CLASS 10 MATH TEST PAPER 12

Class 10 - Mathematics

Time Allowed: 50 minutes **Maximum Marks: 30**

Section A

1. Which of the following is **not** an A.P.? **[1]**

   a) 3, 3 +$\sqrt{2}$, 3 + 2$\sqrt{2}$, 3 + 3$\sqrt{2}$, ...
   b) $\frac{-1}{5}, \frac{-2}{5}, \frac{-3}{5}$,....
   c) – 1.2, 0.8, 2.8, ...
   d) $\frac{4}{3}, \frac{7}{3}, \frac{9}{3}, \frac{12}{3}$,....

2. The n^{th} term of the A.P. $\sqrt{2}, 2\sqrt{2}, 3\sqrt{2}$ ... is **[1]**

   a) $\sqrt{2n}$
   b) (n - 1)$\sqrt{2}$
   c) $n\sqrt{2}$
   d) $2\sqrt{n}$

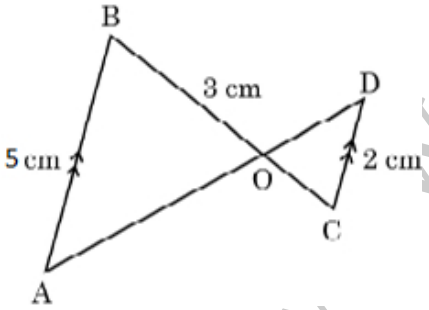
3. Three numbers in A.P. have the sum 30. What is its middle term? **[1]**

   a) 10
   b) 4
   c) 8
   d) 16

4. It is given that $\triangle ABC \sim \triangle DEF$. If $\angle A = 55^\circ, \angle E = 45^\circ$, then $\angle C$ is: **[1]**

   a) 80^o
   b) 55^o
   c) 45^o
   d) 90^o

5. In the given figure, AB || CD. If AB = 5 cm, CD = 2 cm and OB = 3 cm, then the length of OC is **[1]**



   a) $\frac{3}{5}$ cm
   b) $\frac{6}{5}$ cm
   c) $\frac{10}{3}$ cm
   d) $\frac{15}{2}$ cm

6. The value of $(1 + \tan^2\theta)(1 - \sin\theta)(1 + \sin\theta)$ is **[1]**

   a) $\sqrt{2}$
   b) 1
   c) 2
   d) 0

7. $\frac{\text{cosec}^2\ A - \cot^2\ A}{1 - \sin^2\ A}$ is equal to **[1]**

   a) $\sin^2$ A
   b) $\tan^2$ A
   c) $\sec^2$ A
   d) $\cos^2$ A

[1]

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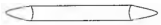
8. If $a\cos\theta + b\sin\theta = 4$ and $a\sin\theta - b\cos\theta = 3$, then $a^2 + b^2$ =

a) 25 b) 7

c) 22 d) 12

9. The shape of a gilli in the gilli-danda game is a combination of **[1]**



a) two cylinders b) a cone and a cylinder

c) two cylinders and a cone d) two cones and a cylinder

10. A solid is hemispherical at the bottom and conical above. If the surface areas of the two parts are equal, then the ratio of its radius and the height of its conical part is **[1]**

a) 1 : 1 b) $1 : \sqrt{3}$

c) $\sqrt{3} : 1$ d) 1 : 3

11. How many bricks each measuring (25 cm $\times$ 11.25 cm $\times$ 6 cm) will be required to construct a wall (8 m $\times$ 6 m $\times$ 22.5 cm)? **[1]**

a) 7200 b) 4800

c) 8000 d) 6400

12. The probability of throwing a number greater than 2 with a fair dice is: **[1]**

a) $\frac{5}{6}$ b) $\frac{2}{3}$

c) $\frac{1}{3}$ d) $\frac{1}{2}$

13. If the probability of a player winning a game is 0.79, then the probability of his losing the same game is: **[1]**

a) 0.21 b) 0.31

c) 1.79 d) 0.21%

14. Two dice are tossed simultaneously. The probability of getting odd numbers on both the dice is: **[1]**

a) $\frac{6}{36}$ b) $\frac{3}{36}$

c) $\frac{12}{36}$ d) $\frac{9}{36}$

15. The length of the shadow of a 20 m tall pole on the ground when the sun's elevation is 45° is **[1]**

a) 20 m b) $20\sqrt{2}$ m

c) 40 m d) $20\sqrt{3}$ m

16. If a vertical pole of length 7.5 m casts a shadow 5 m long on the ground and at the same time, a tower casts a shadow 24 m long, then the height of the tower is: **[1]**

a) 36 m b) 20 m

c) 40 m d) 60 m

17. The tops of two towers of heights x and y, standing on a level ground subtend angles of 30° and 60° respectively at the centre of the line joining their feet. Then, x : y is **[1]**

a) 1 : 3 b) 2 : 1

c) 1 : 2 d) 3 :1

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18. **Assertion (A):** Sum of natural number from 1 to 100 is 5050. **[1]**

Reason (R): Sum of n natural number is $\frac{n(n+1)}{2}$.

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.

19. **Assertion (A):** The value of $\sin\theta = \frac{4}{3}$ is not possible. **[1]**

Reason (R): Hypotenuse is the largest side in any right-angled triangle.

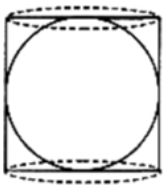
a) Both A and R are true and R is the correct explanation of A.

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.

20. **Assertion (A):** In the given figure, a sphere is inscribed in a cylinder. The surface area of the sphere is not equal to the curved surface area of the cylinder. **[1]**



Reason (R): Surface area of sphere is $4\pi r^2$

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.

21. **Assertion (A):** Card numbered as 1, 2, 3 ... 15 are put in a box and mixed thoroughly, one card is then drawn at random. The probability of drawing an even number is $\frac{1}{2}$. **[1]**

Reason (R): For any event E, we have $0 \leq P(E) \leq 1$

a) Both A and R are true and R is the correct explanation of A.

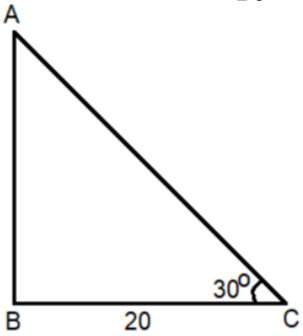
b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

22. **Assertion (A):** In the given fig if BC = 20 m then height AB is also 20 m **[1]**

Reason (R): $\tan\theta = \frac{AB}{BC}$, where θ is angle $\angle$ACB



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.

Section B

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23. **Read the following text carefully and answer the questions that follow:** **[4]**

While preparing for a competitive examination, Akbar came across a match-stick pattern based question. The pattern is given below:

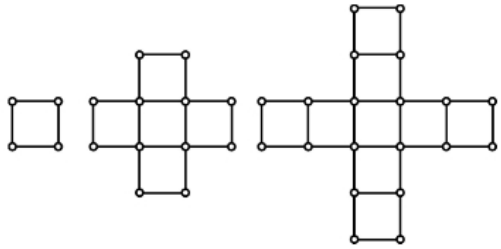


Fig. (1) **Fig. (2)** **Fig. (3)**

Based on the above information, answer the following questions:

i. Write first term and common difference of the A.P. formed by number of squares in each figure.

ii. Write first term and common difference of the A.P. formed by number of sticks used in each figure.

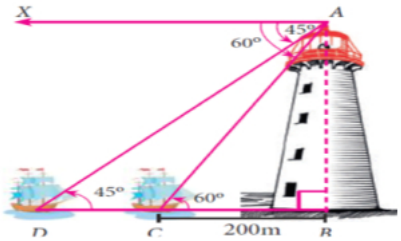
iii. a. How many squares are there in Fig. (10)? Also, write the number of sticks used in Fig. (10).

OR

b. If 88 sticks are used to make mth figure (Fig. (m)), find the value of m. How many squares are formed in this figure?

24. **Read the following text carefully and answer the questions that follow:** **[4]**

A man is watching a boat speeding away from the top of a tower. The boat makes an angle of depression of 60^o with the man's eye when at a distance of 200 m from the tower. After 10 seconds, the angle of depression becomes 45^o.



i. What is the approximate speed of the boat (in km/hr), assuming that it is sailing in still water? (1)

ii. How far is the boat when the angle is 45^o? (1)

iii. What is the height of tower? (2)

OR

As the boat moves away from the tower, angle of depression will decrease/increase? (2)

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