Station 1 Worksheet

Name: _____*KEY*_____

1. Can a triangle be drawn having the following? (if not, brief explain why)

   a. 3 acute angles   *yes*   △ ← *equilateral triangle*

   b. 1 obtuse angle   *yes*   ◁

   c. 2 obtuse angles   *no, cannot have two angles over 90°*

   d. 2 right angles   *no, 90+90=180°*

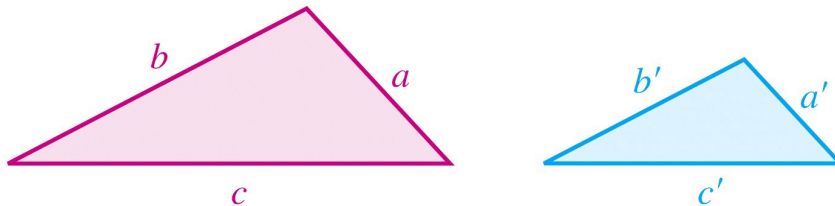   e. 1 straight angle   *no, need three angles in a triangle*

2. Calculate the third angle in the triangle. Then classify the triangles according to its angle measures.

   a. $110°, 35°$ $180-(110+35)=35°$ *isosceles, obtuse*

   b. $60°, 60°$ $180-(60+60)=60°$ *equilateral, acute*

   c. $90°, 20°$ $180-(90+20)=70°$ *right, scalene*

3. The triangles in the figure below are similar. Find b' if $a = 5$ and $b = 15$, and $a' = 7$.

$$\frac{5}{15} = \frac{7}{b'} \Rightarrow 5b' = 7\cdot15 \Rightarrow \boxed{b'=21}$$

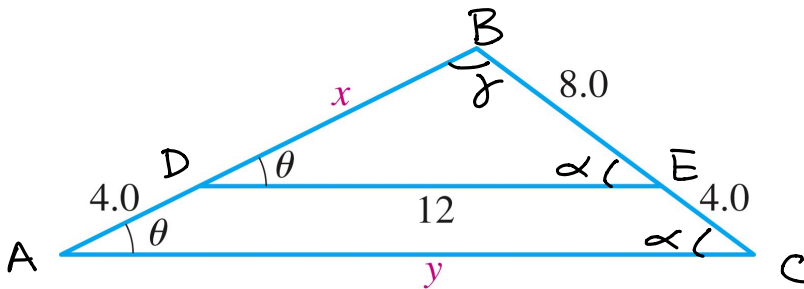4. The triangles in the figure below are similar. Find a and c if $b = 32$.

1.1

0.47

25°

1.0

c

a

25°

b
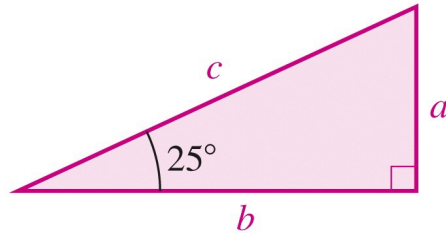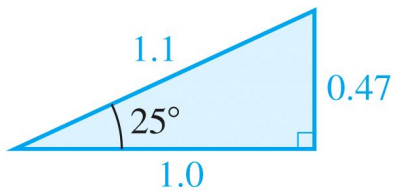
$$\frac{a}{32} = \frac{0.47}{1} \Rightarrow a = 32 \cdot 0.47 \Rightarrow \boxed{a = 15.04}$$

$$\frac{c}{32} = \frac{1.1}{1} \Rightarrow c = 32 \cdot 1.1 \Rightarrow \boxed{c = 35.2}$$

5. Identify the similar triangles in the figure below. Then find x and y.

B

x y 8.0

D θ α E

4.0   12   4.0

A θ y α C

Label triangles first

$\triangle ABC \sim \triangle DBE$

$$\frac{x}{8} = \frac{x+4}{12} \Rightarrow 12x = 8(x+4) \Rightarrow 12x = 8x + 32 \Rightarrow 4x = 32 \Rightarrow \boxed{x = 8}$$

$$\frac{8}{12} = \frac{12}{y} \Rightarrow 8y = 12 \cdot 12 \Rightarrow 8y = 144 \Rightarrow \boxed{y = 18}$$