

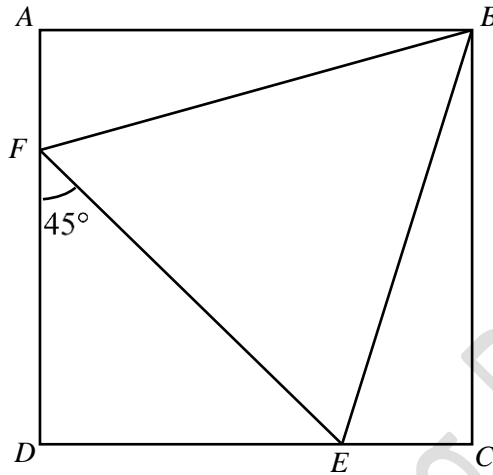
EQUITY

LEARNING PLACE

Elementary Math Topical (Similar and Congruent Triangle)

Question 1

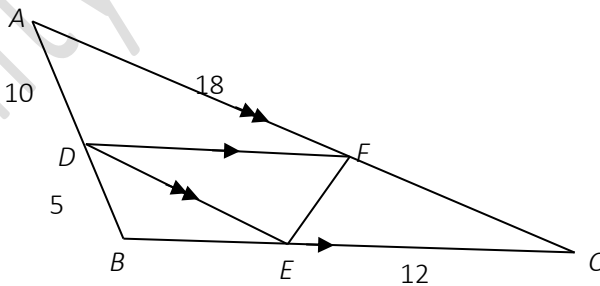
In the diagram, ABCD is a square and angle DFE = 45°.



- a) Prove that $AF = EC$.
- b) Prove that triangle ABF is congruent to triangle CBE .

Question 2:

In the diagram, DF is parallel to BC and AC is parallel to DE . Given that $DB = 5$ cm, $AD = 10$ cm, $EC = 12$ cm and $AF = 18$ cm.



- a) State two triangles that are similar to $\triangle BDE$.
- b) Prove that $\triangle CEF$ is congruent to $\triangle DFE$.
- c) Calculate the length of BC .

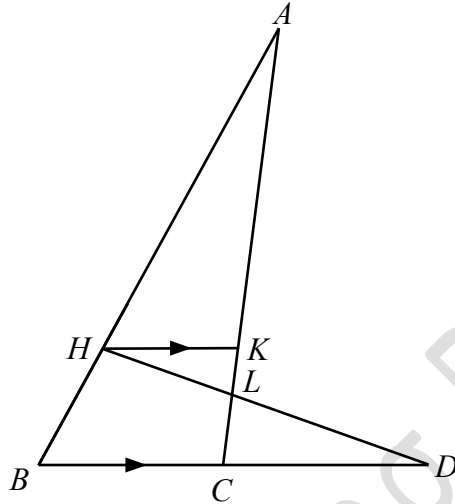
EQUITY

LEARNING PLACE

Elementary Math Topical (Similar and Congruent Triangle)

Question 3:

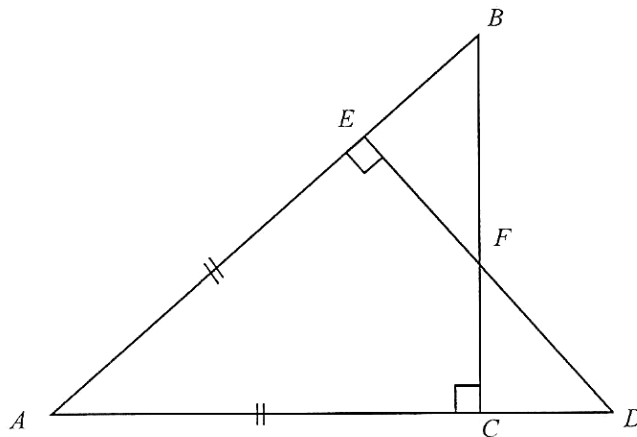
In the diagram below, $AH = BD$, $HK = HB$, and HK is parallel to BD .



- Name the triangle which is congruent to $\triangle AHK$.
- Hence, prove that $\triangle AHL$ is similar to $\triangle DCL$.
- Given that the $HL:CL = 3:2$, find the length of AH given that $DC = 5.5$ cm.

Question 4:

In the diagram, $AE = AC$ and triangles ACB and AED are right angled triangles. Show that triangles ACB and AED are congruent.



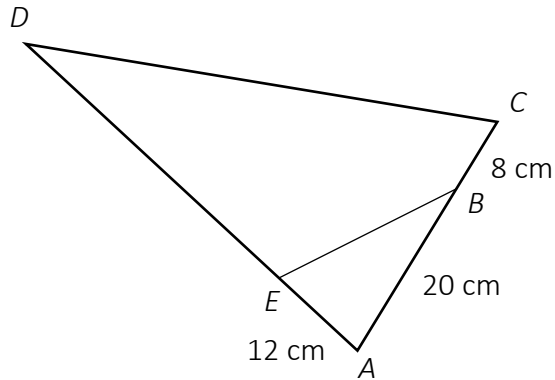
EQUITY

LEARNING PLACE

Elementary Math Topical (Similar and Congruent Triangle)

Question 5:

In the diagram, $AE = 12$ cm, $BC = 8$ cm, $AB = 20$ cm and $\angle AEB = \angle ACD$



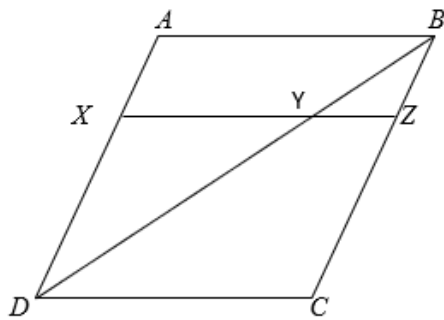
a) Show that $\triangle AEB$ is similar to $\triangle ACD$.

b) Find the length of DE .

c) Find $\frac{\text{Area of } \triangle AEB}{\text{Area of quadrilateral } BCDE}$

Question 6:

In the figure, $ABCD$ is a parallelogram. It is given that XZ is parallel to AB . BYD and XYZ are straight lines and $BC = 3BZ$.



a) Identify two triangles similar to $\triangle BYZ$.

b) Calculate $\frac{YD}{YB}$

c) $\frac{\text{area of } \triangle BYZ}{\text{area of } \triangle CDYZ}$

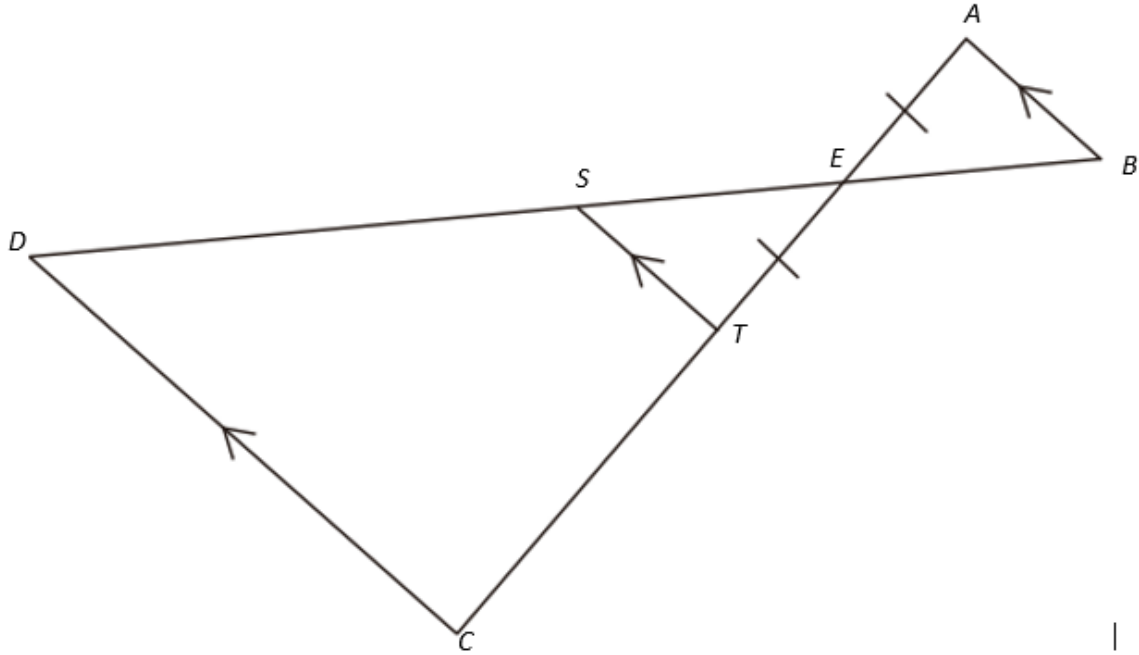
EQUITY

LEARNING PLACE

Elementary Math Topical (Similar and Congruent Triangle)

Question 7:

AEC and BED are straight lines such that $AE = TE$ and line AB is parallel to the lines ST and DC .



a) Show that triangles ABE and TSE are congruent.

The length of CT is twice the length of TE and $DS = 23$ cm.

b) Calculate the length of ES .

c) Find the value of $\frac{\text{Area of } \triangle EST}{\text{Area of } \triangle EDC}$.

d) Given that triangle ABE has an area of 20 cm^2 . Calculate the area of the quadrilateral $STCD$.

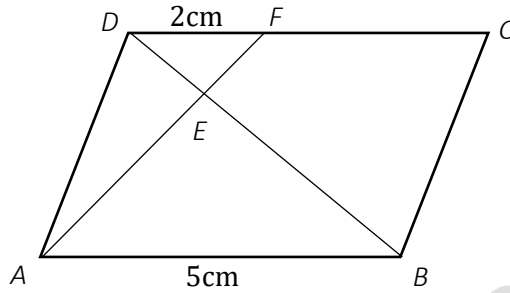
EQUITY

LEARNING PLACE

Elementary Math Topical (Similar and Congruent Triangle)

Question 8:

$ABCD$ is a parallelogram and E is a point on BD . The line AE produced meet CD at F . $DF = 2\text{cm}$ and $AB = 5\text{cm}$.



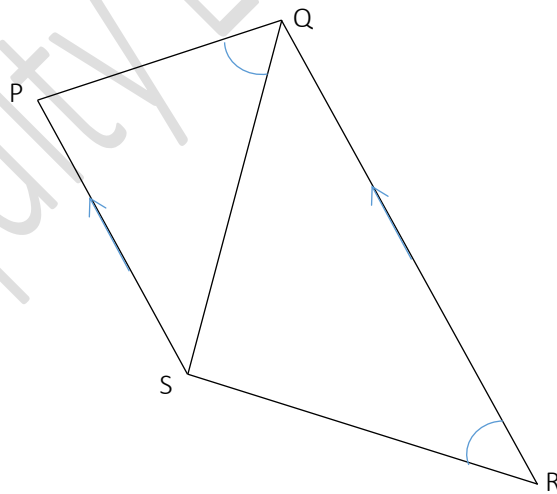
a) Show that triangles DEF and BEA are similar.

b) Find the value of $\frac{\text{Area of } \triangle DEF}{\text{Area of } \triangle BEA}$

c) Find the value of $\frac{\text{Area of } \triangle DEF}{\text{Area of } \triangle DEA}$

Question 9:

In the diagram, PS is parallel to QR and angle $PQS =$ angle SRQ .



a) Explain why triangles PQS and SRQ are similar.

b) Given that $PS = 5\text{ cm}$, $PQ = 6\text{ cm}$, $QS = 8\text{ cm}$ and $QR = 13\text{ cm}$, calculate SR .

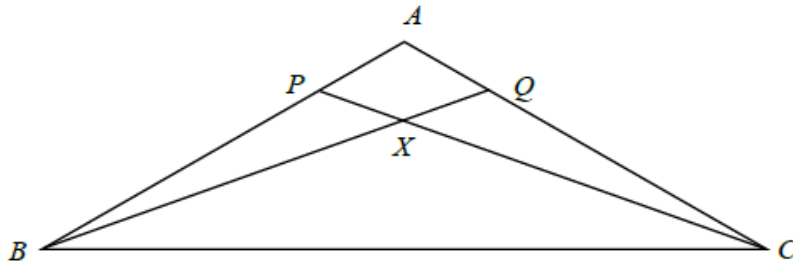
EQUITY

LEARNING PLACE

Elementary Math Topical (Similar and Congruent Triangle)

Question 10:

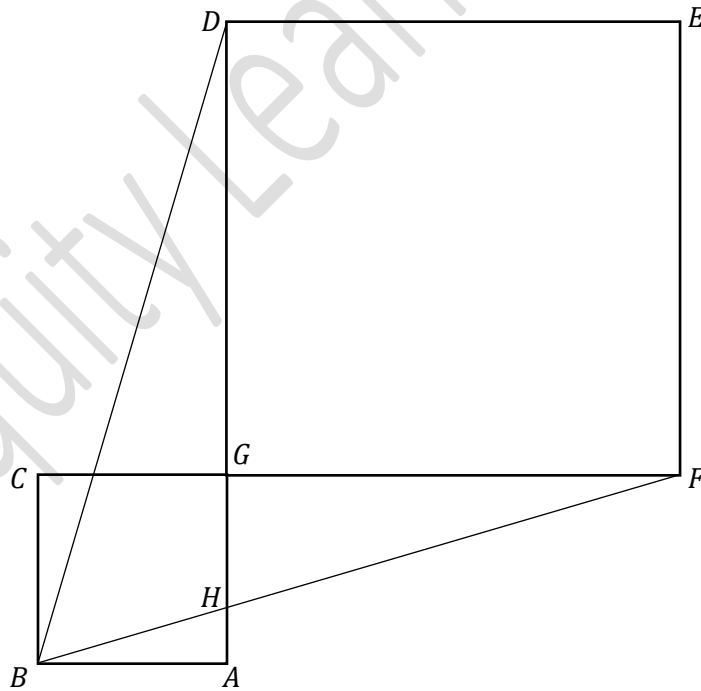
Triangle ABC is an isosceles triangle with $AB = AC$. P and Q are points on the line AB and AC respectively such that $PA = QA$. The ratio of $AQ : AC$ is $1 : 4$. The lines BQ and CP intersect at the point X .



- Show that triangle BXC is an isosceles triangle.
- Given that the area of triangle $ABC = 45 \text{ cm}^2$, find the area of triangle BCQ .

Question 11:

In the diagram, $ABCG$ and $DEFG$ are squares and $\angle AGF = 90^\circ$



- Prove that triangle BCF is congruent to triangle BAD .
- Hence, prove that triangle FGH is similar to triangle DAB

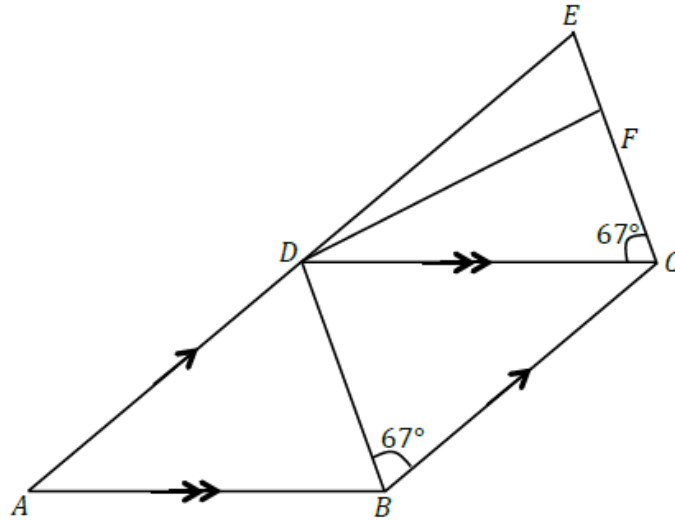
EQUITY

LEARNING PLACE

Elementary Math Topical (Similar and Congruent Triangle)

Question 12:

In the diagram below, $ABCD$ is a rhombus. AD is produced to point E and EFC is a straight line. It is given that $\angle DBC = \angle DCE = 67^\circ$ and $EC = 3EF$.



a) Name one triangle which is congruent to triangle EDC , Explain your reasons clearly.

Find the numerical value of

b) $\frac{\text{Area of triangle } EDF}{\text{Area of triangle } EDC}$

c) $\frac{\text{Area of triangle } DFC}{\text{Area of quadrilateral } ABCD}$