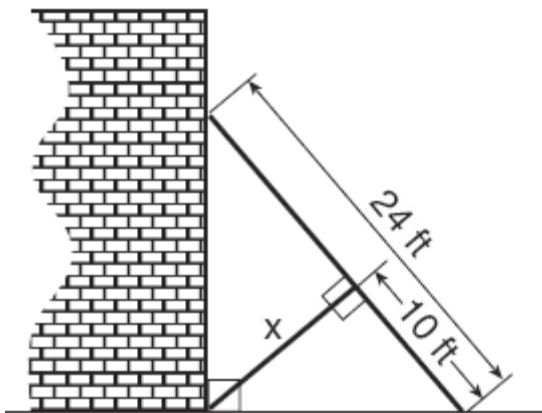


NAME: _____

G.G.47: Investigate, justify, and apply theorems about mean proportionality: the altitude to the hypotenuse of a right triangle is the mean proportional between the two segments along the hypotenuse; and the altitude to the hypotenuse of a right triangle divides the hypotenuse so that either leg of the right triangle is the mean proportional between the hypotenuse and segment of the hypotenuse adjacent to that leg

1. 010619b, P.I. G.G.47

The accompanying diagram shows a 24-foot ladder leaning against a building. A steel brace extends from the ladder to the point where the building meets the ground. The brace forms a right angle with the ladder.

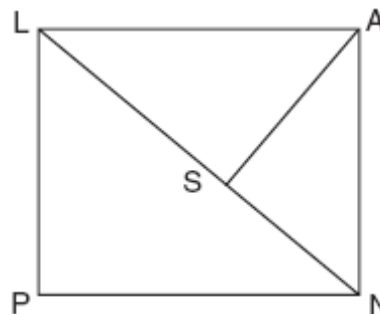


If the steel brace is connected to the ladder at a point that is 10 feet from the foot of the ladder, which equation can be used to find the length, x , of the steel brace?

- [A] $10^2 + x^2 = 24^2$ [B] $\frac{10}{x} = \frac{x}{14}$
[C] $\frac{10}{x} = \frac{x}{24}$ [D] $10^2 + x^2 = 14^2$

2. 010920b, P.I. G.G.47

The accompanying diagram shows part of the architectural plans for a structural support of a building. $PLAN$ is a rectangle and $\overline{AS} \perp \overline{LN}$.

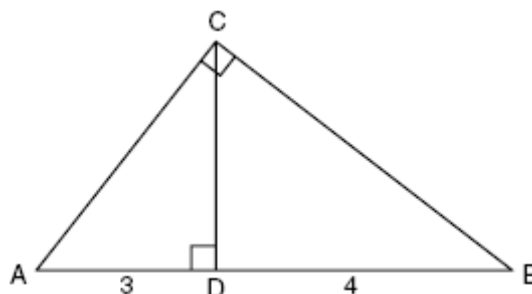


Which equation can be used to find the length of \overline{AS} ?

- [A] $\frac{AS}{SN} = \frac{AS}{LS}$ [B] $\frac{AN}{LN} = \frac{AS}{LS}$
[C] $\frac{AS}{LS} = \frac{LS}{SN}$ [D] $\frac{LS}{AS} = \frac{AS}{SN}$

3. fall0829ge, P.I. G.G.47

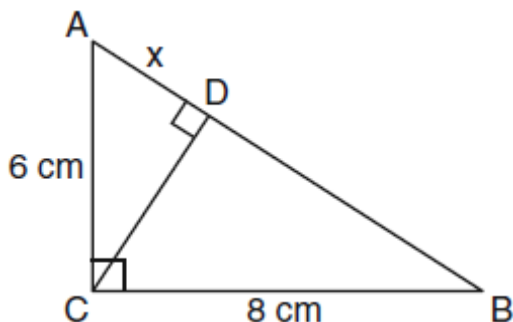
In the diagram below of right triangle ACB , altitude \overline{CD} intersects \overline{AB} at D . If $AD = 3$ and $DB = 4$, find the length of \overline{CD} in simplest radical form.



NAME: _____

4. 060915ge, P.I. G.G.47

In the diagram below, the length of the legs \overline{AC} and \overline{BC} of right triangle ABC are 6 cm and 8 cm, respectively. Altitude \overline{CD} is drawn to the hypotenuse of $\triangle ABC$.

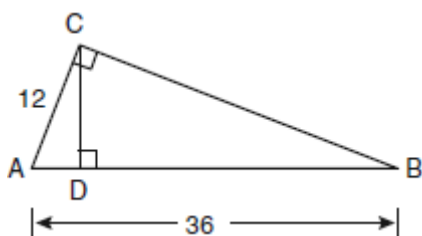


What is the length of \overline{AD} to the nearest tenth of a centimeter?

- [A] 4.0 [B] 6.0 [C] 6.4 [D] 3.6

5. 080922ge, P.I. G.G.47

In the diagram below of right triangle ACB , altitude \overline{CD} is drawn to hypotenuse \overline{AB} .

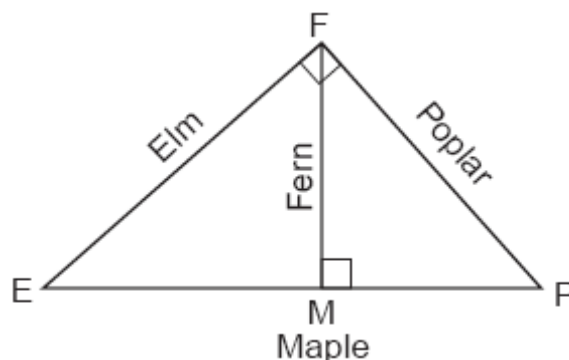


If $AB = 36$ and $AC = 12$, what is the length of \overline{AD} ?

- [A] 32 [B] 6 [C] 3 [D] 4

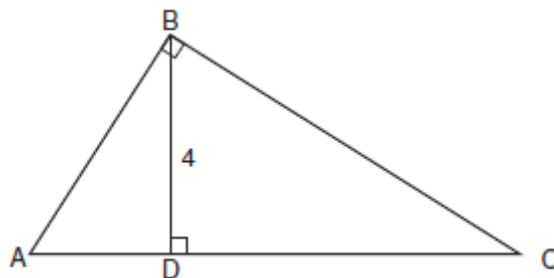
6. 060828b, P.I. G.G.47

Four streets in a town are illustrated in the accompanying diagram. If the distance on Poplar Street from F to P is 12 miles and the distance on Maple Street from E to M is 10 miles, find the distance on Maple Street, in miles, from M to P .



7. 080932b, P.I. G.G.47

The drawing for a right triangular roof truss, represented by $\triangle ABC$, is shown in the accompanying diagram. If $\angle ABC$ is a right angle, altitude $BD = 4$ meters, and \overline{DC} is 6 meters longer than \overline{AD} , find the length of base \overline{AC} , in meters.



G.G.47: Investigate, justify, and apply theorems about mean proportionality: the altitude to the hypotenuse of a right triangle is the mean proportional between the two segments along the hypotenuse; and the altitude to the hypotenuse of a right triangle divides the hypotenuse so that either leg of the right triangle is the mean proportional between the hypotenuse and segment of the hypotenuse adjacent to that leg

[1] B

[2] D

[2] $2\sqrt{3}$, and appropriate work is shown.

[1] Appropriate work is shown, but the answer is not written in simplest radical form.

or [1] Appropriate work is shown, but one computational error is made.

or [1] Appropriate work is shown, but one conceptual error is made.

or [1] $2\sqrt{3}$, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[3] incorrect procedure.

[4] D

[5] D

[4] 8, and appropriate work is shown, such as solving the proportion $\frac{10+x}{12} = \frac{12}{x}$.

[3] Appropriate work is shown, but one computational error is made.

[2] Appropriate work is shown, but two or more computational errors are made.

or [2] Appropriate work is shown, but one conceptual error is made.

or [2] The proportion $\frac{10+x}{12} = \frac{12}{x}$ is written,

but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational error are made.

or [1] 8, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[6] incorrect procedure.

[4] 10, and appropriate work is shown, such

as solving $\frac{x}{4} = \frac{4}{x+6}$.

[3] Appropriate work is shown, but one computational or factoring error is made.

or [3] Appropriate work is shown to find $x = 2$, but no further correct work is shown.

[2] Appropriate work is shown, but two or more computational or factoring errors are made.

or [2] Appropriate work is shown, but one conceptual error is made.

or [2] Appropriate work is shown to find 2 and -8 , but the negative value is not rejected, and no further correct work is shown.

or [2] A correct right triangle proportion is written, but no further correct work is shown.

[1] Appropriate work is shown, but one conceptual error and one computational or factoring error are made.

or [1] 10, but no work is shown.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[7] incorrect procedure.