 16 - 4x$	f. $x = -8$

PERCENTAGES

Tick (✓) the correct answer

1. **About 30% of the earth's surface is land. The rest is water. Write a fraction showing the portion of earth's surface covered by water.**
   a. $\dfrac{3}{10}$
   b. $\dfrac{3}{4}$
   c. $\dfrac{10}{3}$
   d. $\dfrac{5}{2}$

2. **72 is what per cent of 96?**
   a. 25%
   b. 35%
   c. 75%
   d. 85%

3. **Sheetal scored 75 on her first math test. She scored 20% higher on her next math test. What did she score on the second test?**
   a. 80
   b. 90
   c. 85
   d. 95

4. **A store is closing out its stock of sunglasses. The original price of the sunglasses was ₹ 440. The closeout price is 40% off the original price. Find the selling price.**
   a. ₹ 616
   b. ₹ 220
   c. ₹ 264
   d. ₹ 400

5. **Deepak bought some candies that cost ₹ 150. If he had to pay 5% sales tax, how much did he pay for his candies in all?**
   a. ₹ 142.5
   b. ₹ 145
   c. ₹ 155
   d. ₹ 157.5

6. **Aashi obtained 19 marks in a test of 25 marks. What was her percentage of marks?**
   a. 75%
   b. 76%
   c. 70%
   d. 65%

7. **A garden has 5000 trees, 15% of these are mango trees, 17% litchi and the rest are oranges. Find the per cent of orange trees.**
   a. 65%
   b. 50%
   c. 78%
   d. 68%

8. **What sum lent out at 10% per annum simple interest would produce ₹ 12,750 as interest in 5 years?**
   a. ₹ 25500
   b. ₹ 6375
   c. ₹ 38250
   d. ₹ 19125

9. **A skateboard that sells for ₹ 680 is on sale for 15% off. Find the amount of the discount.**
   a. ₹ 102
   b. ₹ 100
   c. ₹ 58
   d. ₹ 578

Fill in the blanks.

10. **If you make twelve out of twelve shots, you have made _____%.**

11. **If more than $\dfrac{3}{4}$ of an item is shaded, it is more than _____%.**

12. **Any number between zero and one means we have a _____ of a whole.**

13. **Three ways we can write a part of a whole are ____, _____ and _____.**

14. **In the statement '25 per cent of 84 is 12', the whole (base) is _____.**

15. **To change a per cent to a fraction, place the percent over _____ then _____ to lowest terms if necessary.**

16. **The decimal 0.0145 written as a per cent is _____.**

State whether the following statements are true or false.

17. **To write a decimal as a per cent, you move the decimal point two places to the right and then drop the per cent sign.** ☐

18. **325% written as a fraction is $3\dfrac{4}{25}$.** ☐

19. **The 'whole' in a per cent problem usually follows the word 'of'.** ☐

20. **A per cent is a ratio with a denominator of 1000.** ☐

ANSWER KEY - CLASS V: MATHEMATICS			
Perimeter and Area	**Volume**	**Symmetry and Patterns**	**Collecting and Representing Data**
1. a	1. a	1. a 2. a	1. b
2. c	2. b	3. d 4. c	2. c
3. c	3. c	5. c 6. a	3. a
4. c	4. c	7. b 8. c	4. b
5. b	5. a	9. b 10. b	5. c
6. a	6. Volume	11. a	6. b
7. c	7. 1 cu m	12. a	7. a
8. d	8. eight times	13. Unit of the pattern	8. c
9. b	9. 125 cm³	14. Mirror image	9. c
10. Perimeter	10. half	15. 3, 8	10. d
11. Area	11. false	16. Pattern	11. a
12. Radius/r	12. true	17. Rotational symmetry	12. b
13. 5 cm	13. L x B x H	18. Line of symmetry	13. b
14. 6 m	14. Side³	19. False	14. Data
15. 4 x Side	15. 12 cubes; 12 cubic unit	20. True	15. Pictograph
16. L x B	16. 48 cubes; 48 cubic unit		16. Bar graph
17. π x r2	17. 15 cubes; 15 cubic unit		17. Horizontal; Vertical
18. Side²	18. 50 m		18. Axix
19. 2 X (L + B)	19. 150 sq. m		19. True
20. 22 cm	20. 1200 cu. m		20. False

ANSWER KEY - CLASS VII: MATHEMATICS			
Percentage	**Profit and Loss**	**Simple Interest**	**Lines and Angles**
1. b	1. b 2. c	1. d	1. b 2. c
2. a	3. d 4. b	2. a	3. a 4. b
3. c	5. d	3. b	5. d
4. b	6. b	4. d	6. Supplementary
5. b	7. a	5. c	7. Transversal
6. d	8. a	6. a	8. Alternate interior angle
7. a	9. d	7. c	9. False
8. b	10. b	8. b	10. True
9. Percentages	11. Cost price (CP)	9. d	11. Angles 1, 2, 7 & 8
10. 720	12. Selling Price (SP)	10. c	12. Angle 3, 4, 5 & 6
11. Decimal or a Fraction	13. Loss	11. b	13. Angles 3 & 5 Angles 4 & 6
12. 1	14. Overhead expenses	12. Principal	14. Angles 1 & 5; Angles 4 & 8;
13. 3.5%	15. 25%	13. Amount	Angles 2 & 6;
14. of	16. True	14. Simple interest	Angles 3 & 7
15. False	17. True	15. Rate per cent per annum	15. Angles 1 & 3; Angles 2 & 4;
16. Ture	18. False	16. Principal, rate of interest and time	Angles 5 & 7;
17. True	19. True	17. True	Angles 6 & 8
18. ¾; .075	20. True	18. False	16. Angle 1 & 3
19. 40%; 0.4		19. True	17. 50º
20. 35%; 7/20		20. True	18. 130º
			19. 130º
			20. 130º

QUADRILATERALS

Tick (✓) the correct answer

1. **Which quadrilateral must have diagonals that are congruent and perpendicular?**
    a. Rhombus
    b. Square
    c. Trapezoid
    d. Parallelogram

2. **Which statement about quadrilaterals is true?**
    a. All quadrilaterals have four right angles
    b. All quadrilaterals have four sides
    c. All quadrilaterals are parallelograms
    d. All quadrilaterals have equal sides

3. **The measure of one angle of a parallelogram is 70°, what are the measures of the remaining angles?**
    a. 70°, 110° and 110°
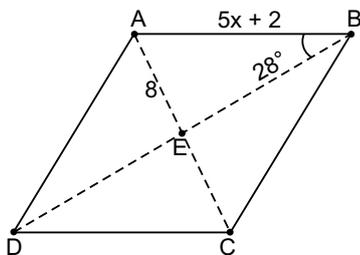   b. 80°, 100° and 120°
    c. 100°, 100° and 90°
    d. None

4. **As shown in the below mentioned figure, the diagonals of rectangle WXYZ intersect at O. Given that mÐXYW = 56° and WY = 33, find the measure of mÐXWO**

    a. 56°
    b. 90°
    c. 34°
    d. None of these
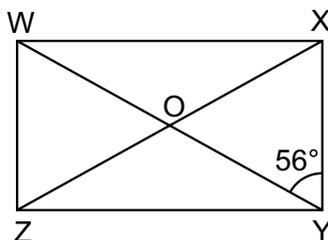
5. **Perimeter of rhombus ABCD, shown in the below figure, is 68. Find x.**

    a. 1
    b. 2
    c. 3
    d. 4

6. **In the rectangle ABCD, AC and BD are diagonals. If AO = 2y + 3 and DO = 3y + 1, the value of y is**

    a. 1
    b. 2
    c. 3
    d. 4
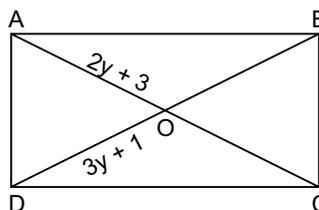
Fill in the blanks.

7. **A_____is a quadrilateral with only one pair of parallel sides.**

8. **A_____is a quadrilateral that has exactly two pairs of adjacent sides congruent.**

9. **A_____is a quadrilateral with two pairs of parallel sides.**

10. **A_____is a parallelogram with all four sides congruent.**

11. **The sum of all the angles of a quadrilateral is _____.**

12. **If all four angles of a quadrilateral are equal it could be a_____or a _____.**

13. **If all four sides of a quadrilateral are equal it could be a _____ or a _____.**

14. **If opposite sides of a quadrilateral are parallel and equal it could be a _____, a _____or a _____.**

15. **If the diagonals of a quadrilateral are perpendicular to each other it could be a _____or a _____.**

16. **If the diagonals of a quadrilateral are equal in length, it could be a _____or a_____.**
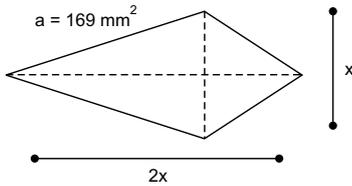
State whether the following statements are true or false.

17. **Some rhombuses are parallelograms.** ☐

18. **Some parallelograms are squares.** ☐

19. **Some trapezoids are rectangles.** ☐

20. **All squares are rhombus.** ☐

MENSURATION

Tick (✓) the correct answer

1. The value of x for the given figure of kite is

a = 169 mm²

2x

x

   a. 13 mm   b. 14 mm
   c. 15 mm   d. None

2. **The bases of a trapezium are 8 m and 6 m, while its altitude is 4 m. What is the area of the trapezium?**
   a. 4 m²   b. 56 m²
   c. 28 m²   d. 26 m²

3. **Find the surface area of a cuboid whose length is 10 cm, breadth is 8 cm and height is 5 cm.**
   a. 350 cm²   b. 400 cm²
   c. 180 cm²   d. 340cm²

4. **Find the surface area of a cube, whose edge is 8 cm.**
   a. 384 cm²   b. 64 cm²
   c. 80 cm²   d. 42 cm²

5. **Find the volume of a cylinder, circumference of whose base is 110 cm and height = 20 cm.**
   a. 20000 cm³   b. 19250 cm³
   c. 1925 cm³   d. None of these

6. **Two circular cylinders of equal volume have heights in the ratio of 1 : 2. What is the ratio of their radii?**
   a. $1 : \sqrt{2}$ b. 1 : 2
   c. $\sqrt{2} : 1$ d. 2 : 2

7. **Which three-dimensional figure has one circular base and a lateral curved surface?**
   a. Sphere   b. Cone
   c. Cylinder   d. Hemi-sphere

Fill in the blanks.

8. The _____ of a three dimensional figure is the combined areas of the faces.

9. The perimeter of a face of cube is 20 cm. Its volume is _____.

10. The space occupied by any object is called its _____.

11. Volume of a cuboid is a 48 cm², its length is 6 cm, width is 4 cm, then height is _____ of its width.

12. A cylinder has _____ curve face and two _____ faces.

13. The volume of a cube will become _____ times if its edge is doubled.

14. The face opposite the _____ is the base of the pyramid.

State whether the following statements are true or false.

15. Two solids having same volume have same size and shape. ☐

16. Cube is a special type of a cubiod, whose length, breadth and height are all same. ☐

17. Lateral surface area of a cube is equal to the total surface area of cube. ☐

Write the formulae for the following:

18. Volume of cylinder - _____

19. Lateral surface area of cube - _____

20. Lateral surface area of cuboid - _____

ANSWER KEY - CLASS VIII: MATHEMATICS

Linear Equations
1. b
2. a
3. b
4. d
5. a
6. c
7. Equation
8. Solution
9. Linear equation
10. False
11. True
12. True
13. True
14. False
15. f
16. e
17. a
18. b
19. c
20. d

Percentages
1. a
2. c
3. b
4. c
5. d
6. b
7. d
8. a
9. a
10. 100
11. 75
12. part/percent
13. percent; decimal; fraction
14. 84
15. 100; reduce
16. 1.45%
17. False
18. False
19. TRue
20. False)

Quadrilaterals
1. b   2. b
3. a   4. c
5. c   6. b
7. Trapezium
8. Kite
9. Parallelogram
10. Rhombus
11. 360⁰
12. Rectangle; Square
13. Square; Rhombus
14. Parallelogram; rectangle; square;
15. Rhombus; square
16. Square, rectangle
17. False
18. True
19. False
20. True

Mensuration
1. a
2. c
3. d
4. a
5. b
6. c
7. b
8. Surface area
9. 125 cm³
10. Volume
11. Half
12. One; flat
13. Eight times
14. Vertex
15. False
16. True
17. False
18. pr²h
19. 4s²
20. 2h(l+b)

ANSWER KEY - CLASS IX: MATHEMATICS

Heron's Formula
1. c
2. b
3. a
4. d
5. c
6. b
7. d
8. b
9. a
10. c
11. 30 cm
12. 14; 400
13. 120 cm²
14. 9.23 cm
15. Yes
16. False
17. False
18. True
19. False
20. True

Surface Area and Volumes
1. c
2. b
3. a
4. b
5. a
6. c
7. b
8. d
9. a
10. d
11. e
12. d
13. f
14. a
15. g
16. 12
17. Double
18. 31
19. $\sqrt{xyz}$
20. 55 cm²

Statistics
1. b
2. c
3. d
4. b
5. a
6. c
7. d
8. d
9. a
10. c
11. A=3
12. B=45
13. C=275
14. D=615
15. $\overline{x}$ =41
16. Class-size
17. Frequency polygon
18. Median
19. Range
20. Mode

Probability
1. d
2. c
3. c
4. b
5. d
6. d
7. a
8. a
9. b
10. d
11. 78/500 or 0.156
12. 273/500 or 0.546
13. 85/500 or 0.17
14. 275/500 or 0.55
15. 92/500 or 0.184
16. True
17. False
18. True
19. True
20. False

HERON'S FORMULA

Tick (✓) the correct answer

1. The area of an equilateral triangle is $12\sqrt{3}$ cm². The measure of each side is
   a. $\sqrt{3}$ cm
   b. $2\sqrt{3}$
   c. $4\sqrt{3}$ cm cm
   d. 4 cm

2. The diagonals of a rhombus are 12 cm and 16 cm. The measure of each side of the rhombus is
   a. 5 cm
   b. 10 cm
   c. 24 cm
   d. 8 cm

3. ABCD is a parallelogram. The area of DABC = 255 cm² and CD = 17 cm. Then the measure of altitude DP is

   a. 30 cm
   b. 15 cm
   c. 20 cm
   d. None of these
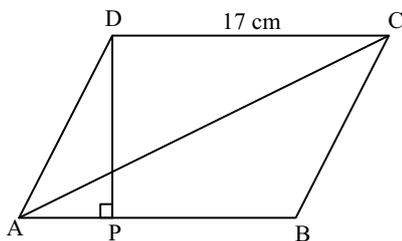
4. The perimeter of a rectangular field is 1080 m and its sides are in the ratio 15 : 12. The area of the field is
   a. 3600 m²
   b. 36,000 m²
   c. 7200 m²
   d. 72,000 m²

5. The area of PQR is

   a. 2 cm²
   b. $\sqrt{2}$ cm²
   c. $2\sqrt{2}$ cm²
   d. $4\sqrt{2}$ cm²
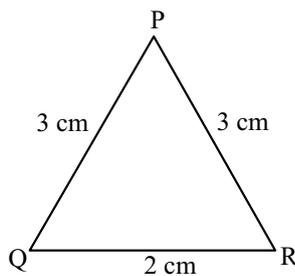
6. The sides of a triangle are halved. Then, the ratio of the areas of the original triangle to the new triangle is
   a. 1 : 4
   b. 4 : 1
   c. 1 : 2
   d. 2 : 1

7. The diagonal of a square measures $5\sqrt{2}$ cm. Hence, the area of the square is
   a. $25\sqrt{2}$ cm²
   b. 50 cm²
   c. 5 cm²
   d. 25 cm²

8. ABCD is a trapezium in which AB || CD. If AB = 12 cm, DC = 18 cm and the area of the trapezium is 150 cm², then the measure of BQ is

   a. 5 cm
   b. 10 cm
   c. 4 cm
   d. 8 cm
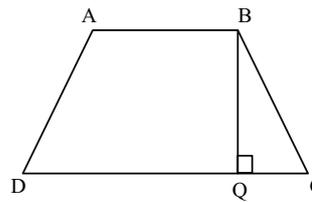
9. The area of the quadrilateral ABCD is
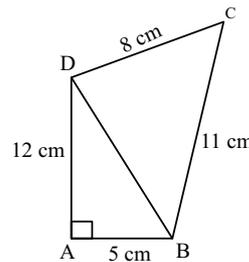
   a. 73.8 cm²
   b. 43.8 cm²
   c. 30 cm²
   d. None of these

10. The area of an isosceles right angled triangle is 16 cm². The length of its hypotenuse is
    a. $8\sqrt{2}$ cm
    b. $16\sqrt{2}$ cm
    c. 8 cm
    d. $4\sqrt{2}$ cm

In a triangle, the sides are as follows: a = 26 cm, b = 24 cm and c = 10 cm. Write the solutions in the column B to the questions asked in Column A

Column A	Column B
11. The value of 's' equals	
12. s(s – a) (s – b) (s – c) equals	
13. Area of DABC =	
14. Measure of its altitude with 'a' as base	
15. Is the triangle right-angled?	

State whether each of the following statements is true or false.

16. The area of a rhombus is equal to $\frac{1}{2}$ × (sum of its diagonals). ☐

17. If the perimeter of a triangle is 27 cm and its sides are in the ratio 2 : 3 : 4, then the smallest side is 12 cm. ☐

18. The altitude of an equilateral triangle of side 1 cm is $\frac{\sqrt{3}}{2}$ cm. ☐

19. The area of a triangle by Heron's formula is $\sqrt{(s-a)(s-b)(s-c)}$. ☐

20. The diagonal of a rectangle with sides *a* and *b* is $\sqrt{a^2+b^2}$. ☐

SURFACE AREAS AND VOLUMES

1. **A class room is 18 m × 12 m. Its height is 10 m. The cost of painting its four walls at the rate of ₹ 10 / m² is**
   a. ₹ 60
   b. ₹ 600
   c. ₹ 6000
   d. ₹ 60,000

2. **The surface area of a cube is 384 cm2. Its volume is**
   a. 64 cm³
   b. 512 cm³
   c. 8 cm³
   d. 16 cm³

3. **The diagonal of a cube is $\sqrt{48}$ cm. Its edge is**
   a. 4 cm
   b. 2 cm
   c. 8 cm
   d. none of these

4. **When air is blown into a football, its radius is tripled. The ratio of the surface area of the original football to the inflated one is**
   a. 1 : 3
   b. 1 : 9
   c. 27 : 1
   d. 1 : 27

5. **The total surface area of a cylinder is 312 cm². Its curve surface area is one-third of the total surface area. If the diameter of the cylinder is 26 cm, its height is**
   a. $\dfrac{11}{7}$ cm
   b. $\dfrac{7}{11}$ cm
   c. $\dfrac{14}{11}$ cm
   d. $\dfrac{11}{14}$ cm

6. **A cone has a diameter 14 cm and height 24 cm. Its slant height is**
   a. 625 cm
   b. 7 cm
   c. 25 cm
   d. 50 cm

7. **The total surface area of a hemisphere of radius 'r' is**
   a. $2\pi r^2$
   b. $3\pi r^2$
   c. πr^2
   d. $4\pi r^2$

8. **A cube has volume 27 cm³. The radius of the largest sphere that can be cut off from the cube is**
   a. 9 cm
   b. 6 cm
   c. 3 cm
   d. 1.5 cm

9. **The curved surface area of a cone of radius 10.5 cm is 792 cm². The slant height of the cone is**
   a. 24 cm
   b. 12 cm
   c. 48 cm
   d. 10.5 cm

10. **The height of a cylinder is thrice its radius. If its volume is 216π cubic cm, its height is**
    a. 2 cm
    b. 12 cm
    c. 3 cm
    d. 6 cm

Match the following:

Column A	Column A
11. Volume of a sphere	a. $\dfrac{2}{3}\pi r^3$
12. Volume of a cone	b. $4\pi r^2$
13. Volume of a cylinder	c. $\pi r\,(r + h)$
14. Volume of a hemisphere	d. $\dfrac{1}{3}\pi r^2 h$
15. Total surface area of cone	e. $\dfrac{4}{3}\pi r^3$
	f. $\pi r^2 h$
	g. $\pi r\,(r + l)$

Fill in the blanks with the correct option.

16. **A cuboid has _____ edges. (8/12)**

17. **If the height of a cylinder is doubled and the radius remains unchanged, its volume is_____. (doubled / halved)**

18. **Three cubes of side 'l' each are placed side by side. The length of the resulting cuboid is _____. (l / 3l)**

19. **The areas of the three adjacent faces of a cuboid are x, y and z. Then, its volume is _____. (x y z / $\sqrt{xyz}$)**

20. **The radius of the base of a cone is 3.5 cm and its slant height is 5 cm. Then, the lateral surface area of the cone is _____. (110 cm² / 55 cm²)**

STATISTICS

Tick (✓) the correct answer

1. The mean of the first five odd natural numbers is
   a. 25   b. 5
   c. 7   d. 9

2. The class marks of a distribution are 18, 24, 30, 36, 42, 48. The last class is
   a. 45 – 50   b. 47 – 50
   c. 45 – 51   d. 47 – 51

3. The following data is arranged in ascending order: 8, 13, 17, x, x + 4, 26, 30, 41. If its median is 22, the value of x is
   a. 26   b. 24
   c. 22   d. 20

4. The mode of 8, 12, 15, 12, p, 8, 12, 15, 8 is 12. Hence the value of p is
   a. 8   b. 12
   c. 15   d. 18

5. The mean of 140, 150, x, 158, 161 is 152.2. The value of x is
   a. 152   b. 152.2
   c. 153   d. 154

6. If 4 is added to each observation of a given data, then their mean
   a. remains unchanged
   d. becomes 4 times the original mean
   c. is increased by 4
   b. is decreased by 4

7. The median of the following data 37, 5, 15, 92, 49, 42, 62, 87, 32, 44 is 43. If the values 5 and 92 are removed, their median is
   a. 42   b. 39
   c. 44   d. 43

8. The class intervals of a frequency distribution are 5 – 9, 10 – 14, 15 – 19. The true limits of the second class are
   a. 10.5 – 13.5   b. 10.5 – 14.5
   c. 9.5 – 13.5   d. 9.5 – 14.5

9. The mean of marks in Mathematics of 8 students of a class is 65 and the mean of marks of the remaining 12 students is 50. The mean of marks of the whole class is
   a. 56   b. 65
   c. 50   d. 57.5

10. If there is no gap between the rectangles drawn with class – intervals on the x-axis, the graph is a
    a. frequency polygon   b. bar graph
    c. histogram   d. none of these

11-15 For the following frequency distribution, complete the table by stating the values of A, B, C, D, and $\overline{X}$.

X	F	Fx
15	1	15
25	A =	75
35	2	70
B =	4	180
55	5	C =
TOTAL	15	D =
MEAN $\overline{X}$ =		

Fill in the blanks with the correct option.

16. The difference between the upper limit and the lower limit of the class is called_____. (class - size / class-mark)

17. Data can be represented graphically by drawing _____ (cumulative frequency / frequency polygon)

18. The middlemost observation of the data is called_____. (median/mode)

19. The difference between the highest and the lowest values of the data is called _____. (frequency / range)

20. The value of the variable that occurs most frequently is called _____. (mode / mean)

PROBABILITY

Tick (✓) the correct answer

1. Which one of the following can be the probability of an event?

   a. $\dfrac{10}{3}$

   b. $-\dfrac{3}{10}$

   c. 1.01

   d. 0.3

2. A coin is tossed 1000 times and a head appears 470 times. The empirical probability of getting a tail is
   a. 0.47
   b. 0.047
   c. 0.53
   d. 0.053

3. A box contains 5 red scarves, 7 blue scarves and 12 yellow scarves. The probability of drawing out a green scarf is

   a. $\dfrac{1}{2}$

   b. 1

   c. 0

   d. -1

4. Three coins are tossed simultaneously 100 times with the following outcomes:

Outcomes	3 heads	2 heads	1 head	No head
Frequency	30	20	35	15

   The experimental probability of getting at least 2 heads is
   a. 0.2
   b. 0.5
   c. 0.35
   d. 0.85

5. According to the table in Question 4, what is the probability of getting no tails?
   a. 0.15
   b. 0.85
   c. 0.20
   d. 0.30

6. Out of 200 students of Class IX of a school, 57 students opted for Sanskrit, 75 students opted for French and the remaining students opted for Hindi as the second language. If a student is selected at random, the probability that he has not opted for Sanskrit is

   a. $\dfrac{75}{200}$

   b. $\dfrac{68}{200}$

   c. $\dfrac{57}{200}$

   d. $\dfrac{143}{200}$

7. The percentage of marks obtained by a student in the unit tests is given below.

Unit Test	I	II	III	IV
Marks (%)	68	72	76	85

   Based on the above data, what is the probability that the student gets > 70% marks in a unit test?

   a. $\dfrac{3}{4}$

   b. $\dfrac{1}{2}$

   c. $\dfrac{1}{4}$

   d. 1

8. Forty vehicles (cars and school buses) are parked outside a school-gate. If the number of school buses is 18, what is the probability that a vehicle selected at random is a school bus?
   a. 0.45
   b. 0.55
   c. 0.5
   d. None of these

9. 15 bags of rice, each marked 10 kg, actually weighed as follows (in kg): 10.0, 9.9, 10.1, 10.01, 9.78, 9.89, 10.2, 10, 10.11, 9.99, 9.8, 9. 95, 10.1, 10.1, 10.07.
   The probability that any one of the bags selected at random weighs less than the marked weight is
   a. 0.6
   b. 0.4
   c. 0.13
   d. 0.66

10. For the probability P (E) of an event, which of the following is correct?
    a. $0 < P(E) < 1$
    b. $0 > P(E) > 1$
    c. $0 \geq P(E) \geq 1$
    d. $0 \leq P(E) \leq 1$

A die is tossed 500 times and the following outcomes are noted with their frequencies:

Outcome	1	2	3	4	5	6
Frequency	92	78	105	64	76	85

Based on the above data, state the Empirical Probability (in column B) for the questions asked in Column A.

Column A	Column B
11. Getting an even prime number	
12. Getting an odd number	
13. Number 6 appears	
14. Getting a number ≤ 3	
15. Getting the smallest number	

State whether each of the following statements is True or False.

16. If the probability of winning a game is 0.6, then the probability of losing it, is 0.4. ☐

17. If a coin is tossed 50 times, the experimental\ probability of getting a tail is always $\dfrac{1}{2}$. ☐

18. Empirical probability is the probability when an experiment is actually conducted. ☐

19. The sum of the probabilities of an experiment is 1. ☐

20. From a deck of 52 cards, one card is pulled out. The probability of the card having a red colour is $\dfrac{1}{13}$. ☐

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