Warm-up

1. Solve the following.

a) if m∠7 = 100°, find m∠3 = $100°$

b) if m∠7 = 95°, find m∠6 = $85°$

c) if m∠1 = 120°, find m∠5 = $120°$

d) if m∠4 = 20°, find m∠7 = $160°$

e) if m∠3 = 140°, find m∠5 = $140°$

f) if m∠4 = 30°, find m∠1 = $150°$

g) if m∠4 = 40°, find m∠2 = $40°$

h) if m∠3 = 125°, find m∠8 = $55°$

Agenda!

1. **Pythogrean Theorem & Similarity**

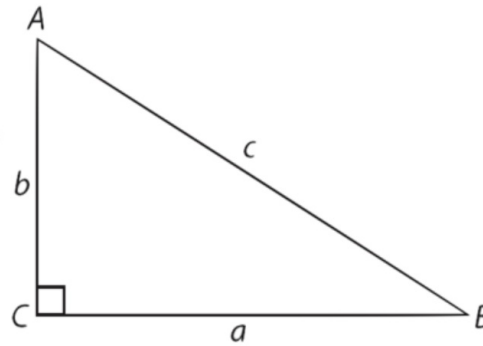2. **Homework questions**

3. **Finish yesterday's independent practice**
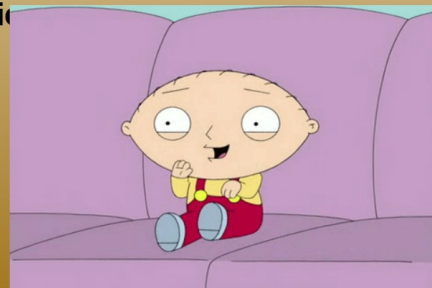
Theorem

Pythagorean Theorem
The sum of the squares of the lengths of the legs (*a* and *b*) of a right triangle is equal to the square of the length of the hypotenuse (*c*).

$$a^2 + b^2 = c^2$$

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Key Concepts

The Pythagorean Theorem

- The Pythagorean Theorem is often used to find the lengths of the sides of a right triangle, a triangle that includes one $90°$ angle.
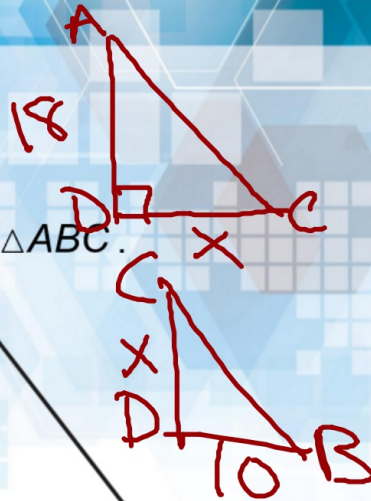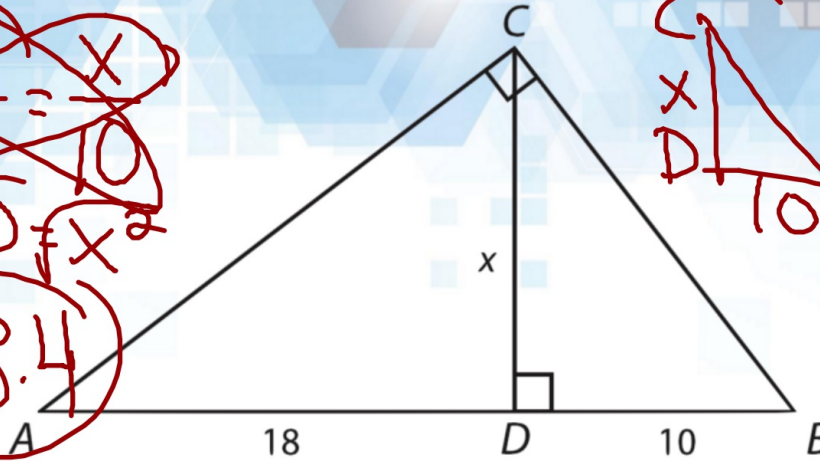
3

Guided Practice

Example 2

Find the length of the altitude, x, of $\triangle ABC$.

$\frac{18}{x} = \frac{x}{10}$

$180 = x^2$

$x = 13.4$

C

x

A   18   D   10   B

18

Guided Practice: Example 2, *continued*

3. Summarize your findings.

The length of the altitude, x, of $\triangle ABC$ is $6\sqrt{5}$ units, or approximately 13.4 units.

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Guided Practice

Example 3

Find the unknown values in the figure.

A ———— 8 ———— C

$4.8^2 + f^2 = 6^2$

$23.04 + f^2 = 36$

$-23.04 \qquad -23.04$

$\sqrt{f^2} = \sqrt{12.96}$

$f = 3.6$

$4.8^2 + e^2 = 8^2$

$23.04 + e^2 = 64$

$-23.04 \qquad -23.04$

$\sqrt{e^2} = \sqrt{40.96}$

$e = 6.4$

6.4

$+ 3.6$

$C = 10$

4.8

Guided Practice: Example 3, *continued*

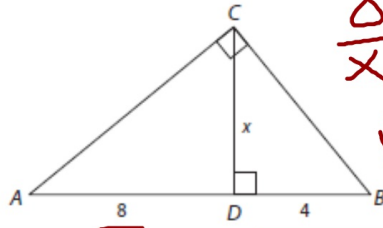## 5. Summarize your findings.

The length of *c* is 10 units.

The length of *e* is 6.4 units.

The length of *f* is 3.6 units.
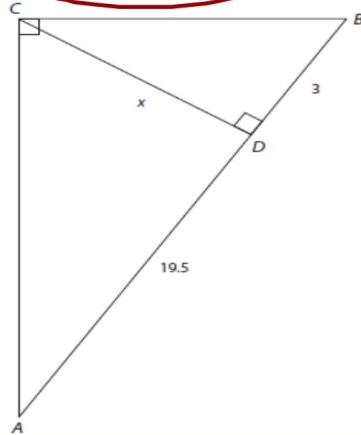
Find the unknown length(s) in each figure.

1.

$$\frac{8}{x} = \frac{x}{4}$$

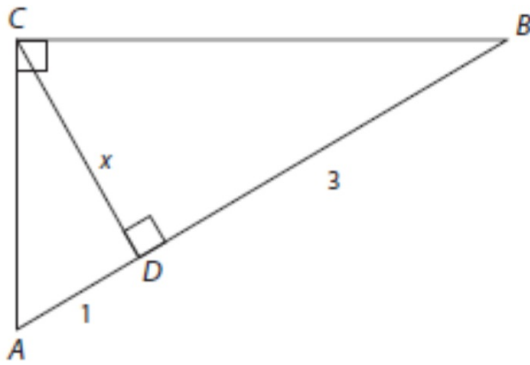$$\sqrt{x^2} = \sqrt{32}$$

$$x = 5.6$$

2.

$$\frac{19.5}{x} = \frac{x}{3}$$

$$\sqrt{x^2} = \sqrt{58.5}$$

$$x = 7.6$$

3.

4.