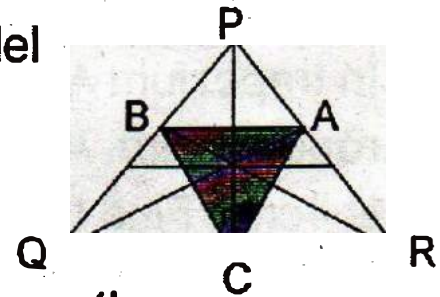


Note : i) Answer all questions.

ii) Read the questions carefully and answer them with proper understanding.

iii) Logical explanations should be given wherever necessary.

- 1 In the picture below, the lines parallel to each side of the shaded triangle through the opposite vertex are drawn to make the big triangle.



How many triangles in the picture have the same area as that of the shaded triangle. 2

- 2 In square ABCD, AC = 12cm. Find the length of a side of 2

- 3 From a fraction, a new fraction is formed by subtracting the same natural number to both the numerator and denominator. In what kind of fractions does this give a smaller number. 2

- 4 Find the smaller of each pair of fractions below. 2

i) $\frac{14}{17}$, $\frac{11}{18}$ ii) $\frac{13}{15}$, $\frac{11}{13}$

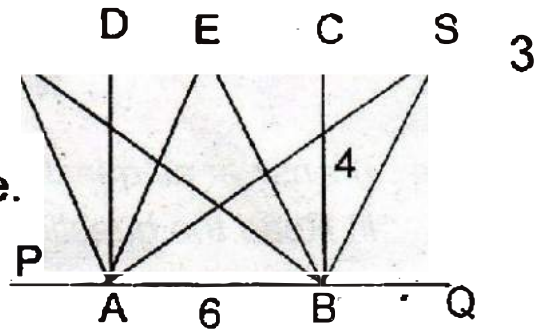
- 5 Draw a circle and triangle with one vertex at the centre of the circle and the other two on the circle. Draw another triangle of the same area with all three vertices on the circle. 2

- 6 Prove that the lengths of the perpendiculars from any point on the bisector of an angle to the sides are equal. 2

- 7 Write 4 fractions by adding 1 each to the numerator and

denominator of $\frac{6}{5}$. Write all the 5 fractions in ascending order.

- 8 In the figure, ABCD is a rectangle and $\triangle ACB$ is an isosceles triangle. If $AB = 6\text{cm}$ and $BC = 4\text{cm}$.



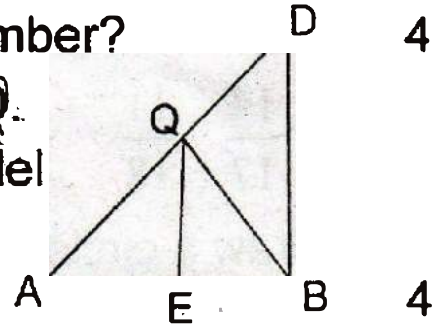
- i) Find the area of $\triangle AEB$. 3
- ii) Find the sum of the areas of $\triangle ASB$ and $\triangle ARB$. 3
- 9 In trapezium ABCD, AC and BD intersect at P. Draw a rough figure. Area of $\triangle ABP$ is 9cm^2 and area of $\triangle CPD$ is 4cm^2 . Find the area of trapezium ABCD. 3
- 10 Find the general principle of the pattern below and explain it using algebra. 3

$$1 - \frac{1}{3} = \frac{2}{3} = \frac{2}{2^2 - 1}, \quad 1 - \frac{1}{4} = \frac{3}{4} = \frac{3}{2^2 - 1}, \quad 1 - \frac{1}{8} = \frac{7}{8} = \frac{7}{2^3 - 1}, \quad 1 - \frac{1}{5} = \frac{4}{5} = \frac{4}{5^2 - 4^2 - 1}$$

- 11 Find fractions of denominators which are powers of 10 getting closer and closer to the fraction $\frac{3}{11}$.

- 12 The sum of a number and its square is one and a half times their difference. What is the number? 4

- 13 In the figure side AC is extended to Q. $BC = CD$. The line CE is drawn parallel to DB through C intersects AB at E.



Prove that line CE bisects $\angle C$

- 14 In quadrilateral ABCD, $\angle A = 80^\circ$, $\angle D = 120^\circ$, $AB = 5\text{cm}$, $AD = 3\text{cm}$ and $DC = 4\text{cm}$. Draw the quadrilateral. Draw a triangle of equal area. Necessary lengths may be measured. 5