Prealgebra 6.9

Solve problems involving indirect measurement using shadow reckoning

Solve problems using surveying methods

similar triangles

corresponding parts

direct measurement

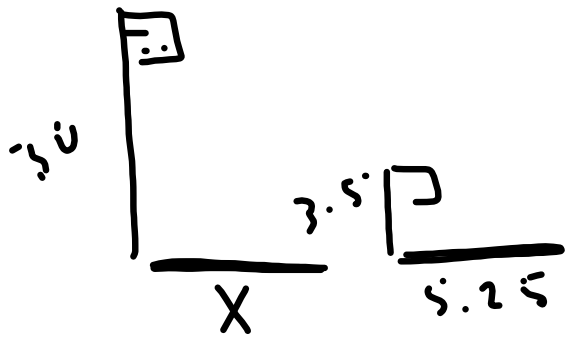
indirect measurement

what causes shadows?

surveying

1. **FLAGS** A flagpole is 30 feet high and a mailbox is 3.5 feet high. The mailbox casts a shadow that is 5.25 feet long. How long is the flagpole's shadow at the same time?

Mar 11-7:17 PM



$\frac{30}{3.5} = \frac{X}{5.25}$

$\frac{3.5X}{3.5} = \frac{157.5}{3.5}$

45 ft

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3. **FLAGS** A flagpole is 30 feet high and a mailbox is 3.5 feet high. The mailbox casts a shadow that is 5.25 feet long. How long is the flagpole's shadow at the same time?

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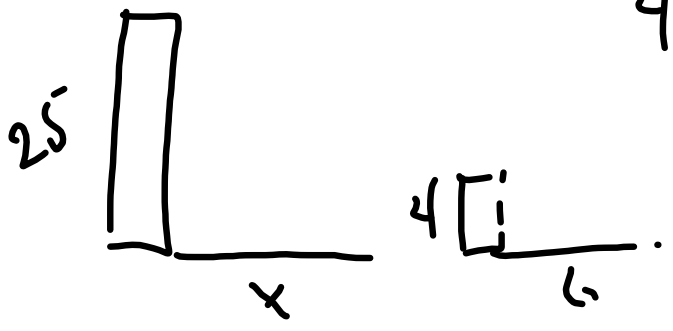
4. **ARCHITECTURE** The height of Medina Middle School is 25 feet tall. A mail service drop box outside the school is 4 feet tall. The drop box casts a shadow that is 6 feet long. At the same time, what is the length of the shadow of the school building?

$\frac{25}{4} = \frac{x}{6}$



$\frac{4x}{4} = \frac{150}{4}$

$x = 37.5 ft$

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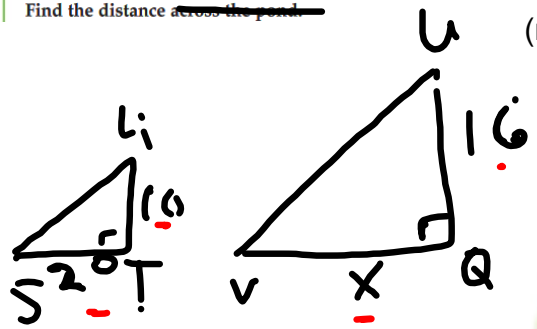
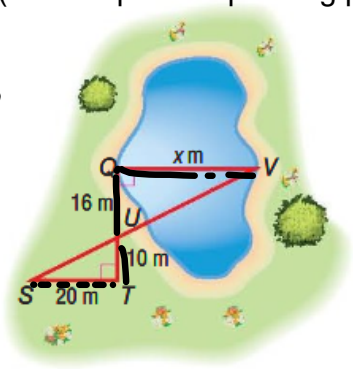
EXAMPLE 2 **Find Missing Measures**

MAPS In the figure, $\triangle STU \sim \triangle VQU$. Find the distance ~~across the pond~~.

Are the triangles similar? How can we know?

(match up corresponding parts)





$\frac{20}{x} = \frac{10}{16}$

$\frac{10x}{10} = \frac{320}{10}$

$x = 32$ m

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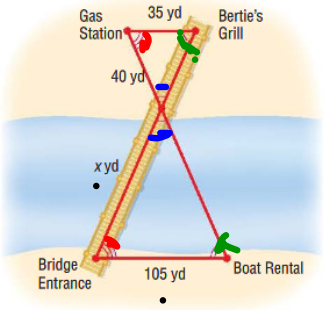
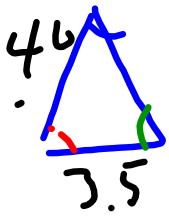
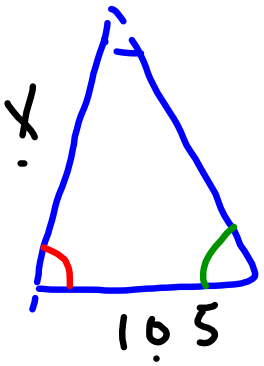
5. **BRIDGES** The triangles below are similar. Find x.







$\frac{40}{x} = \frac{35}{105}$

$\frac{35x}{35} = \frac{4200}{35}$ $x = 120$ yd

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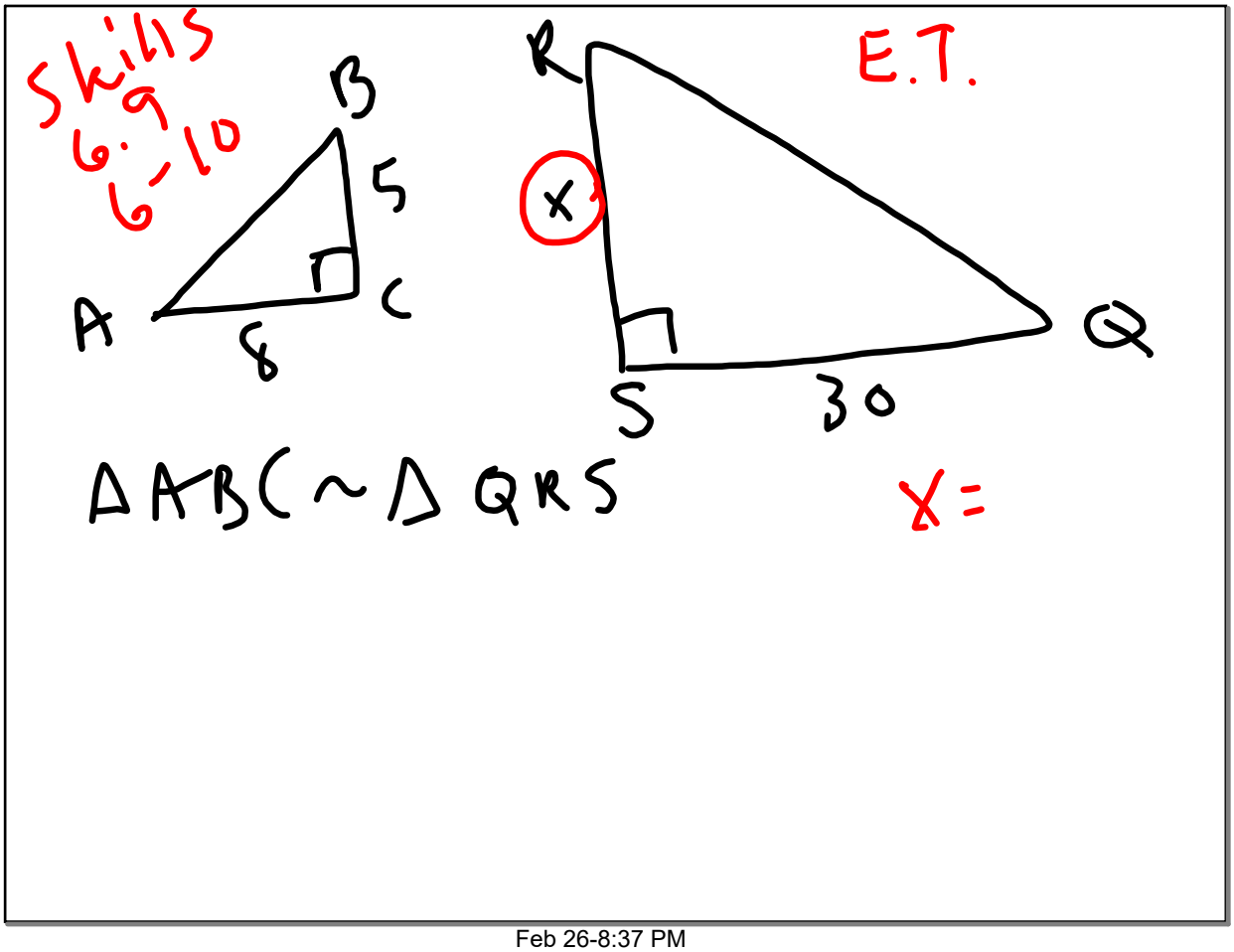

Feb 26-8:37 PM