NAME _____ DATE _____ PERIOD _____

4-7 Practice: Word Problems

Indirect Measurement

1. HEIGHT Paco is 6 feet tall and casts a 12-foot shadow. At the same time, Diane casts an 11-foot shadow. How tall is Diane?

$\frac{6}{x} = \frac{12}{11}$

6 | x
12 | 11

$x = 5.5$ FT

2. LIGHTING If a 25-foot-tall house casts a 75-foot shadow at the same time that a streetlight casts a 60-foot shadow, how tall is the streetlight?

$\frac{25}{x} = \frac{75}{60}$

25 | x
75 | 60

$x = 20$ FT

3. FLAGPOLE Lena is $5\frac{1}{2}$ feet tall and casts an 8-foot shadow. At the same time, a flagpole casts a 48-foot shadow. How tall is the flagpole?

5.5 | x
8 FT | 48

$\frac{5.5}{x} = \frac{8}{48}$

$x = 33$ FT

4. LANDMARKS A woman who is 5 feet 5 inches tall is standing near the Space Needle in Seattle, Washington; she casts a 13-inch shadow at the same time that the Space Needle casts a 121-foot shadow. How tall is the Space Needle? CONVERT: 5'5" = 65 in, 121 FT = 1452 in

65 in | x
13 in | 1452 in

$\frac{65}{13} = \frac{x}{1452}$

$x = 7260$ in or 605 FT

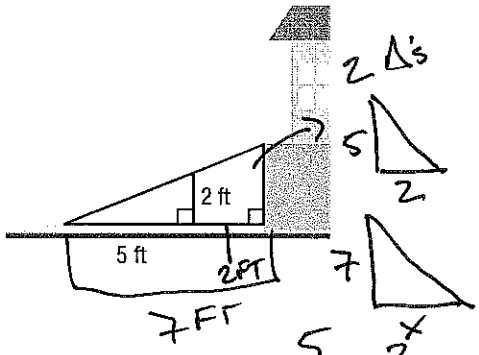
5. NATIONAL MONUMENTS A 42-foot flagpole near the Washington Monument casts a shadow that is 14 feet long. At the same time, the Washington Monument casts a shadow that is 185 feet long. How tall is the Washington Monument?

42 | x
14 | 185

$\frac{42}{x} = \frac{14}{185}$

$x = 555$ FT

6. ACCESSIBILITY A ramp slopes ~~upward~~ from the sidewalk to the entrance of a building at a constant incline. If the ramp is 2 feet high when it is 5 feet from the sidewalk, how high is the ramp when it is 7 feet from the sidewalk?



2 Δ's

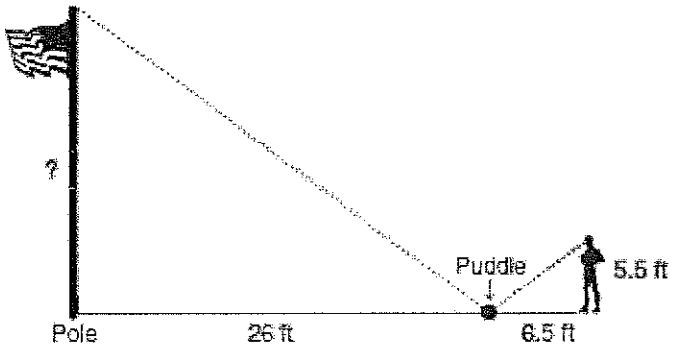
5 | 2
7 | x

$\frac{5}{7} = \frac{2}{x}$

2.8 FT

Lesson 4-7

As shown in the drawing, Raymond used similar triangles to find the height of a pole. When he stood 6.5 feet from a small puddle, he could see the reflection of the top of the pole in the puddle. The puddle was 26 feet from the pole, and Raymond's eye level was 5.5 feet about the ground.



$\frac{5.5}{?} = \frac{6.5}{26}$

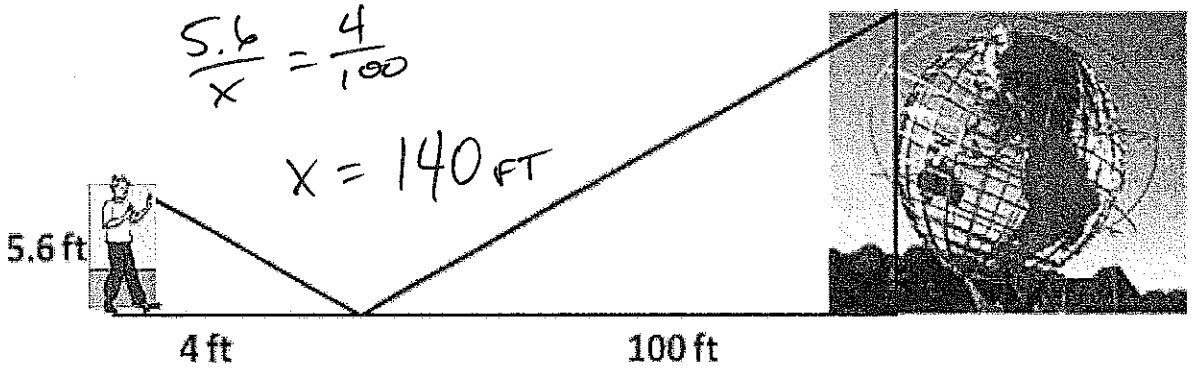
$143 = 6.5?$

$? = 22\text{FT}$

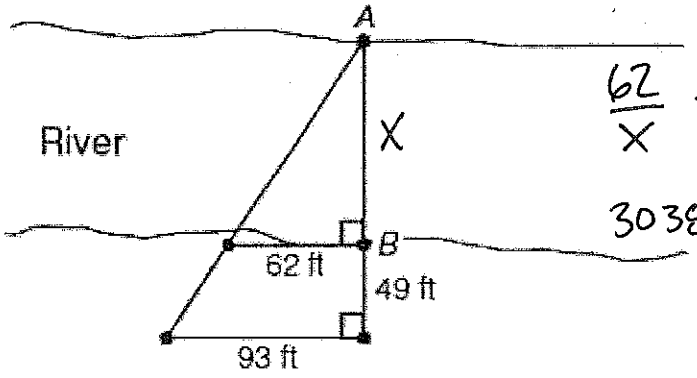
To estimate the height of the Unisphere, the World's largest globe, you can place a mirror on the ground and stand where you can see the top of the Unisphere in the mirror, as shown in the diagram. What is the height of the Unishpere?

$\frac{5.6}{x} = \frac{4}{100}$

$x = 140\text{ FT}$



An engineer wanted to approximate the width of a river. She placed markers at Point *A* and Point *B* to represent the average width of the river. She also placed 3 other markers along the riverbank and measured the distances shown in the diagram below.



$\frac{62}{x} = \frac{93}{49+x}$

$3038 + 62x = 93x$

$3038 = 31x$

$x = 98\text{FT}$

Based on this diagram, what was the width of the river, in feet, from point *A* to point *B*?