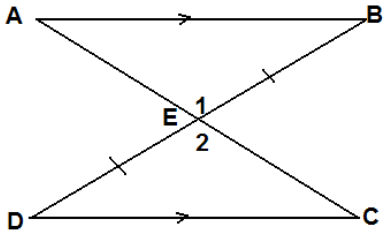
Grade 10_CAPS Curriculum

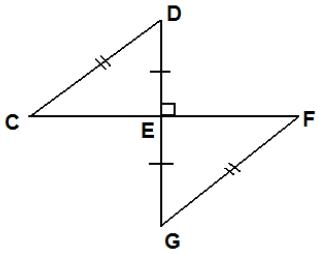
10.7 Euclidean Geometry - Triangles

1.1 Congruency

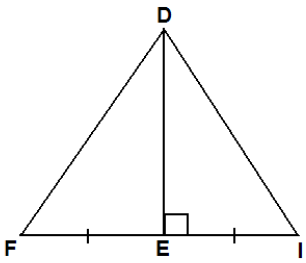
(a) Prove $\Delta ABE \equiv \Delta CDE$



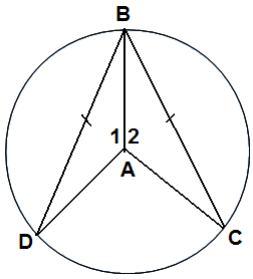
(b) Prove $\Delta CDE \equiv \Delta FGE$



(c) Prove $\Delta DEF \equiv \Delta DEI$

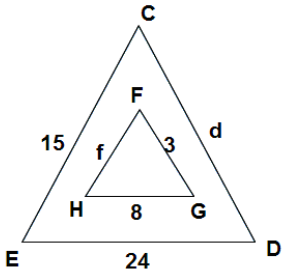


(d) Prove $\hat{A}_1 = \hat{A}_2$

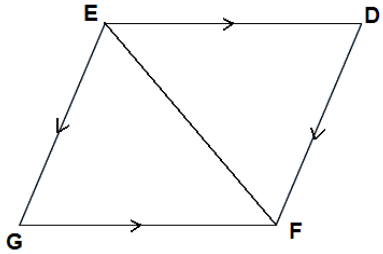


1.2 Similarity

(a) If $\Delta CDE \text{ /// } \Delta FGH$ calculate the value(s) of d and f.

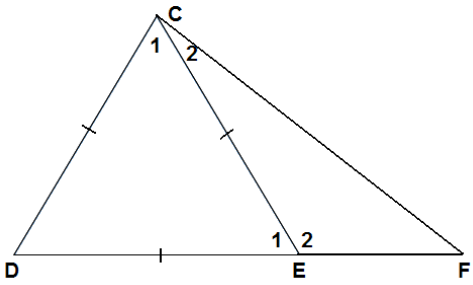


(b) Prove that ΔDEF and ΔGFE will be similar.



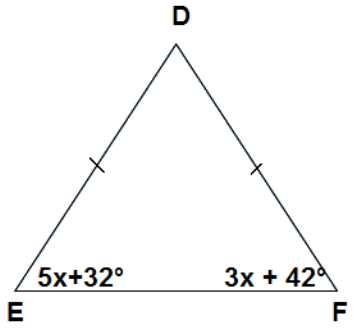
1.3 Geometric properties of triangles.

(a) $E\hat{C}F = 44°$, calculate



- $\hat{D}$
- $\hat{E}_2$
- $\hat{F}$

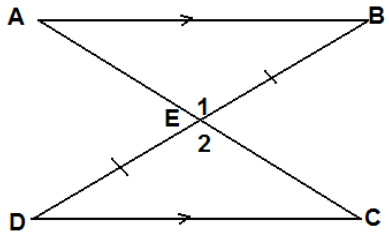
(b) Calculate the value of x.



MEMO

1.1 Congruency [8.3.6.1; 8.3.6.2]

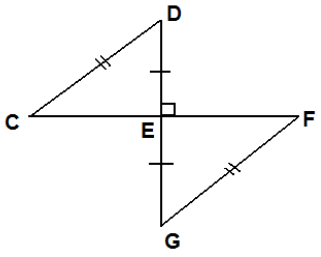
(a) Prove that $\Delta ABE \equiv \Delta CDE$



In ΔABE and ΔCDE:

BE = DE	Given
$\hat{A} = \hat{C}$	Alternate <'s
$\hat{B} = \hat{D}$	Alternate <'s
or $\hat{E}_1 = \hat{E}_2$	Vertically opp
$\therefore \Delta ABE \equiv \Delta CDE$	S, A, A

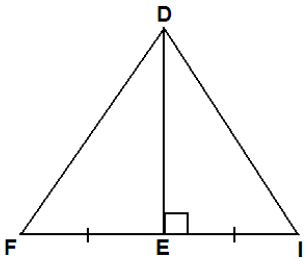
(b) Prove $\Delta CDE \equiv \Delta FGE$



In ΔCDE and ΔFGE:

CD = FG	Given
DE = EG	Given
$C\hat{E}D = F\hat{E}G$	$DG \perp CF$
$\therefore \Delta CDE \equiv \Delta FGE$	R, H, S

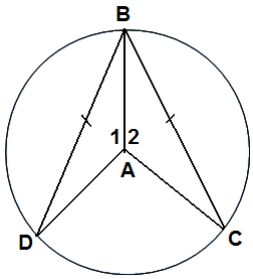
(c) Prove that $\Delta DEF \equiv \Delta DEI$



In ΔDEF and ΔDEI:

EF = EI	Given
DE = DE	Common
$F\hat{E}D = I\hat{E}D$	DE $\perp$ FI
$\therefore \Delta DEF \equiv \Delta DEI$	S, A, S

(d) Prove that $\hat{A}_1 = \hat{A}_2$

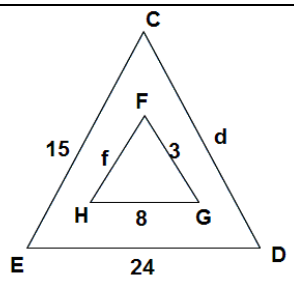


In ΔABD and ΔABC:

DB = CB	Given
AB = AB	Common
AD = AC	Radii
$\therefore \Delta DEF \equiv \Delta DEI$	S, S, S

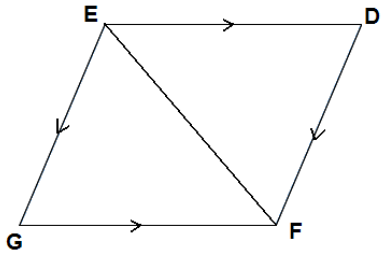
1.2 Similarity [8.3.7.1; 8.3.7.2]

(a) If ΔCDE /// ΔFGH calculate the value(s) of d and f.



$$\frac{CD}{FG}=\frac{ED}{HG} \qquad \frac{HF}{CE}=\frac{HG}{ED}$$
$$\frac{d}{3}=\frac{24}{8} \qquad \frac{f}{24}=\frac{8}{24}$$
$$d=9 \qquad f=8$$

(b) Prove that ΔDEF and ΔGFE will be similar.



$\hat{D}=\hat{G}$ Opp <'e in //^{m}

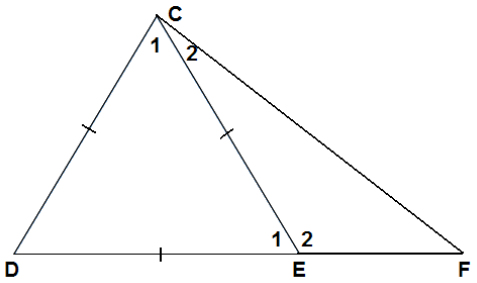
$D\hat{E}F=G\hat{F}E$ Alternate <'e ED//GF

$E\hat{F}D=G\hat{E}F$ Alternate <'e, GE//DF

$\therefore \Delta$DEF /// ΔGFE < , < , <

1.3 Geometric properties of triangles. [8.3.4.1; 8.3.4.2]

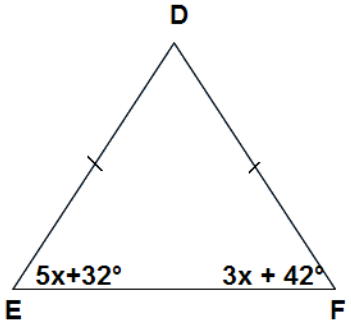
(a) E$\hat{C}$F = 44°, calculate



- $\hat{D} = 60°$ Equilateral Δ
- $\hat{E}_2 = 120°$ Outside < = sum interior <'e
- $\hat{F} = 180° - 120° - 44°$ Interior<'e of Δ

  $\hat{F} = 16°$

(b) Calculate the value of x.



$5x + 32° = 3x + 42°$

$5x - 3x = 42° - 32°$

$2x = 10°$

$x = 5°$