



EDUDEVS
Upskilling Education

CLASS - X
MATHEMATICS - STANDARD
SET A

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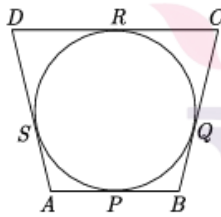
Section A

Section A consists of 20 questions of 1 mark each.

1. If $x = a$ and $y = b$ is the solution of the equations $x - y = 2$ and $x + y = 4$, then the values of a and b are, respectively

- (a) 3 and 5 (b) 5 and 3
(c) 3 and 1 (d) -1 and -3

2. In the given figure, a circle touches all the four sides of quadrilateral ABCD with $AB = 6$ cm, $BC = 7$ cm and $CD = 4$ cm, then length of AD is



- (a) 3 cm (b) 4 cm
(c) 5 cm (d) 6 cm

3. The quadratic equation $5x^2 - 3x + 1 = 0$ has

- (a) two distinct real roots
(b) two equal real roots
(c) no real roots
(d) more than 2 real roots

4. The area of a right angled triangle is 40 sq cm and its perimeter is 40 cm. The length of its hypotenuse is

- (a) 16 cm (b) 18 cm
(c) 17 cm (d) data insufficient

5. In the figure, PQ is parallel to MN. If $\frac{KP}{PM} = \frac{4}{13}$ and $KN = 20.4$ cm then find KQ

8. The real roots of the equation $x^{2/3} + x^{1/3} - 2 = 0$ are

(a) 1, 8 (b) -1, -8

(c) -1, 8 (d) 1, -8

9. Which term of an AP, 21, 42, 63, 84, ... is 210?

(a) 9th (b) 10th

(c) 11th (d) 12th

10. If the height and length of the shadow of a man are equal, then the angle of elevation of the sun is,

(a) 45° (b) 60°

(c) 90° (d) 120°

11. The area of a circular ring formed by two concentric circles whose radii are 5.7 cm and 4.3 cm respectively is (Take $\pi = 3.1416$)

(a) 44 sq. cm. (b) 66 sq. cm.

(c) 22 sq. cm. (d) 33 sq. cm.

12. The maximum number of zeroes a cubic polynomial can have, is

(a) 1 (b) 4

(c) 2 (d) 3

13. If triangle ABC is similar to triangle DEF such that $2AB = DE$ and $BC = 8$ cm then find EF.

(a) 16 cm (b) 14 cm

(c) 12 cm (d) 15 cm

14. A sphere is melted and half of the melted liquid is used to form 11 identical cubes, whereas the remaining half is used to form 7 identical smaller spheres. The ratio of the side of the cube to the radius of the new small sphere is

- (a) $(\frac{4}{3})^{1/3}$ (b) $(\frac{8}{3})^{1/3}$
(c) $(3)^{1/3}$ (d) 2

15. Ratio of volumes of two cones with same radii is

- (a) $h_1 : h_2$ (b) $s_1 : s_2$
(c) $r_1 : r_2$ (d) None of these

16. In the formu $\bar{x} = a + h \left(\frac{\sum f_i u_i}{\sum f_i} \right)$, for finding the mean of grouped frequency distribution, u_i is equal to

- (a) $\frac{x_i + a}{h}$ (b) $h(x_i - a)$
(c) $\frac{x_i - a}{h}$ (d) $\frac{a - x_i}{h}$

17. If the probability of an event is p , then the probability of its complementary event will be

- (a) $p - 1$ (b) p
(c) $1 - p$ (d) $1 - 1/p$

18. The distance of the point P (-3, -4) from the x-axis (in units) is

- (a) 3 (b) -3
(c) 4 (d) 5

In the question number 19 and 20, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correction option.

19. Assertion : Pair of linear equations : $9x + 3y + 12 = 0$, $8x + 6y + 24 = 0$ have infinitely many solutions.

Reason : Pair of linear equations $a_1x + b_1y + c_1 = 0$ and $a_2x + b_2y + c_2 = 0$ have infinitely many solutions, if

$$\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$$

(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.

20. Assertion : If the circumference of a circle is 176 cm, then its radius is 28 cm.

Reason : Circumference = $2\pi \times$ radius

(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).

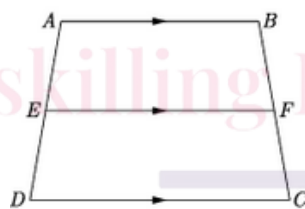
(c) Assertion (A) is true but reason (R) is false.

(d) Assertion (A) is false but reason (R) is true.

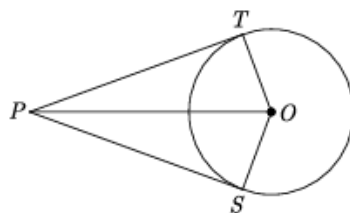
SECTION-B

Section B consists of 5 questions of 2 marks each.

21. In the given figure, if ABCD is a trapezium in which $AB \parallel CD \parallel EF$, then prove that $\frac{AB}{ED} = \frac{BF}{FC}$



22. In the given figure, from a point P, two tangents PT and PS are drawn to a circle with centre O such that $\angle SPT = 120^\circ$, Prove that $OP = 2PS$.

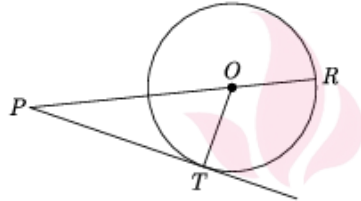


23. Find the value of $\cos 2\theta$, if $2 \sin \theta = \sqrt{3}$.

24. A chord of a circle of radius 10 cm, subtends a right angle at its centre. What is the length of the chord?

or

In figure, on a circle of radius 7 cm, tangent PT is drawn from a point P such that $PT = 24$ cm. If O is the centre of the circle, then what is the length of PR?



25. In a family of two children find the probability of having at least one girl

SECTION-C

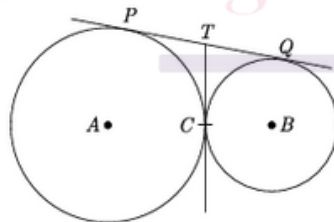
Section C consists of 6 questions of 3 marks each.

26. The length, breadth and height of a room are 8 m 50 cm, 6 m 25 cm and 4 m 75 cm respectively. Find the length of the longest rod that can measure the dimensions of the room exactly.

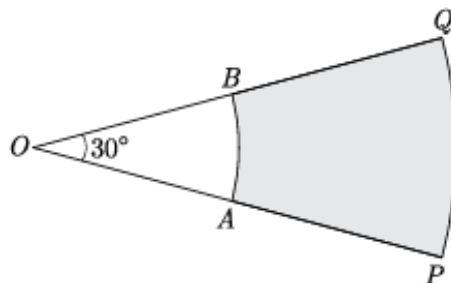
27. If triangle ABC is similar to triangle DEF such that $2AB = DE$ and $BC = 8$ cm then find EF

28. If θ be an acute angle and $5 \operatorname{cosec} \theta = 7$, then evaluate $\sin \theta + \cos^2 \theta - 1$

29. In given figure, two circles touch each other at the point C. Prove that the common tangent to the circles at C, bisects the common tangent at P and Q.



30. In Figure, PQ and AB are two arcs of concentric circles of radii 7 cm and 3.5 cm respectively, with centre O. If $\angle POQ = 30^\circ$, then find the area of shaded region



OR

A horse is tethered to one corner of a rectangular field of dimensions 70m × 52 m, by a rope of length 21 m. How much area of the field can it graze?

31. Two dice are tossed simultaneously. Find the probability of getting

(i) an even number on both dice.

(ii) the sum of two numbers more than 9.

or

In a family of three children, find the probability of having at least two boys.

SECTION-D

Section D consists of 4 questions of 5 marks each.

32. Determine graphically whether the following pair of linear equations :

$$3x - y = 7$$

$$2x + 5y + 1 = 0 \text{ has:}$$

(a) unique solution

(b) infinitely many solutions or

(c) no solution.

or

For Uttarakhand flood victims two sections A and B of class contributed Rs. 1,500. If the contribution of X-A was Rs. 100 less than that of X-B, find graphically the amounts contributed by both the sections.

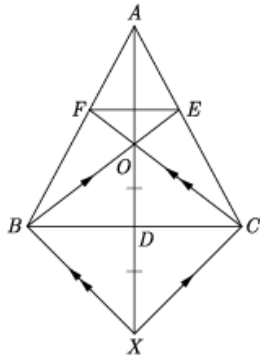
33. If the mid-point of the line segment joining A $\left[\frac{x}{2}, \frac{y+1}{2}\right]$ and B(x+1, y-3) is C(5,-2), find x, y.

34. In $\triangle ABC$, AD is a median and O is any point on AD. BO and CO on producing meet AC and AB at E and F respectively. Now AD is produced to X such that OD = DX as shown in figure

Prove that :

(1) EF || BC

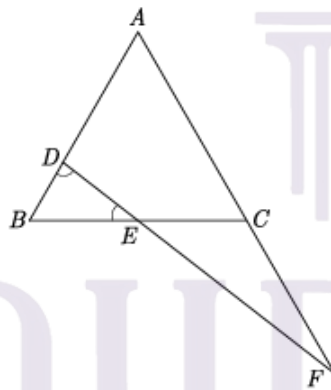
(2) AO : AX = AF : AB



or

In the figure, $\angle BED = \angle BDE$ and E is the mid-point of BC. Prove that

$$\frac{AF}{CF} = \frac{AD}{BE}$$



35. A milk tanker cylindrical in shape having diameter 2 m and length 4.2 m supplies milk to the two booths in the ratio of 3 : 2 . One of the milk booths has cuboidal vessel having base area 3.96 sq. m. and the other has a cylindrical vessel having radius 1 m. Find the level of milk in each of the vessels. Use $\pi = 22/7$

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