

## Section 3.2 Solving Equations Using Multiplication and Division

### Transformations That Produce Equivalent Equations

1. multiply the same value to both sides of an equation
2. Divide the same value to both sides of an equation

Examples

1.  $3x = 2$

$\frac{3x}{3} = \frac{2}{3}$   
 $x = \frac{2}{3}$

2.  $-x = 5$

$\frac{-x}{-1} = \frac{5}{-1}$   
 $x = -5$

opp rule  $\sqrt{-(-5)} = 5$   
 $5 = 5$

3.  $\frac{x}{9} = -25$

$x = -225$   
 $\sqrt{\frac{-225}{9} = -25}$   
 $-25 = -25$

4.  $-\frac{x}{6} = 9$

$\frac{x}{6} = -9 \cdot 6$   
 $x = -54$

5.  $-14 = -\frac{7}{8}m$

$\frac{8}{7} \cdot (-14) = \frac{8}{7} \cdot (-\frac{7}{8}m)$   
 $-14 = -m$   
 $m = 14$

$\frac{4}{5}x = -28$   
 $x = -35$

$\frac{4}{5}(-35) = -28$   
 $-28 = -28$

7. a. A strobe light emits 14 flashes per second. Find the total number of flashes it emits in a 5-minute period.

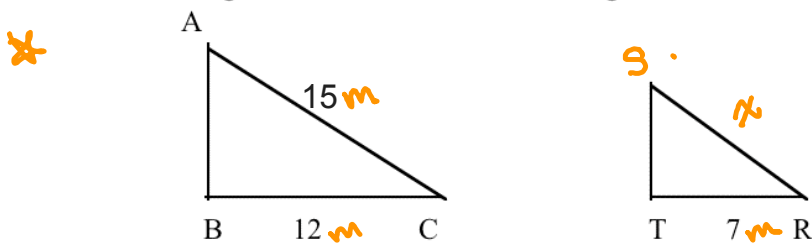
$14 \frac{\text{fl}}{\text{sec}} \cdot 60 \text{ sec} \cdot 5 \text{ min} = 4200 \text{ flashes}$

- b. A time-lapse camera photographed a growing plant at a rate of 25 frames per hour over several days. For how many days was the plant photographed if there were a total of 17,400 frames?

$25 \frac{\text{fr}}{\text{hr}} \cdot 24 \text{ hrs} \cdot x \text{ days} = 17400 \text{ frames}$

$600x = 17400$   
 $x = 29 \text{ days}$

8. The two triangles are similar. What is the length of side  $\overline{RS}$ ?



$7 \cdot \frac{\Delta 1}{12} = \frac{\Delta 2}{x} \cdot 7$   
 $x = 8\frac{3}{4} \text{ m}$