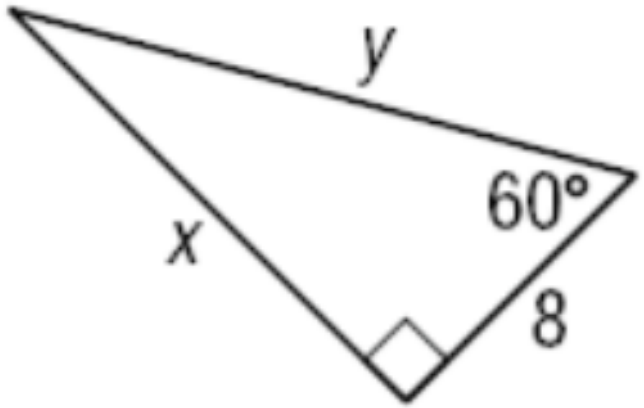
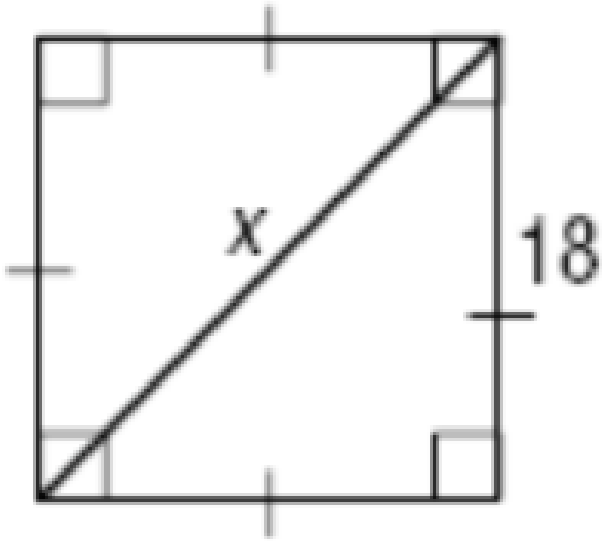
Warm-up

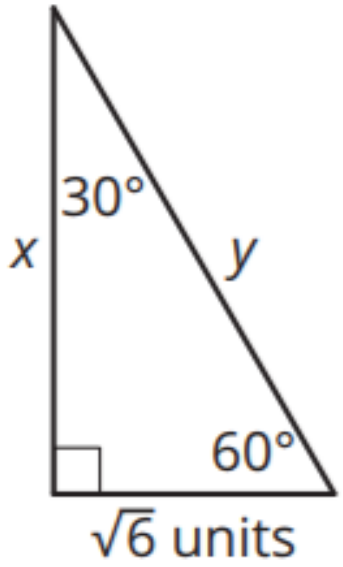
1)



2)



Determine the unknown side lengths in each triangle.



$x = \sqrt{3} \cdot \sqrt{6}$ $\quad y = 2\sqrt{6}$ units

$x = \sqrt{3 \cdot 6}$

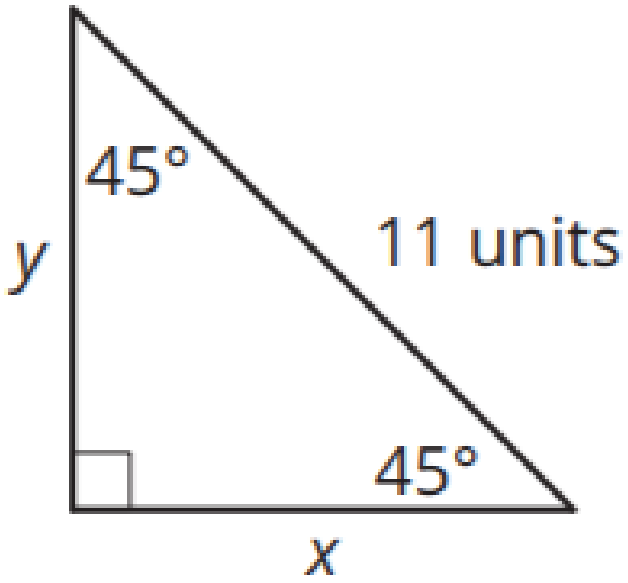
$x = \sqrt{3 \cdot 3 \cdot 2}$

$x = \sqrt{3^2 \cdot 2}$

$x = 3\sqrt{2}$ units

A standard procedure involving radicals is to **extract the roots**, which is the process of removing all perfect square numbers from under the radical symbol.

The Product Property of Radicals states that $\sqrt{a} \cdot \sqrt{b} = \sqrt{a \cdot b}$ when a and b are greater than 0.



$$x = \frac{11}{\sqrt{2}}$$

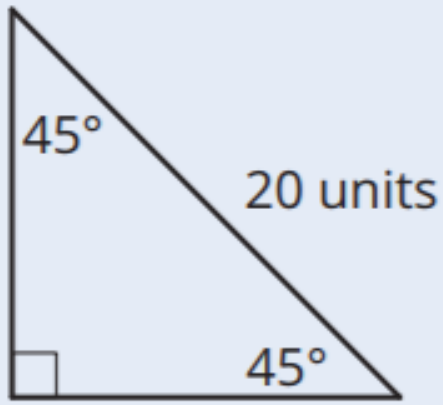
$$x = \frac{11}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{11\sqrt{2}}{2} \text{ units}$$

$$y = \frac{11\sqrt{2}}{2} \text{ units}$$

A standard math convention is to **rationalize the denominator**, which is the process of rewriting a fraction with no irrational numbers in the denominator.

To rationalize the denominator of a fraction involving radicals, multiply a fraction by a form of 1 so that the product in the denominator includes a perfect square radicand. Then rewrite, if possible.

8. **Calculate the length of the legs of the isosceles triangle shown.**



M1-153

David says that the length of each side is $\sqrt{10}$ units.

$$\frac{20}{\sqrt{2}} = \sqrt{\frac{20}{2}}$$
$$= \sqrt{10}$$

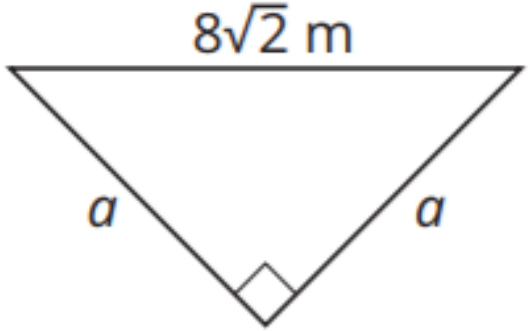
Brien says that the length of each side is $10\sqrt{2}$ units.

$$\frac{20}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{20\sqrt{2}}{2}$$
$$= 10\sqrt{2}$$

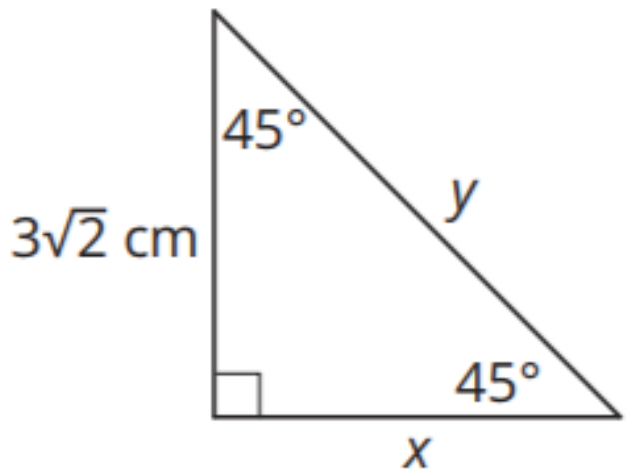
Determine who's correct and explain the error in the other student's work.

9. Solve for the unknown side lengths of each figure.

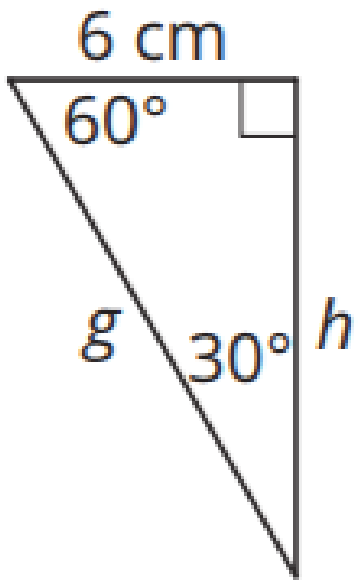
a.



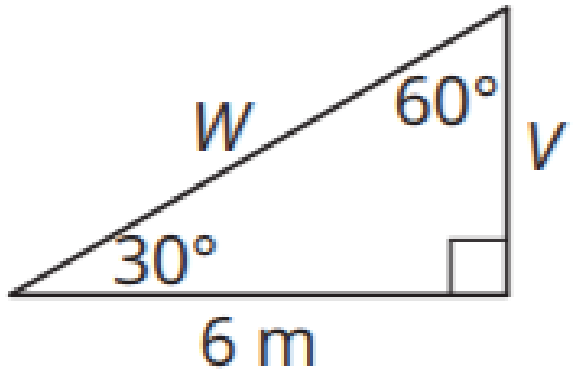
b.



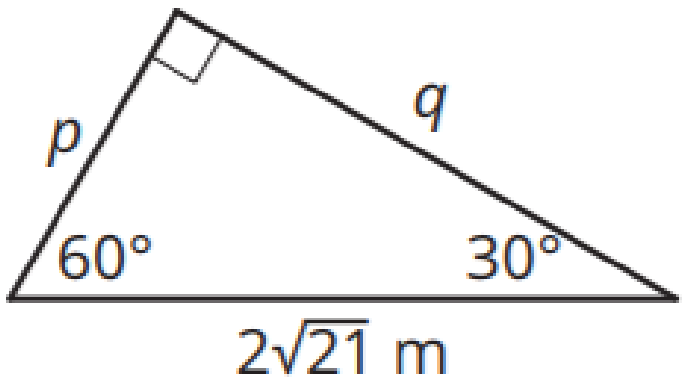
c.



d.



e.



f. The perimeter of a square measures 32 cm.