Self Evaluation

Mathematics Test 1

1 hour

25 scores

1) The difference between fifth term and tenth term of an arithmetic sequence is 20.
What is the difference between 10 th term and 20 th term of the same arithmetic sequence ?

(a) 10 (b) 20 (c) 40 (d) 60

1 score

2) The letters of the word $CACTUS$ are written in small paper pieces and placed in a box.One is taken from the box without looking into the box.

a) What is the probability of getting the letter C?

b) What is the probability of not getting C?

2 score

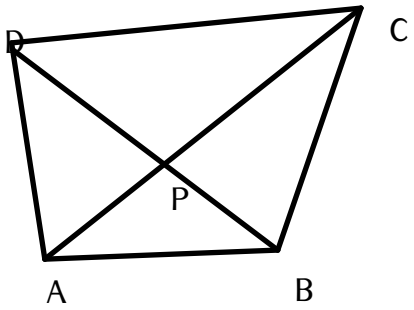
3) The heights of 12 members of a team are listed below.
143 cm , 157 cm , 138 cm, 160 cm, 140cm, 173 cm, 142 cm, 119 cm , 134 cm, 150 cm, 164 cm, 138 cm

a) What is the median height?

b) How many members are there above median height?

2 score

4) In the quadrilateral $ABCD$
$\angle A = 110^\circ$
$\angle C = 70^\circ$



$\angle B = 60^\circ$

a) What is the measure of $\angle D$?

b) Write the relation between PA, PB, PC, PD

c) If $PA = 4, PC = 9, PD = 3$ then what is PB?

3 score

5) The difference in the length of two adjacent sides of a rectangle is 2 and the area 35 square unit.

a) If the smaller side is x then what is the larger side?

b) Write a equation connecting the sides and area of the rectangle.

c) Calculate the sides and the perimetre of the rectangle.

3 score

6) In triangle ABC Length of the sides are : $AB = 8$cm, $AC = 8\sqrt{3}$, $BC = 16$.

a) What kind of triangle is this ?

b) What are the angles of this triangle?

c) What is the distance from A to the mid point of BC?

d) What is the radius of the circle passing through its vertices.

4 score

7) Draw the following geometric figure and answer the question

a) Two angles of a triangle are $50°$ and $75°$.A circle of radius 2.5cm touches its sides inside.

b) Mention the geometric concept used in your method of construction.

5 score

8) Manju has drawn a circle in geogebra axes mod.The vertices of the square $ABCD$ are on a circle with origin at the centre. If the point A is $(4, 4)$ then

a) What is the radius of the circle?

b) What are the coorinates of the points where the circle cut the axes?

c) What are the other vertices of the square?

d) Find the area of the square $ABCD$

5 score

SJ Self Evaluation Series

Answers

1) ⋆ We know that the difference between any two terms of an arithmetic sequence is a multiple of common difference.

⋆ $x_{10} - x_5 = 5d = 20$. So, $x_{20} - x_{10} = 10d = 40$

2) ⋆ There are 6 letters in the word $CACTUS$. The letter C repeats twice.
Probability of getting C is $\frac{2}{6} = \frac{1}{3}$

⋆ Probability of not getting C is $\frac{4}{6} = \frac{2}{3}$

3) a) The arrangement of the numerical data in the

ascending order is given below
$119, 134, 138, 138, 140, 142, 143, 150, 157, 160$
$164, 173$
$n = 12$, so 6 th and 7 th number comes in the middle. They are 142 and 143.
Median is $\frac{142+143}{2} = 142.5$

b) There are 6 members above median.

4) a) $\angle D = 360 - (110 + 70 + 60) = 360 - 240 = 120^\circ$

b) Since opposite angle sum is 180°. $ABCD$ is cyclic.
We can imagine a circle passing through the vertices.
$PA \times PC = PB \times PD$

c) $4 \times 9 = PB \times 3, PB = \frac{36}{3} = 12$cm

5) a) Since one side is x then other side is $x + 2$

b) $x(x + 2) = 35 \to x^2 + 2x = 35$

c) Add 1 on both sides to complete the square.
$x^2+2x+1 = 36, (x+1)^2 = 36, x+1 = 6, x = 5$
Sides are 5 and 7
perimetre $= 2(5 + 7) = 24$unit

6) Draw a rough diagram if necessary, mark the given measures. Sides are in the ratio $1 : \sqrt{3} : 2$

a) This is a right angled triangle.

b) $\angle A = 90^\circ, \angle B = 60^\circ, \angle C = 30^\circ$

c) Since BC is the hypotenuse of the right triangle the distance from A to the mid point of BC will be the radius of the circumcircle , which is half of the hypotenuse. Distance from A to the mid point of BC is 8.

7) ⋆ Draw a circle of radius 2.5cm with centre O

⋆ Divide the angle around O into $2 \times 50 = 100^\circ$ and $2 \times 75 = 150^\circ$ by drawing radii

⋆ Complete the triangle by joining the ends of the radii.

⋆ Angle formed by the arc at the centre is two times angle in the complement.

8) a) Radius of the circle is $4\sqrt{2}$

b) $(4\sqrt{2}, 0), (0, 4\sqrt{2}), (-4\sqrt{2}, 0), (0, -4\sqrt{2})$

c) Vertices of the square are $(4, 4), (-4, 4), (-4, -4), (4, -4)$

d) $AB = 8$. Area of the square is $8^2 = 64$ sq.unit

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