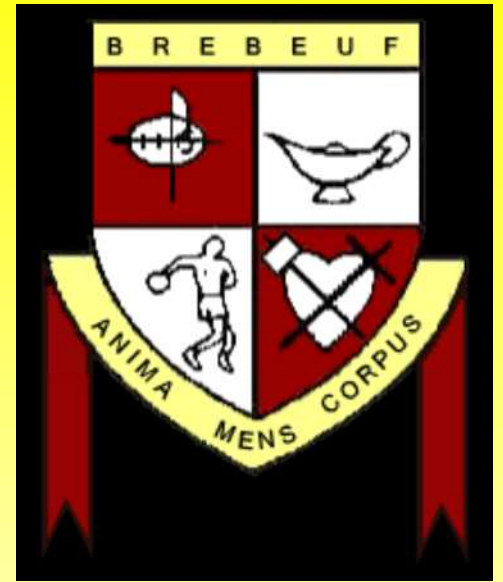


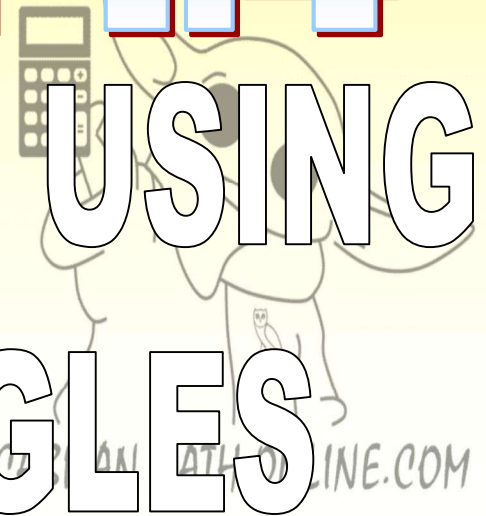
ST. JEAN DE BREBEUF MATHEMATICS



CHAPTER 1.4

SOLVE PROBLEMS USING

SIMILAR TRIANGLES



CHAPTER 1.4

SOLVE PROBLEMS USING SIMILAR TRIANGLES

KEY CONCEPTS

Similar triangles can be used to find **heights** or **distances** that are difficult to measure.

Similar triangles have many practical applications.



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CHAPTER 1.4 SOLVE PROBLEMS USING SIMILAR TRIANGLES

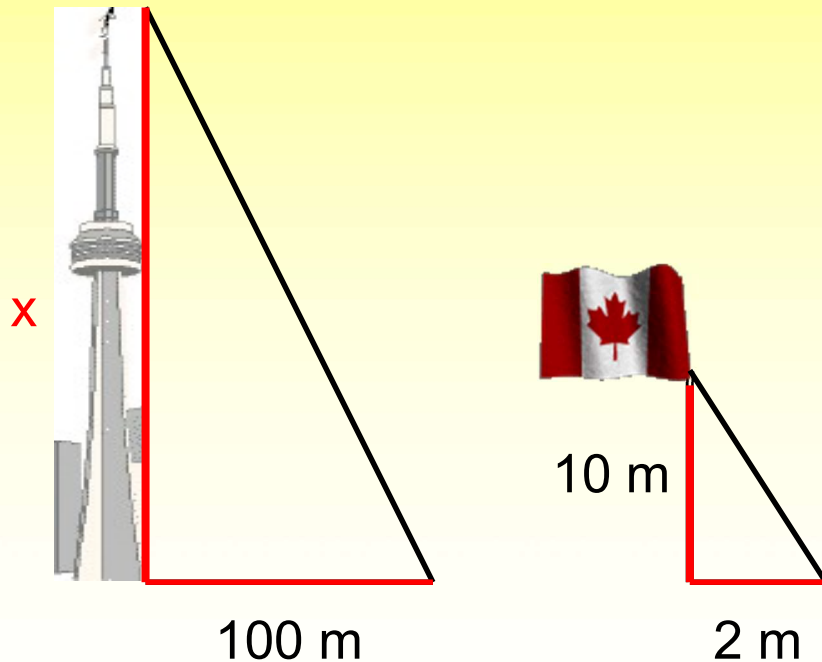
EXAMPLE 1 Finding the Height of an Object

A **10 metre** flag pole casts a shadow **2 metres** long. The CN Tower casts a shadow which is **100 metres** long.

How **tall** is the CN Tower?

Let “x” represent the height of the CN Tower (in metres)

Set up a proportion and solve for x



$$\frac{x}{10} = \frac{100}{2} \quad * \text{ Cross multiply}$$

$$2x = \frac{1000}{2}$$

$$x = 500$$

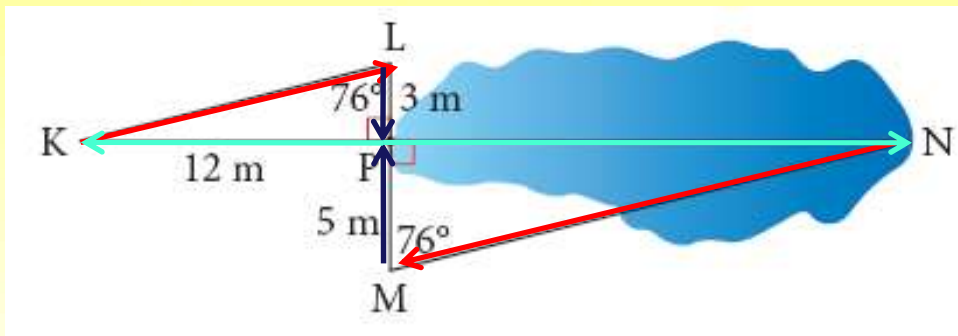
The CN Tower is **500 metres** tall

CHAPTER 14 SOLVE PROBLEMS USING SIMILAR TRIANGLES

EXAMPLE 2 Finding the Length of an Object

To find the length of a pond, a surveyor took some measurements. She recorded them on the diagram below.

What is the **length** of the pond?



Since $\triangle KLP \sim \triangle NMP$, we can set up **proportions** and solve for the length of the pond (**PN**)

→ Enter known values

→ Solve for unknown length

$$\frac{KL}{NM} = \frac{LP}{MP} = \frac{PK}{PN}$$

$$\frac{KL}{NM} = \frac{3}{5} = \frac{12}{PN}$$

$$\frac{3}{5} \times \frac{12}{PN} \quad * \text{ Cross multiply}$$

$$\frac{3 \cancel{PN} = 60}{\cancel{3}}$$

$$PN = 20$$

The pond is **20 metres** long.

CHAPTER 14 SOLVE PROBLEMS USING SIMILAR TRIANGLES

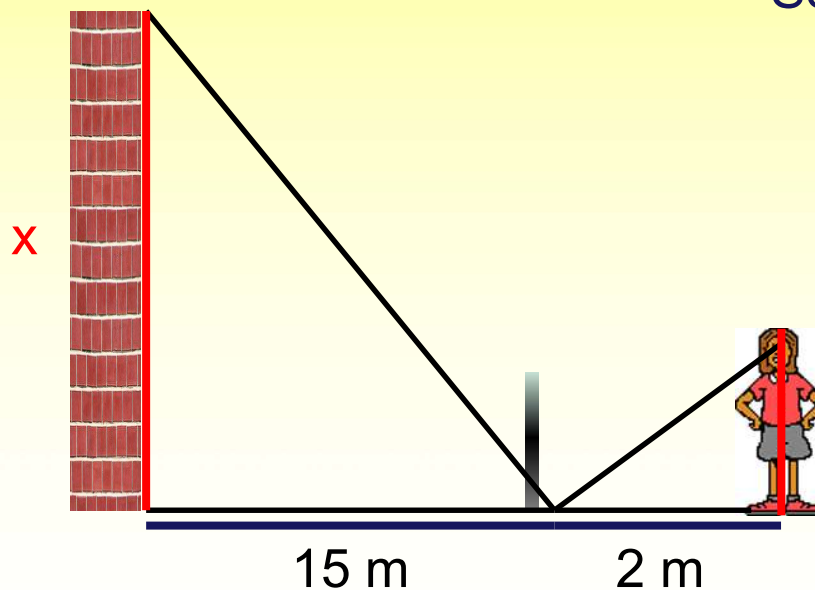
EXAMPLE 3 Using Mirrors to Find Height

Ginger's eyes are **1.3 m** from the floor. She places a mirror on the floor **15 m** from the base of a brick wall. She walks backward **2 m**, until she sees the top of the wall in the mirror.

What is the **height** of the brick wall?

Let "x" represent the height of the brick wall (in metres)

Set up a proportion and solve for x



$$\frac{x}{1.3} = \frac{15}{2} \quad * \text{ Cross multiply}$$
$$\cancel{2}x = \frac{19.5}{\cancel{2}}$$
$$x = 9.75$$

1.3 m

The brick wall is **9.75 metres** high.

CHAPTER 14

SOLVE PROBLEMS USING SIMILAR TRIANGLES

Homework:

* You may continue to work on
Assignment (due next class)

* When done:

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#4 – 6, 7, 10, 12

