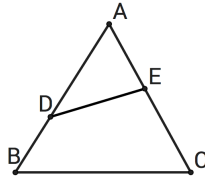
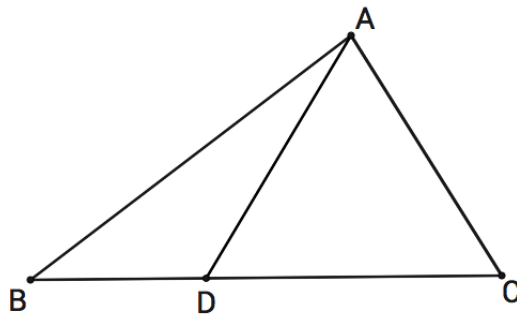


1) **Exercise 1**

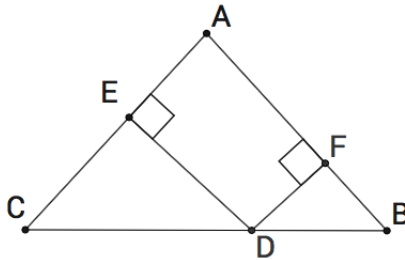
In the diagram, $\angle ABC = \angle AED$, $AD = 3$, $DB = 2$ and $AE = 2$. Determine the length of EC .



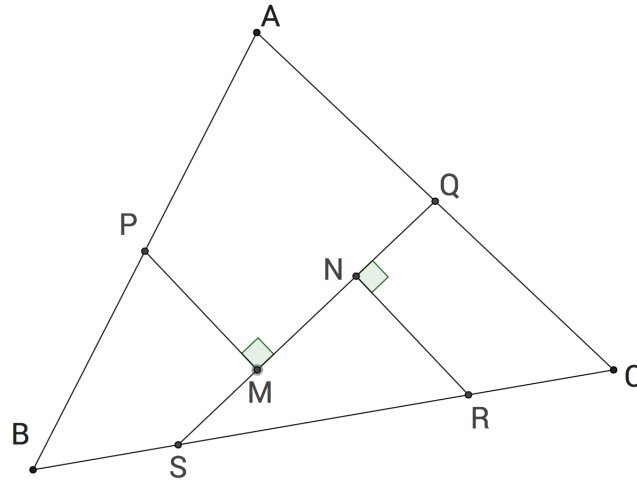
2) In triangle ABC , D is a point on BC . Further, $AB = 35$, $BD = 11$ and $AD = AC = 31$. Determine the length of DC .



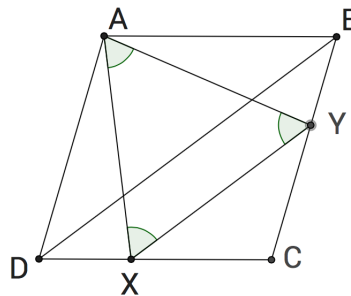
3) In triangle ABC , $AC = AB = 25$ and $BC = 40$. Point D is a point chosen on BC . From D , perpendiculars are drawn to meet AC at E and AB at F . Determine the value of $DE + DF$.



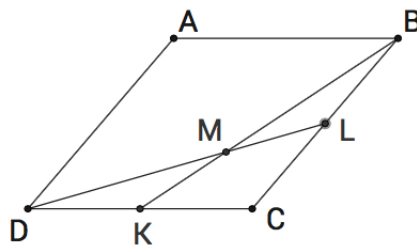
- 4) Triangle ABC is an isosceles triangle in which $AB = AC = 10$ and $BC = 12$. The points S and R are on BC such that $BS : SR : RB = 1 : 2 : 1$. The midpoints of AB and AC are P and Q respectively. Perpendiculars are drawn from P and R to meet SQ at M and N respectively. What is the length of MN ?



- 5) The lengths of the diagonals AD and BC in rhombus $ABCD$ are 6 and 8 respectively. Triangle AXY is equilateral and line XY is parallel to diagonal BC . Determine the length of the altitude of triangle AXY .

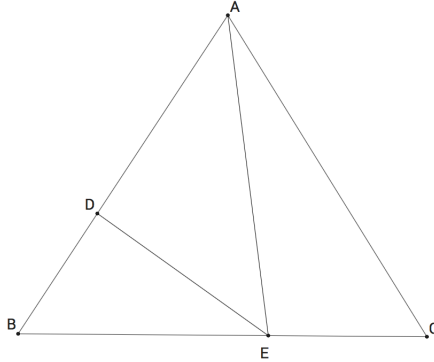


- 6) In the diagram, $ABCD$ is a rhombus with K the midpoint of DC and L the midpoint of BC . Segments DL and BK intersect at M . Determine the fraction of the area of quadrilateral $KMLC$ is of the area of the rhombus $ABCD$.



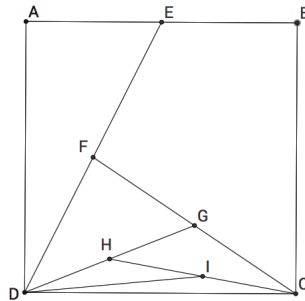
7) **Exercise 3:**

In triangle ABC , point D is on AB such that AD is twice as long as DB and E is a point on BC such that BE is twice as long as EC . If the area of triangle ABC is 90 units squared, what is the area of triangle ADE in units squared?

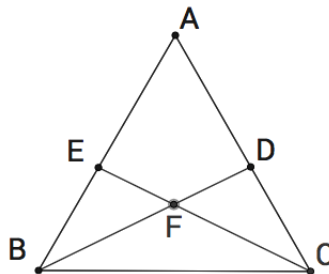


8) **Exercise 2**

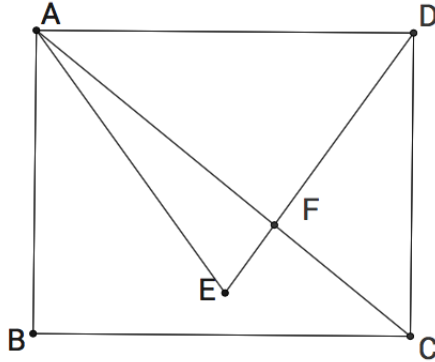
Square $ABCD$ has an area of 4. The point E is the midpoint of AB . Similarly, F, G, H and I are the midpoints of DE, CF, DG and CH respectively. What is the area of triangle IDC ?



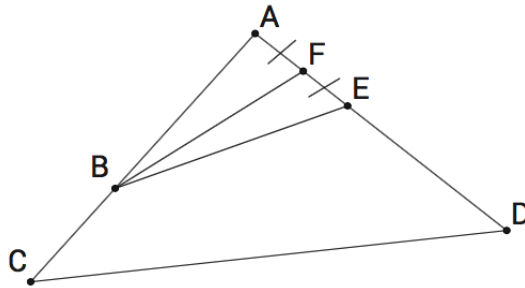
9) In the diagram, $AB = AC = 12\text{cm}$ and $AE = AD = 8\text{cm}$. The area of quadrilateral $AEFD$ is 8cm^2 . What is the area of triangle ABC in square centimetres?



- 10) The diagram shows a square $ABCD$ with unit length. Triangle ADE is equilateral. The diagonal AC of square $ABCD$ intersects line segment DE at the point F . What is the area of triangle AFD ?



- 11) Below, F is the midpoint of AE , $AE = \frac{1}{2}ED$, $AB = 9$ and $BC = 3$. If the area of quadrilateral $BEDC$ is 72, then what is the area of triangle BFE ?



- 12) In the diagram, triangle ABC is equilateral with sides of length 2. Line segments CD and EB are medians and $FGHI$ is a square. Determine the ratio of the area of square $FGHI$ to triangle ABC .

