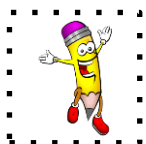


### Solving Proportions Using Cross Products



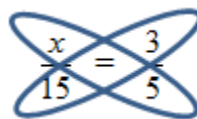
**Objective: I will learn to find a missing number in a proportion by using cross products.**



#### Example #1:

$$\frac{x}{15} = \frac{3}{5}$$

1. *Draw your visual oval cues showing what you will multiply:*



2. *Write the cross product expressions:*  $5 \cdot x = 15 \cdot 3$

3. *Multiply the solvable expression ( $15 \cdot 3$ ):*  $5x = 45$

4. *Solve for the value of the variable in one of three ways:*

a. *use mental math:*  $2x = 6$     $x = 3$

b. *look for a missing factor:*  $5x = 45$

*Ask yourself: what # multiplied by 5 equals 45?*

$$x = 9$$

c. *divide the known product by the coefficient:*

$$16x = 203.2$$

*divide:*  $203.2 \div 16 = 12.7$

$$x = 12.7$$



**Example #2:**

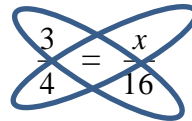
$$\frac{54}{72} = \frac{x}{16}$$



Remember: if you can simplify a fraction, then do so! Instead of working with

$\frac{54}{72}$ , divide by the GCF of 18 and simplify to:  $\frac{3}{4}$

1. *Draw your visual oval cues showing what you will multiply:*



2. *Write the cross product expressions:*  $3 \cdot 16 = 4 \cdot x$

**NOTE:** In this problem, the variable is on the right side of the equal sign. This is fine! Continue to solve for the value of the variable  $x$ .

3. *Multiply the solvable expression (  $3 \cdot 16$  ):  $48 = 4x$*

4. *Solve for the value of the variable in one of three ways:*

a. *use mental math:*  $48 = 4x, \quad x = 12$

b. *look for a missing factor:*  $48 = 4x$

*Ask yourself: what # multiplied by 4 equals 12?*

$$x = 12$$

- c. *divide the known product by the coefficient:*

$$48 = 4x$$

*divide:*  $48 \div 4 = 12$

$$x = 12$$



**YOU GOT THIS:**

1.  $\frac{5}{45} = \frac{4}{k}$

2.  $\frac{10}{35} = \frac{y}{49}$

3.  $\frac{x}{104} = \frac{51}{221}$