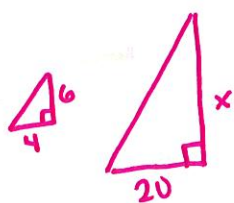


Applications of Similar Triangle Practice

1. A painter is preparing an estimate to paint a building. To approximate the building's height, he stands so that the tip of his shadow coincides with that of the building. The painter uses the measurements shown in the figure. Find the height of the building.

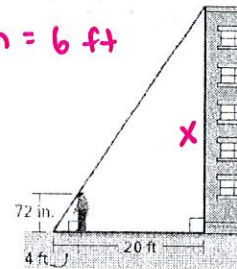


$$\frac{4}{20} = \frac{6}{x}$$

$$4x = 120$$

$$x = 30 \text{ ft.}$$

72 in = 6 ft

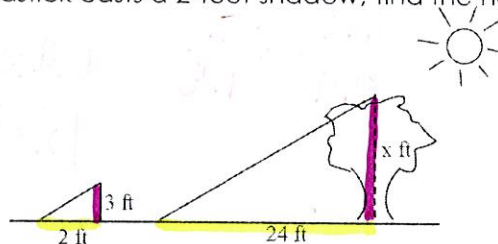


2. If a tree casts a 24-foot shadow at the same time that a yardstick casts a 2-foot shadow, find the height of the tree.

$$\frac{2}{24} = \frac{3}{x}$$

$$2x = 72$$

$$x = 36 \text{ ft.}$$

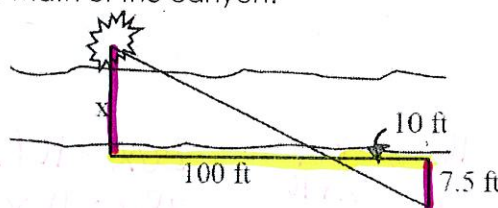


3. A bush is sighted on the other side of a canyon. Find the width of the canyon.

$$\frac{10}{100} = \frac{7.5}{x}$$

$$10x = 750$$

$$x = 75 \text{ ft.}$$

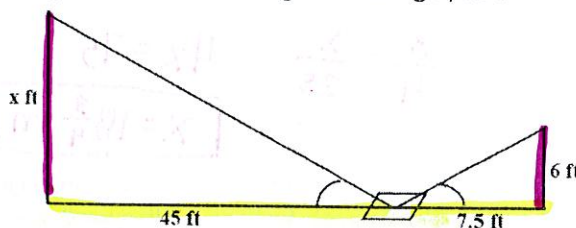


4. Ramon places a mirror on the ground 45 ft from the base of a geyser. He walks backward until he can see the top of the geyser in the middle of the mirror. At that point, Ramon's eyes are 6 ft above the ground, and he is 7.5 ft from the mirror. Use similar triangles to find the height of the geyser.

$$\frac{x}{45} = \frac{6}{7.5}$$

$$7.5x = 270$$

$$x = 36 \text{ ft.}$$



5. The Giant Wheel at Cedar Point in Ohio is one of the tallest Ferris wheels in the country at 136 feet tall. If the Giant Wheel casts a 34-foot shadow, write and solve a proportion to find the height of a nearby man who casts a 1.5-foot shadow.



$$\frac{136}{x} = \frac{34}{1.5}$$

$$34x = 204$$

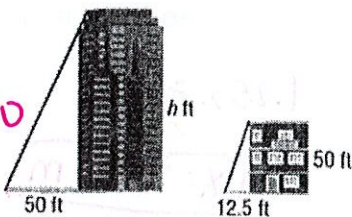
$$x = 6 \text{ ft.}$$

6. What is the height of the building?

$$\frac{50}{12.5} = \frac{h}{50}$$

$$12.5h = 2500$$

$$h = 200 \text{ ft.}$$

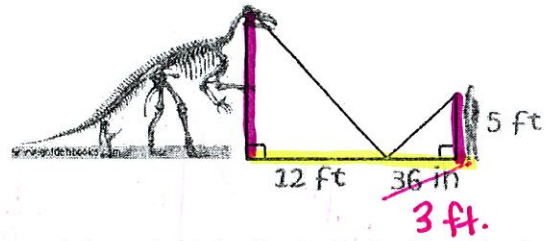


7. You use a mirror to estimate the height of the dinosaur skeleton. According to the laws of optics, the light reflects off a mirror at the same angle from which it strikes the mirror. How tall is the dinosaur?

$$\frac{3}{5} \times \frac{12}{x}$$

$$3x = 60$$

$$x = 20 \text{ ft.}$$

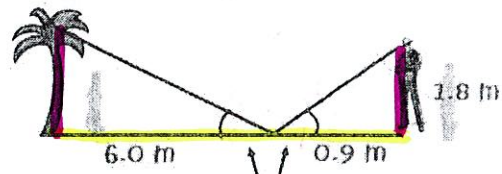


8. Lamar Presley is planning to landscape his yard. First he needs to calculate the height of a palm tree in the backyard. He sights the top of the tree in a mirror that is 6.0 meters from the tree. It is on the ground and faces up. Lamar is 0.9 meters from the mirror and his eyes are 1.8 meters from the ground. How tall is the tree?

$$\frac{6.0}{0.9} = \frac{x}{1.8}$$

$$0.9x = 10.8$$

$$x = 12 \text{ m}$$



These angles are congruent because light reflects off a mirror at the same angle it arrives.

9. The A-frame building shown in the figure has a balcony that is 16 feet long, 16 feet high, and parallel to the ground. The building is 28 feet wide at its base. How tall is the A-frame building?

$$\frac{16}{28} = \frac{x}{x+16}$$

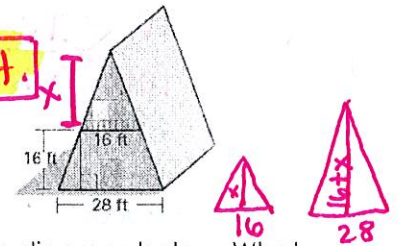
$$28x = 16(x+16)$$

$$28x = 16x + 256$$

$$12x = 256$$

$$x = 21\frac{1}{3} \text{ ft.}$$

$$16 + 21\frac{1}{3} = 37\frac{1}{3} \text{ ft.}$$

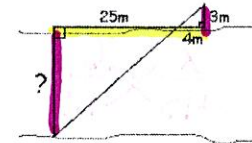


10. Ruth wanted to find the distance across a stream. She measured and made the diagram below. What is the distance across the stream?

$$\frac{3}{4} = \frac{x}{25}$$

$$4x = 75$$

$$x = 18\frac{3}{4} \text{ m}$$



11. Two extension ladders are leaning at the same angle against a vertical wall. The 3-m ladder reaches 2.4 m up the wall. How much farther up the wall does the 8-m ladder reach?

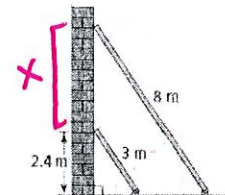
$$\frac{3}{2.4} = \frac{8}{x+2.4}$$

$$3(x+2.4) = 19.2$$

$$3x + 7.2 = 19.2$$

$$3x = 12$$

$$x = 4 \text{ m}$$



12. Erin, who is 1.60 m tall, casts a shadow that is 1.25 m long. Her shadow extends to the end of a tree's shadow when she stands 4.75 m from the tree. What is the height of the tree?

$$\frac{1.25}{1.6} = \frac{6}{x}$$

$$1.25x = 9.6$$

$$x = 7.68 \text{ m}$$

