FATHIMA MATRICULATION HIGHER SECONDARY SCHOOL – KOVILUR

MATHS – QUESTION BANK

GEOMETRY QUESTIONS AND GRAPH(8 MARK)

Example 4.10 Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{3}{5}$ of the corresponding sides of the triangle PQR (scale factor $\frac{3}{5}$ < 1).

Example 4.11 Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{7}{4}$ of the corresponding sides of the triangle PQR (scale factor $\frac{7}{4}$ > 1).

EXERCISE 4.1

10. Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{2}{3}$ of the corresponding sides of the triangle PQR (scale factor $\frac{2}{3}$ < 1).

11. Construct a triangle similar to a given triangle LMN with its sides equal to $\frac{4}{5}$ of the corresponding sides of the triangle LMN (scale factor $\frac{4}{5}$< 1).

12. Construct a triangle similar to a given triangle ABC with its sides equal to $\frac{6}{5}$ of the corresponding sides of the triangle ABC (scale factor $\frac{6}{5}$ > 1).

13. Construct a triangle similar to a given triangle PQR with its sides equal to $\frac{7}{3}$ of the corresponding sides of the triangle PQR (scale factor $\frac{7}{3}$ > 1).

Example 4.17 Construct a ΔPQR in which PQ = 8 cm, ∠ = R 60° and the median RG from R to PQ is 5.8 cm. Find the length of the altitude from R to PQ.

Example 4.18 Construct a triangle PQR such that QR = 5 cm, ∠ = P 30° and the altitude from P to QR is of length 4.2 cm.

Example 4.19 Draw a triangle ABC of base BC = 8 cm, ∠ = A 60o and the bisector of ĐA meets BC at D such that BD = 6 cm.

EXERCISE 4.2

11. Construct a ΔPQR which the base PQ = 4.5 cm, ∠ = R 35o and the median from R to RG is 6 cm.

12. Construct a ΔPQR in which QR = 5 cm, ∠ = P 40° and the median PG from P to QR is 4.4 cm. Find the length of the altitude from P to QR.

13. Construct a ΔPQR such that QR = 6.5 cm, ∠ = P 60° and the altitude from P to QR is of length 4.5 cm. 14. Construct a DABC such that AB = 5.5 cm, ∠ = C 25° and the altitude from C to AB is 4 cm.

15. Draw a triangle ABC of base BC = 5.6 cm, ∠ = A 40° and the bisector of ĐA meets BC at D such that CD = 4 cm.

16. Draw a triangle PQR such that PQ = 6.8 cm, vertical angle is 50° and the bisector of the vertical angle meets the base at D where PD = 5.2 cm.

Example 4.29 Draw a circle of radius 3 cm. Take a point P on this circle and draw a tangent at P.

Example 4.30 Draw a circle of radius 4 cm. At a point L on it draw a tangent to the circle using the alternate segment.

Example 4.31 Draw a circle of diameter 6 cm from a point P, which is 8 cm away from its centre. Draw the two tangents PA and PB to the circle and measure their lengths.

EXERCISE 4.4

11. Draw a tangent at any point R on the circle of radius 3.4 cm and centre at P ?

12. Draw a circle of radius 4.5 cm. Take a point on the circle. Draw the tangent at that point using the alternate segment theorem.

13. Draw the two tangents from a point which is 10 cm away from the centre of a circle of radius 5 cm. Also, measure the lengths of the tangents.

14. Take a point which is 11 cm away from the centre of a circle of radius 4 cm and draw the two tangents to the circle from that point.

15. Draw the two tangents from a point which is 5 cm away from the centre of a circle of diameter 6 cm. Also, measure the lengths of the tangents.

16. Draw a tangent to the circle from the point P having radius 3.6 cm, and centre at O. Point P is at a distance 7.2 cm from the centre.

GRAPH QUESTIONS

Example 3.51 Discuss the nature of solutions of the following quadratic equations. (i) x^2+x-12=0

(ii) $x^2 - 8x + 16 = 0$ $(iii) x^2 + 2x + 5 = 0.$

Example 3.52 Draw the graph of y =$2x^2$ and hence solve $2x^2 - x - 6 = 0$

Example 3.53 Draw the graph of y =x^2+4x+3 and hence find the roots of x^2+x+1=0

Example 3.54 Draw the graph of y = x^2+x-2and hence solve x^2+x-2=0.

Example 3.55 Draw the graph of y =x^2-4x+3and use it to solve x^2 -6x+9=0

Exercise 3.16 1.

1.Graph the following quadratic equations and state their nature of solutions. (i) x^2-9x+20=0 (ii)x^2-4x+4=0 (iii) x^2+x+7=0 (iv) x^2-9=0(v) x^2 -6x+9=0 (vi) (2x-3)(x+2)=0

2. Draw the graph of y=x^2-4 and hence solve x^2-x-12=0

3. Draw the graph of y =x^2+x and hence solve x^2 +1=0

4. Draw the graph of $y = x^2+3x+2$ and use it to solve $x^2 +2x+1=0$

5. Draw the graph of $y = x^2+3x-4$ and hence use it to solve $x^2 +3x-4=0$

6. Draw the graph of $y = x^2-5x-6$ and hence solve $x^2-5x-14=0$

7. Draw the graph of $y = 2x^2-3x-5$ and hence solve $2x^2-4x-6=0$

8. Draw the graph of $y = (x-1)(x+3)$ and hence solve $x^2-x-6=0$

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GRAPH QUESTIONS(8 MARK)[REDUCED SYLLABUS]

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EXERCISE 3.16

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2. Draw the graph of y=x^2-4 and hence solve x^2-x-12=0

3. Draw the graph of y =x^2+x and hence solve x^2 +1=0

4. Draw the graph of y =x^2+3x+2 and use it to solve x^2 +2x+1=0

5. Draw the graph of y =x^2+3x-4 and hence use it to solve x^2 +3x-4=0

6. Draw the graph of y =x^2-5x-6 and hence solve x^2-5x-14=0

7. Draw the graph of y =$2x^2$-3x-5 and hence solve $2x^2$-4x-6=0

8. Draw the graph of y =(x-1)(x+3) and hence solve x^2-x-6=0

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