IEM KOLKATA

MENSURATION
AREA & PERIMETER

Instructor: Akash Bhattacharya

Q1) (i)The length of a rectangle is increased by 40% and the breadth is decreased by 40%. What will be the change in the area?

(ii) By what percent should the breadth be increased to maintain the same area, if the decrease in length is 40%?

Q2) Ram was in a hurry to catch the bus. So, rather than walking from A to B and then from B to C along the given rectangular path, he decided to take a short cut and walked through the diagonal. This saved him a distance which was equal to half of the length of the longer side. Find the ratio between the longer and the shorter side.

(a) 3:4 (b) 4:3 (c) 11:12 (d) 12:11

Q3) In $\triangle PQR$, the length of side QR is 3cm less than twice the length of side PQ. The length of the side PR is 14 cm more than the length of side PQ. What is fhe length of the shortest side of $\triangle PQR$ if the perimeter of the triangle is 55cm?

(a) 14cm (b) 11 cm (c) 12cm (d) 10 cm

Q4) A square is of side 40cm. The midpoints are joined to form a smaller square. This process is repeated. What will be the perimeter of 8th square?

(a) $20\sqrt{2}$ (b) 20 (c) $10/\sqrt{2}$ (d) $10\sqrt{2}$

Q5) P & Q work together to tile a floor of dimension of 16m$\times$12m, each tile being 1m$\times$0.5m. P can tile at a rate of 50 per hour and Q at 60 per hour. What is the time (in hrs) taken to complete, if they work together?

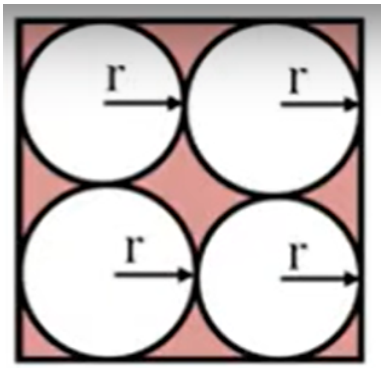
(a) $3\frac{27}{55}$ (b) $3\frac{7}{33}$ (c) $3\frac{7}{15}$ (d) $13\frac{1}{2}$

Q6) How many minimum number of square tiles are needed to cover a rectangular floor of dimension 5.25m and 5.10m completely?

Q7) The perimeter of a rectangular garden of length 100m is 340 metres. A flower bed 5 metre wide is built around it. A gardener works for two days on this flower bed and charges ₹8 per square metre. His fixed charges per day are ₹300. What will be the total money paid to the gardener at the end of two days, on completion of the work?

Q8) A rectangular garden 100m by 80m has two mutually perpendicular footpaths running across the breadth. The width of both the footpath is 10m. Find the cost of gravelling the footpath at ₹35 per sq meter.

Q9) Find the area of the shaded portion of the given figure. Given, $r = 7$cm.



Q10) An equilateral triangle is drawn on the diagonal of a square of side 'a'. What is the relation between the areas of the triangle and the square?

Q11) The sides of a triangle are 3 cm, 4 cm and 5 cm. Find the area and the perimeter of the triangle formed by joining the mid points of the three sides of the original triangle.

Q12) If the length of the median of an equilateral triangle is **m**. Find its area.

Q13) Four horses are tied with the help of a 14 m long rope, at the corners of a rectangular field 60m×45m. The horses can't reach other. Find the area the horses leave ungrazed.

Q14) The product of 3 sides of a triangle is 2400cm^3 & the radius of the circumcircle is 12cm. Find the area of the triangle.
(a) 50cm^2 (b) 40cm^2 (c) 20cm^2 (d) 400cm^2

Q15) Find the area of the triangle whose coordinates are A(2,4), B(3,-1), C(-3,3)?
(a) 13 sq units (b) 12 sq units (c) 10 sq units (d) 14 sq units