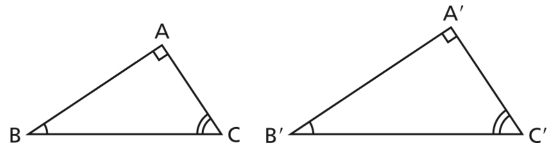
Name: ________________________________ Date: ________________________

Master 2.1a Activate Prior Learning: Similar Triangles

For similar triangles ΔABC and ΔA′B′C′:

- The **corresponding angles** are:
  ∠A = ∠A′; ∠B = ∠B′; ∠C = ∠C′
- The **corresponding sides** are:
  AB and A′B′; BC and B′C′; AC and A′C′

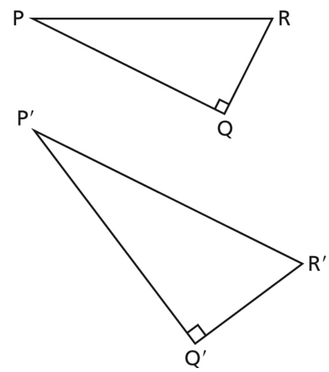


In two right triangles, the right angles are a pair of equal corresponding angles.
For two right triangles to be similar, we need only know that:

- the measures of two corresponding acute angles are equal:
  either ∠P = ∠P′ or ∠R = ∠R′

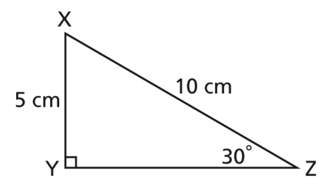
or

- the ratios of two pairs of corresponding sides are equal:
  either $\dfrac{PQ}{P'Q'} = \dfrac{PR}{P'R'}$ or $\dfrac{PQ}{P'Q'} = \dfrac{QR}{Q'R'}$ or $\dfrac{QR}{Q'R'} = \dfrac{PR}{P'R'}$

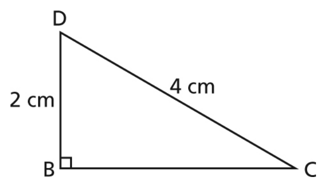


Check Your Understanding

1. Which triangles below are similar to ΔXYZ?
Explain how you know.



a)



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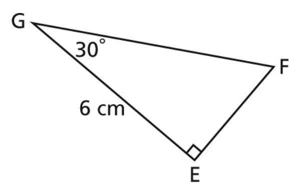
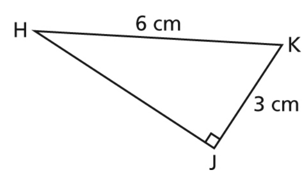
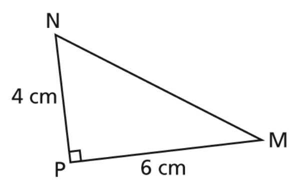


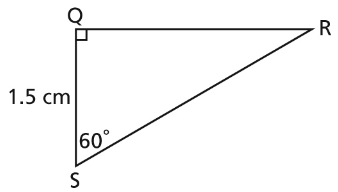
c)



d)



e)



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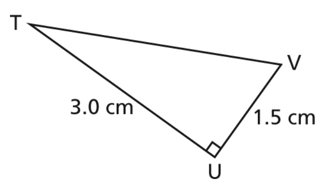


Name: ________________________________ Date: ________________________

Master 2.1b Activate Prior Learning: Solving Equations of the Form: $b = \frac{x}{a}$ and $b = \frac{a}{x}, x \neq 0$

To solve an equation, we determine the value of the variable.
To do this, we isolate the variable on one side of the equation.
When an equation contains a fraction, we multiply both sides of the equation by the denominator of the fraction and simplify.

- To solve an equation of the form $b = \frac{x}{a}$

Solve: $10 = \frac{x}{3}$ Since 3 is the denominator of the fraction, multiply both sides by 3.

$3(10) = 3\left(\frac{x}{3}\right)$ Simplify both sides of the equation.

$30 = x$

The solution is $x = 30$.

- To solve an equation of the form $b = \frac{a}{x}, x \neq 0$

Solve: $5 = \frac{4}{n}$ Since n is the denominator of the fraction, multiply both sides by n.

$n(5) = n\left(\frac{4}{n}\right)$ Simplify.

$5n = 4$ To solve the equation, isolate the variable by dividing both sides by 5.

$\frac{5n}{5} = \frac{4}{5}$ Simplify.

$n = \frac{4}{5}$, or 0.8

The solution is $n = \frac{4}{5}$, or 0.8.

Check Your Understanding

1. Solve each equation.

a) $12 = \frac{m}{3}$ **b)** $10 = \frac{t}{2}$ **c)** $\frac{s}{1.2} = 5$ **d)** $\frac{v}{9} = 1.1$

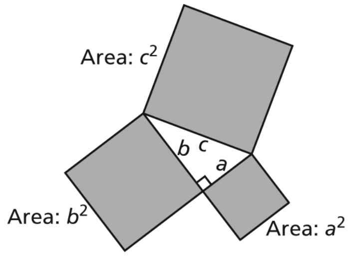
2. Solve each equation.

a) $10 = \frac{3}{v}$ **b)** $24 = \frac{8}{u}$ **c)** $\frac{3.6}{r} = 6$ **d)** $\frac{12}{t} = 0.4$

Name: ______________________________ Date: ______________________

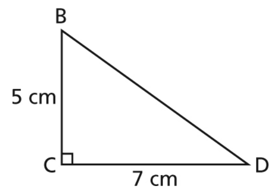
Master 2.1c Activate Prior Learning: The Pythagorean Theorem

In a right triangle, the Pythagorean Theorem states that the square of the hypotenuse is equal to the sum of the squares of the legs.
The area model as shown is one way to prove this is true.



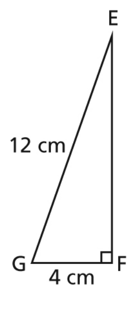
We write: $c^2 = a^2 + b^2$

- To determine the length of the hypotenuse when we know the lengths of the legs
  In ΔBCD, determine the length of BD to the nearest tenth of a centimetre.



  Use the Pythagorean Theorem.
  $BD^2 = BC^2 + CD^2$ Substitute: BC = 5 and CD = 7
  $BD^2 = 5^2 + 7^2$
  $BD = \sqrt{5^2 + 7^2}$ Use a calculator.
  $= 8.6023\ldots$
  BD is about 8.6 cm long.

- To determine the length of a leg when we know the lengths of the other leg and the hypotenuse
  In ΔEFG, determine the length of EF to the nearest tenth of a centimetre.

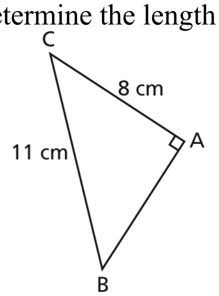


  Use the Pythagorean Theorem.
  $EG^2 = EF^2 + FG^2$ Substitute: EG = 12 and FG = 4
  $12^2 = EF^2 + 4^2$ Solve for EF.
  $EF^2 = 12^2 - 4^2$
  $EF = \sqrt{12^2 - 4^2}$
  $= 11.3137\ldots$
  EF is about 11.3 cm long.

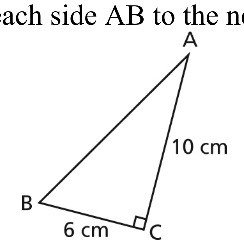
Check Your Understanding

1. Determine the length of each side AB to the nearest tenth of a centimetre.

a)



b)



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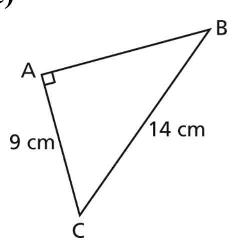

d)