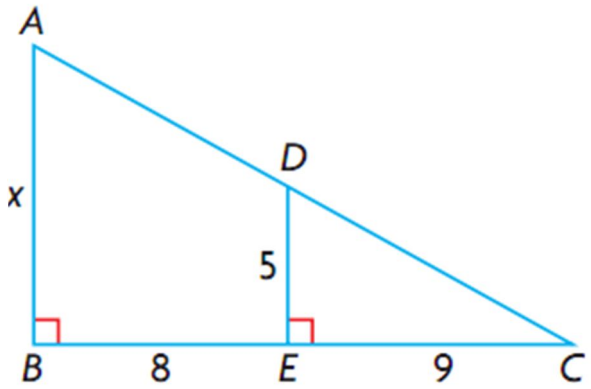
A∞Ω
MATH@TD

Chapter 7 – Similar Triangles and Trigonometry
7.2 Similar Triangles and the Real World

In order to solve "real world problems" you have to be **SURE** that the triangles you are working with are **similar**. All that is needed for proof of similarity is "Angle-Angle Similarity" $(AA\sim)$.

**Example 7.2.1**

From your text: Pg. 386 #3
a) Show that the two triangles to the right are similar, with reasons.
b) Determine $x$




$\angle CED = \angle CBA$ 90°

$\angle C = \angle C$ same

$\therefore \triangle CED \sim \triangle CBA$ by AA~

$5 \times \left(\frac{x}{5}\right) = \left(\frac{17}{9}\right) \times 5$

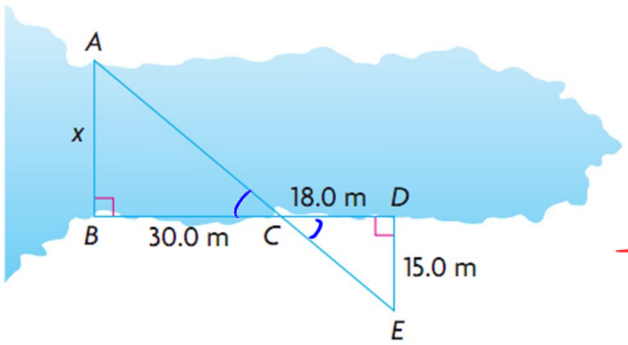
$x = \frac{85}{9}$

**Example 7.2.2**

From your text: Pg. 386 #5

Remember: "Real World Problems" require concluding statements

How wide is this bay?




$\angle B = \angle D$ 90°

$\angle ACB = \angle ECD$ OAT

$\triangle ACB = \triangle ECD$ by AA~

Since we have similar Δ's, we can use the ratios.

Method 1:

$\frac{30}{18} = 1.6667\ldots$ : ratio.

$\therefore x = 15 \times 1.6667 = 25\text{ m}$

Method 2:

$15 \times \left(\frac{x}{15}\right) = \left(\frac{30}{18}\right) \times 15$

$x = 25\text{ m}$

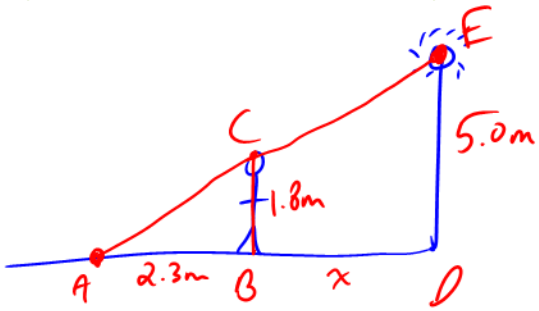
$\therefore$ The bay is 25m wide.

**Example 7.2.3**

From your text: Pg. 387 #8

Tyler, who is $1.8m$ tall, is walking away from a lamppost that is $5.0m$ tall. When Tyler's shadow measures $2.3m$, how far is he from the lamppost?

Pictures are your friends!!!!




$\angle A = \angle A$ same

$\angle ABC = \angle ADE$ 90° (good assumption)

$\therefore \triangle ABC \sim \triangle ADE$ by AA~

$$2.3 \times \left(\frac{AD}{2.3}\right) = \left(\frac{5.0}{1.8}\right) \times 2.3$$

$AD = 6.39\ m$

$\therefore x = 6.39 - 2.3 = 4.09$

His distance to the pole is 4.09 m.

**Class/Homework**: Pg. 386 – 388 #4, 6, 9, 10, 11, 12, 14 (toughy!!)