

# Fundamental Geometry and Similarity

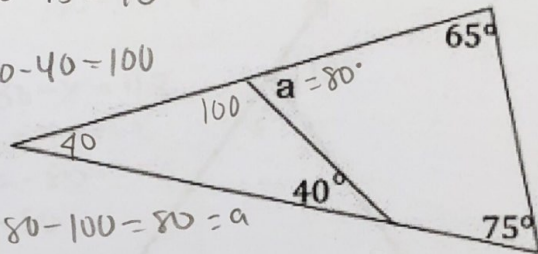
Practice Problems

1) What is the value of a?

$$180 - 65 - 75 = 40$$

$$180 - 40 - 40 = 100$$

$$180 - 100 = 80 = a$$



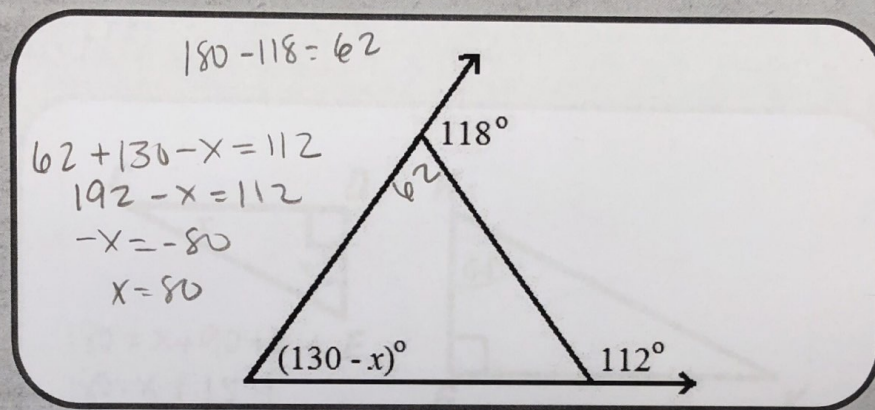
a)  $a = 40^\circ$

b)  $a = 80^\circ$

c)  $a = 90^\circ$

d)  $a = 140^\circ$

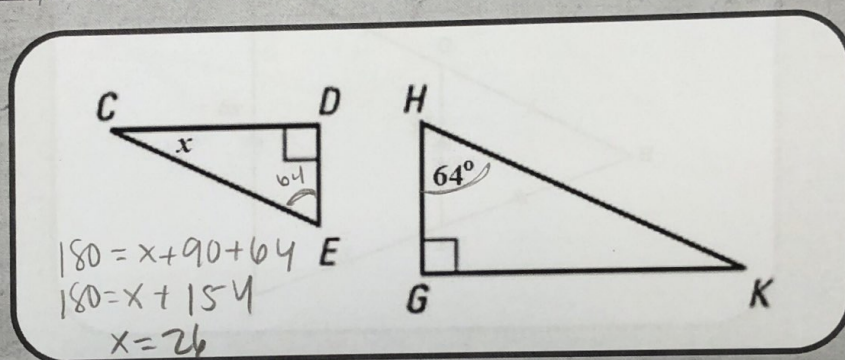
2) What is the value of  $x$ ?



- a)  $x = 50^\circ$
- b)  $x = 80^\circ$
- c)  $x = 100^\circ$
- d)  $x = 130^\circ$

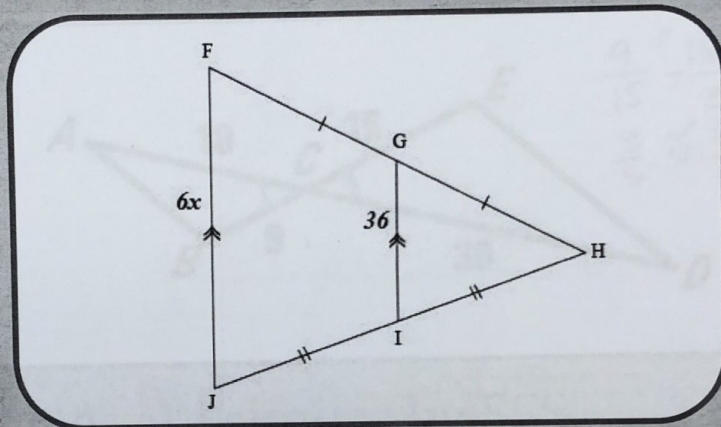
3) What is the value of  $x$ ?

If  $\triangle CED \sim \triangle KHG$  ...



- a)  $x = 90^\circ$
- b)  $x = 64^\circ$
- c)  $x = 26^\circ$
- d)  $x = 116^\circ$

4) What is the value of  $x$ ?



a)  $x = 3$

b)  $x = 6$

c)  $x = 12$

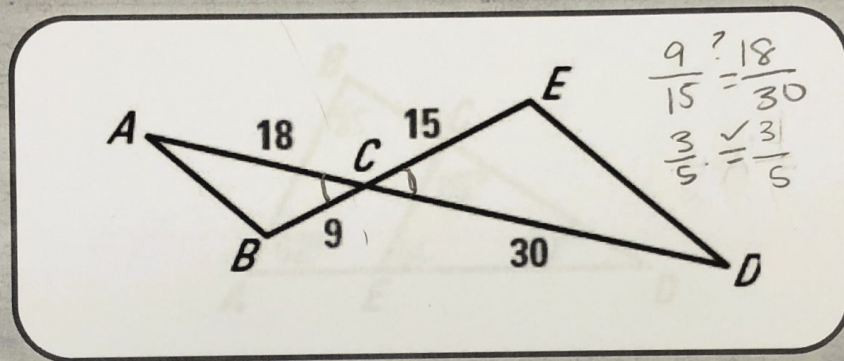
d)  $x = 30$

$$2(36) = 6x$$

$$72 = 6x$$

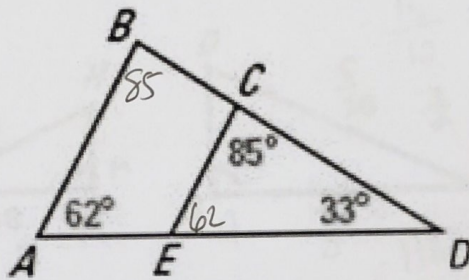
$$x = 12$$

## 5) Are They Similar?



- a) The triangles are similar by SSS
- b) The triangles are similar by SAS
- c) The triangles are similar by AA
- d) There is not enough information to determine

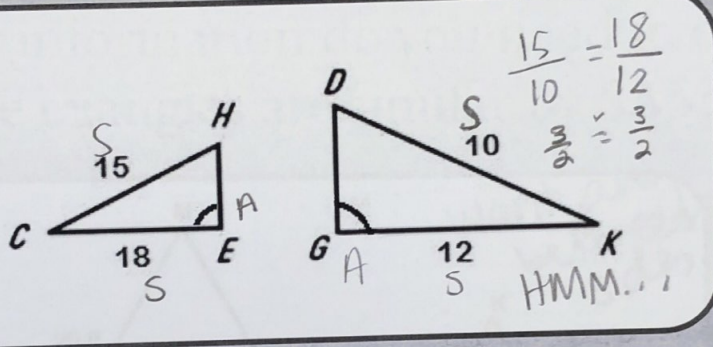
## 6) Are They Similar?



- a) The triangles are similar by SSS
- b) The triangles are similar by SAS
- c) The triangles are similar by AA
- d) There is not enough information to determine

## 7) Are They Similar?

Angle not included between sides

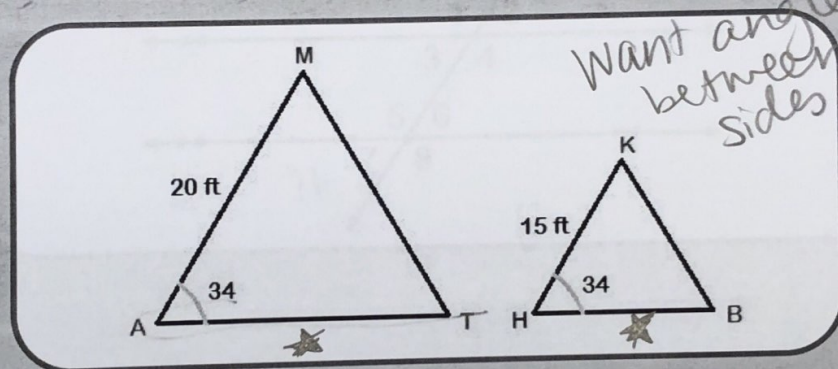


- a) The triangles are similar by SSS
- b) The triangles are similar by SAS
- c) The triangles are similar by AA
- d) There is not enough information to determine



## 8) If They Were Similar...

What further information do you need in order to determine the triangles are similar by SAS?



a)  $\frac{20}{15} = \frac{MT}{KB}$

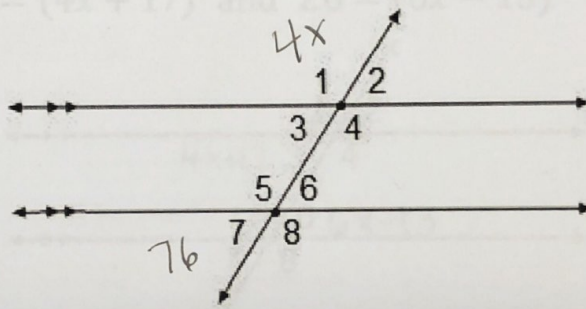
b)  $m\angle T = m\angle B$

c)  $\frac{20}{15} = \frac{AT}{HB}$

d)  $m\angle M = m\angle K$

## 9) What is the value of $x$ ?

In the figure below,  $\angle 1 = 4x^\circ$  and  $\angle 7 = 76^\circ$



- a)  $x = 18$
- b)  $x = 19$
- c)  $x = 26$
- d)  $x = 100$

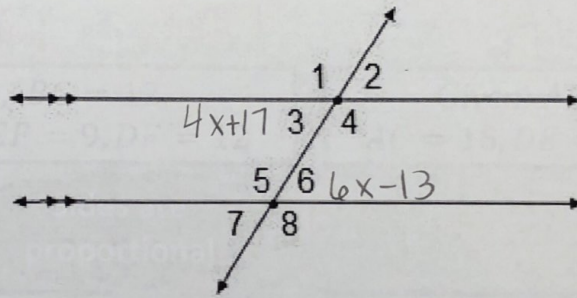
$$4x + 76 = 180$$

$$\frac{4x}{4} = \frac{104}{4}$$

$$x = 26$$

# 10) What is $m\angle 2$ ?

In the figure below,  
 $\angle 3 = (4x + 17)^\circ$  and  $\angle 6 = (6x - 13)^\circ$



Tricky Tricky  
Wants us to find  $m\angle 2$

a)  $m\angle 2 = 15^\circ$

b)  $m\angle 2 = 60^\circ$

c)  $m\angle 2 = 77^\circ$

d)  $m\angle 2 = 180^\circ$

$$4x + 17 = 6x - 13$$

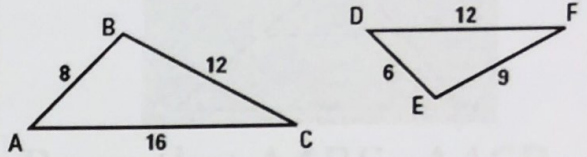
$$30 = 2x$$

$$x = 15$$

$$m\angle 2 = 4(15) + 17 = 77$$

$$m\angle 2 = 77$$

11) Which proof is correct?



Prove that  $\triangle ABC \sim \triangle DEF$ .

CORRECT

Given:  $AB = 8, BC = 12, AC = 16, DE = 6, EF = 9, DF = 12$

Sides are proportional

$$\frac{AB}{DE} = \frac{BC}{EF} = \frac{CA}{FD}$$

only part that is different

SSS

$\triangle ABC \sim \triangle DEF$

INCORRECT

Given:  $AB = 8, BC = 12, AC = 16, DE = 6, EF = 9, DF = 12$

Sides are proportional

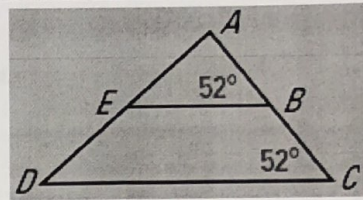
$$\frac{AB}{EF} = \frac{BC}{DE} = \frac{CA}{FD}$$

SSS

$\triangle ABC \sim \triangle DEF$

look at what maps

12) Complete the proof!



Prove that  $\triangle ABE \sim \triangle ACD$ .

Given

Reflexive

$$\angle B \cong \angle C$$

Both equal  
 $52^\circ$

$$\angle A \cong \angle A$$

AA

$$\triangle ABE \sim \triangle ACD$$