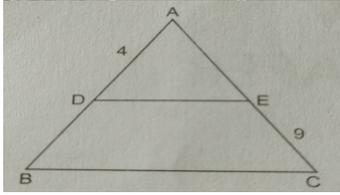
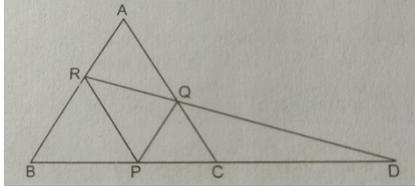


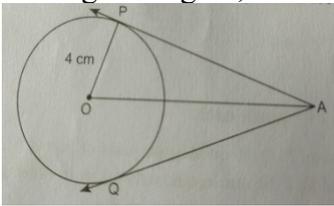
9. In the given figure, $DE \parallel BC$ and $BD = AE$, then value of BD is



- a. 9 b. 6 c. ± 6 d. 36
10. In the given figure, $PQ \parallel BA$ and $PR \parallel CA$. if $PD = 12$ cm, then $BD \times CD$ is equal to



- a. 12 cm b. 72 cm c. 48 cm d. 144 cm
11. In the given figure, AP and AQ are tangents to a circle of radius 4 cm. If $AP = 4\sqrt{3}$ cm, then $\angle PAQ$ is



- a. 40° b. 45° c. 60° d. 30°
12. The area of a square which can be inscribed in a circle of radius 6 cm, is
- a. 12 cm^2 b. 72 cm^2 c. 36 cm^2 d. 144 cm^2
13. Two cubes each of volume 27 cm^3 are joined end to end to form a solid. The surface area of resultant cuboid is
- a. 90 cm^2 b. 90 cm^3 c. 60 cm^2 d. 60 cm^3
14. The mean of given data is 7 and median 4, the mode of the data is
- a. 3 b. 11 c. Not possible d. 13
15. The arc of a circle is of length 5π cm and the sector it bounds has an area of $20\pi \text{ cm}^2$, the radius of the circle is
- a. 6 cm b. 10 cm c. 12 cm d. 8 cm

16. Median class for the distribution is

Class Interval	Frequency
0 - 5	3
5 - 10	9
10 - 15	2
15 - 20	5
20 - 25	7

- a. 12.5 b. 10 - 15 c. 15 - 20 d. 5 - 10
17. Two dice are rolled simultaneously. The probability of getting number greater than 4 on each die is
- a. $1/6$ b. $1/9$ c. $1/36$ d. $1/18$
18. If $\sec \alpha = \frac{2}{\sqrt{3}}$, then value of $\frac{3 \sin \alpha - 2 \cos \alpha}{3 \sin \alpha + 2 \cos \alpha}$ is
- a. $\frac{3\sqrt{3}-2}{3\sqrt{3}+2}$ b. $\frac{3-2\sqrt{3}}{3+2\sqrt{3}}$ c. $\frac{3+2\sqrt{3}}{3-2\sqrt{3}}$ d. $\frac{3\sqrt{3}+2}{3\sqrt{3}-2}$

DIRECTION: In the question number 19 and 20, a statement of assertion (A) is followed by a statement of Reason (R). Choose the correct option

19. Statement A (Assertion): $\sqrt{3}$ is an irrational number.

Statement R (Reason): square root of a prime number is always irrational

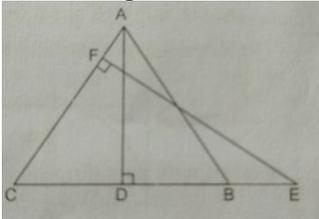
- a. Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A)

- b. Both assertion (A) and reason (R) are true and 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. Statement A (Assertion): In triangle ABC, $BC = 12$ cm. If D and E are midpoints of side AB and AC respectively, then coordinates of D and E can be $D(0, 3)$ and $E(6, 3)$.
Statement R (Reason): The line segment joining two sides of a triangle is parallel to the third and half of it.
- 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 and 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

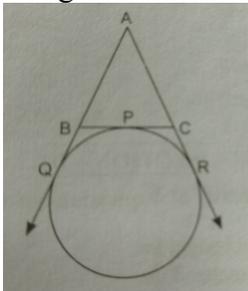
21. Solve for x and y: $0.2x + 0.3y = 1.3$; $0.4x + 0.5y = 2.3$
22. In the given figure below (Fig-22), ABC is an isosceles triangle in which $AB = AC$ and E is a point on the side CB produced such that FE is perpendicular to AC. If AD is perpendicular to CB, prove that $AB \times EF = AD \times EC$.

Fig-22



23. In the given figure (Fig-23), find perimeter of triangle ABC if $AR = 15$ cm.

Fig-23



24. The length of the hour hand of a clock is 3 cm. Find the area swept by it during the time 8.00 a.m. to 9.00 a.m.

OR

A chord of a circle of radius 10 cm subtends a right angle at the centre. Find the area of the minor segment.

25. If $7 \sin^2 \theta + \cos^2 \theta = 4$, find positive value of $\tan \theta$.

OR

If $3x = \operatorname{cosec} \theta$ and $\frac{3}{x} = \cot \theta$, evaluate $3(x^2 - \frac{1}{x^2})$

SECTION C

26. Show that $(\sqrt{2} + \sqrt{3})^2$ is irrational given that $\sqrt{6}$ is an irrational number.
27. If α and β are the zeroes of polynomial $3x^2 - 5x + 1$, then find the polynomial whose zeroes are 3α and 3β .
28. A part of monthly hostel charges is fixed and the rest depends upon the number of days one has taken food in the mess. When students A take food for 22 days, he has to pay Rs 1380 as hostel charge whereas a student B who takes food for 28 days pays Rs 1680 as hostel charges. Find the fixed charges

and cost of food per day.

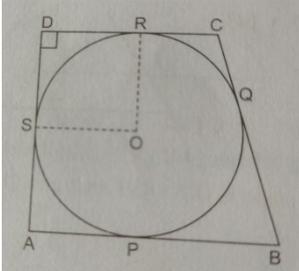
OR

A bag contains 94 coins of 5 rupees and 2 rupees denomination. If the total worth of these coins be Rs 308, find the number of coins of each kind.

29. In triangle ABC, $AB = x$ units, $AC = 7$ units and $\cos B = 0$. Evaluate

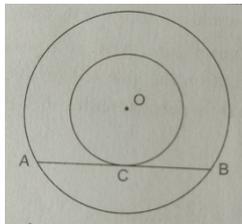
$$\sqrt{7-x} \tan C + \sqrt{7+x} \cot A - 14 \cos A + 21 \sin C + \sqrt{49+x^2} \cos B$$

30. A quadrilateral ABCD is drawn so that $\angle D = 90^\circ$, $BC = 38$ cm and $CD = 25$ cm. A circle is inscribed in the quadrilateral and it touches the side AB, BC, CD and DA at point P, Q, R and S respectively. If $BP = 27$ cm, find the radius of the inscribed circle.



OR

Chord AB of the bigger circle is tangent to concentric small circle at the point C. Show that C bisect AB.



31. A bag contains cards numbered 30 to 43. A card is drawn from the bag. Find the probability that

- i. Card drawn is a prime numbered card.
- ii. Card drawn is numbered divisible by 7.
- iii. Card drawn is numbered between 33 and 40.

SECTION D

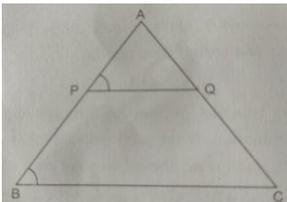
32. Some students planned a picnic. The total budget for food was Rs 2000. But 5 students failed to attend the picnic and thus the cost of the food for each member is increased by Rs 20. How many students attended the picnic and how much did each student pay for the food?

OR

A takes 6 days less than the time taken by B to finish a piece of work. If both A and B together can finish work in 4 days, find the time taken by A to finish the work.

33. State and prove Basic Proportionality Theorem. Using above, in the given figure,

$PQ \parallel BC$, $AP = x$, $PB = x - 2$, $AQ = x + 2$ and $QC = x - 1$, find the value of $3x - 5$.

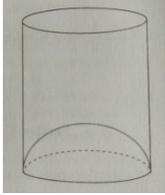


34. A company manufactures gas cylinders with hemispherical ends. The total length of the solid cylinder is 19 m and diameter of cylinder is 7 m. find the volume and surface area of the cylinder.

OR

A juice seller serves his customers using a glass as shown in figure. The inner diameter of cylindrical glass is about 5 cm but the bottom of the glass has a hemispherical raised portion, which reduces the

capacity of the glass. If the height of the glass is 10 cm, find the apparent capacity of the glass and its actual capacity. (use $\pi = 3.14$)

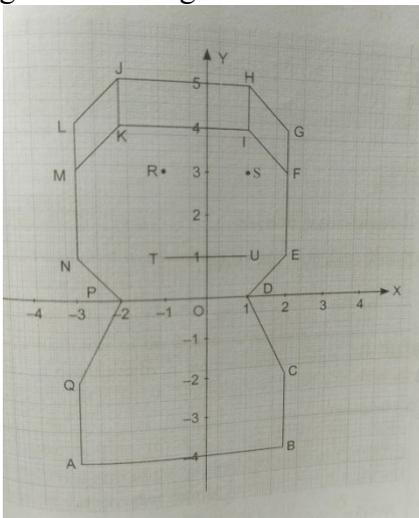


35. Find the median for the following data

Class Interval	Frequency
20 – 40	12
40 – 60	18
60 – 80	23
80 – 100	15
100 – 120	12
120 – 140	12
140 – 160	8

SECTION E

36. When we board metro, we come across beautiful morals on walls and pillars many in the form of geometrical figures. One student went home and drew imaginative figure as :



Using above figure answer the following:

- What are coordinates of eyes R and S?
- What is width of cap MKIFGHJL?
- What are coordinates of point where AB cuts the y-axis?

OR

What are coordinates of the point where KI cuts the y-axis?

37. Priya is preparing for the bicycle Marathon. Her racing bicycle has a device to calculate the number of kilometers she cycled. She decides to increase the distance she cycles everyday by a fixed number of kilometers.

- On the first day Priya cycled 8 kms and increase the distance covered each day by 3 km. How much distance she cycle on 5th day.
- On third day Priya cycled 11 km and on 8th day she cycled 26 km. How many kilometers she cycled on 1st day?

- iii. Priya plans to go on a cycle tour from Bangalore to Mangalore covering 425 km. She travels 20 km on day 1 and increases the distance covered each day by 5 km. In how many days will she reach her destination?

OR

Priya plans to go on cycle tour Bangalore to Surathkal covering 450 km. she travels 15 km on day 1 and increases the distance covered each day by 4 km. How many kilometer she cycled in 8 days?

38. Flight of plane are controlled by ATC and directions are given accordingly. ATC finds the angle of elevation of Aeroplan from point on the ground is 60° . After a flight of 50 seconds, it is observed that angle of elevation changes to 30° . The height of the plane remains constant at $5000\sqrt{3}$ m. Using the above information answer the following:



- i. Show the situation using the diagram.
ii. What is the speed of the plane in km/h when angle of elevation, changed from 60° to 30° ?
iii. What is the distance travelled by the plane in 50 seconds?

OR

It was observed that after 30 seconds angle of elevation changed to 45° . How much distance was travelled during this duration?