APRIL 21, 2016

UNIT 7: SIMILARITY AND TRANSFORMATIONS

7.4: SIMILAR TRIANGLES

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MATH 9

WHAT'S THE POINT OF TODAY'S LESSON?

We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Shape and Space 3" OR "SS3" which states:

"Demonstrate an understanding of similarity of polygons."

SIMILAR TRIANGLES

TO IDENTIFY SIMILAR TRIANGLES:

* the measures of the 3 pairs of corresponding angles must be EQUAL

OR

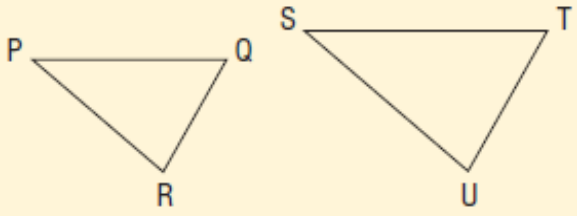
* the ratios of the lengths of the 3 pairs of corresponding sides must be EQUAL; in other words, corresponding sides are proportional

MMS9, Page 344:

Properties of Similar Triangles

To identify that ΔPQR and ΔSTU are similar, we only need to know that:

- $\angle P = \angle S$ and $\angle Q = \angle T$ and $\angle R = \angle U$; *or*
- $\frac{PQ}{ST} = \frac{QR}{TU} = \frac{PR}{SU}$



WARM UP: **A flag pole casts a shadow 13.2 m long. At the SAME time, a woman with a height c 1.65 m casts a shadow 2.4 m long.**

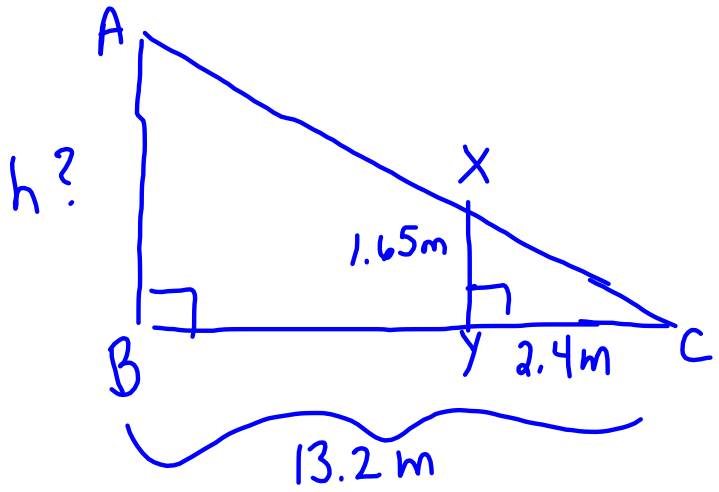
9.1 m

a) Sketch and label a diagram. (It should contain small triangle inside of a large triangle.)

b) PROVE that the two triangles in your diagram are SIMILAR.

c) What is the height of the flag pole to the nearest tenth of a metre?

a)



b) $\angle B = \angle Y$ (GIVEN)

$\angle C = \angle C$ (COMMON)

$\angle A = \angle X$ (SATT)

$\therefore \triangle ABC \sim \triangle XYC$ (AAA)

c) $SF = \frac{s}{o}$

$= \frac{13.2}{2.4}$

$= 5.5$

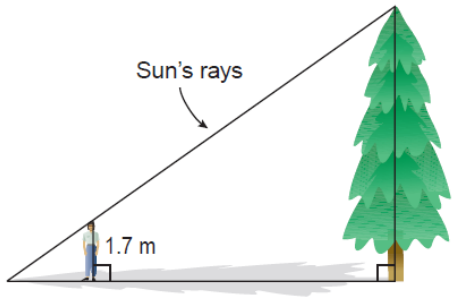
$h = 5.5(1.65)$

$= 9.075$

$= 9.1\text{ m}$

HOMEWORK QUESTIONS?

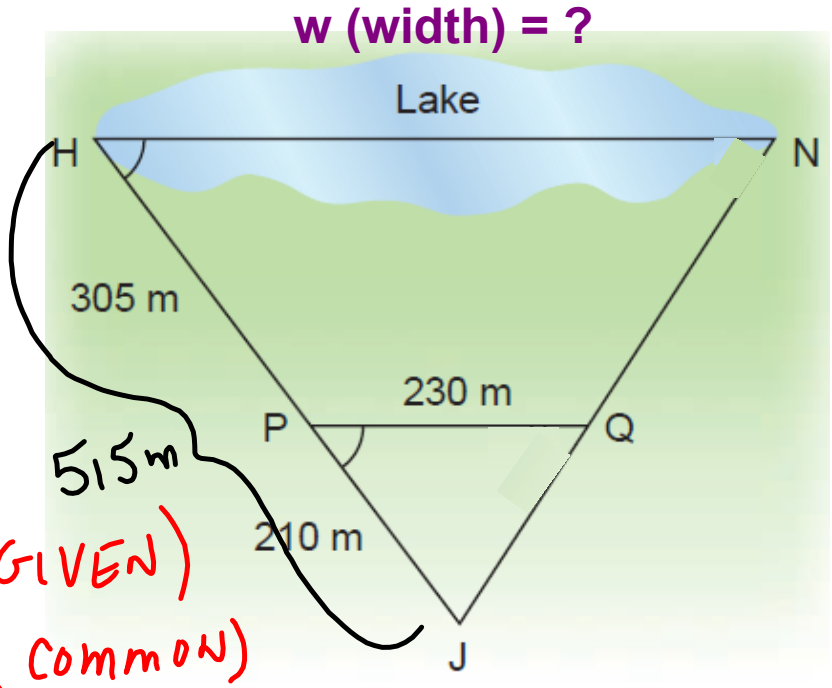
(page 350, #9



EXAMPLE:

a) Prove that these 2 triangles are similar.

b) Find the width of the lake to the nearest whole metre.



a) $\angle H = \angle P$ (GIVEN)

$\angle J = \angle J$ (COMMON)

$\angle N = \angle Q$ (SATT)

$\therefore \triangle HJN \sim \triangle PJQ$ (AAA)

$SF = \frac{S}{U}$

$= \frac{515}{210}$

$\doteq 2.4524$

$w = 2.4524(230)$

$\doteq 564.052$

$\doteq 564\text{m}$

OR

$\frac{w}{230} = \frac{515}{210}$

$210w = 118\,450$

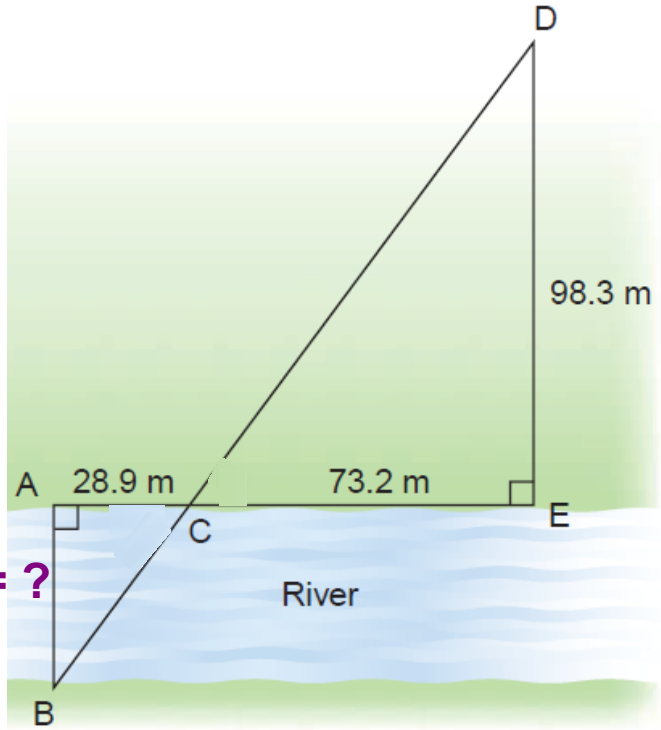
$w \doteq 564.0476$

$w \doteq 564\text{m}$

EXAMPLE:

a) **Prove that these 2 triangles are similar.**

b) **Find the width of the river to the nearest tenth of a metre.**



w (width) = ?

a) $\angle C = \angle C$ (DAT)

$\angle A = \angle E$ (GIVEN)

$\angle B = \angle D$ (SATT)

$\therefore \triangle ABC \sim \triangle EDC$ (AAA)

b) $\frac{28.9}{73.2} = \frac{w}{98.3}$

$2840.87 = 73.2w$

$38.8097 \doteq w$

$38.8\text{ m} \doteq w$

OR

$SF = \frac{S}{O}$

$= \frac{73.2}{28.9}$

$\doteq 2.5329$

$w \doteq \frac{98.3}{2.5329}$

$\doteq 38.8093$

$\doteq 38.8\text{ m}$

CONCEPT REINFORCEMENT:

MMS9:
PAGE 350: #7, #10 and #11 (proofs req'd)
PAGE 351: #12 and #13 (proofs req'd)