Unit 7: Ratios and Proportions | Name: _____

Lesson 7: Solving Proportions | Hour: Key

# Six Steps for Solving a Story Problem:

1. Read the problem
2. Identify the question ⇒ highlight it!
3. Find the important info ⇒ Underline it!
4. Write a proportion
5. Solve it
6. Write the answer ⇒ label it!

## Solving Story Problems with Proportions

1) Carl works 8 hours and earns $52. How many hours would he have to work to earn $130?

| Proportion: | y=kx: |
|---|---|
| $\frac{\$52}{8\text{ hrs}} = \frac{\$130}{x\text{ hrs}}$ <br> $52x = (130)(8)$ <br> $52x = 1040$ <br> $x = 20$ | $y = 6.5x$ |
| **Constant of Variation:** K = ? <br> $y = kx$ <br> $52 = k(8)$ <br> $6.5 = k$ | **Answer:** <br> Carl has to work 20 hours. |

2) Fifteen scoops of lemonade drink mix are needed to make five gallons. How many gallons will 6 scoops of lemonade mix make?

| Proportion: | y=kx: |
|---|---|
| $\frac{15 \text{ scoops}}{5 \text{ gallons}} = \frac{6 \text{ scoops}}{x \text{ gals}}$ <br> $15x = 30$ <br> $x = 2$ | $y = 3x$ |
| **Constant of Variation:** <br> $y = kx$ <br> $15 = k(5)$ <br> $3 = k$ | **Answer:** <br> 6 scoops of lemonade mix will make 2 gallons. |

3) You are waiting in line to purchase concert tickers. Every 10 minutes, the cashier at the head of your line helps 3 people. There are 11 people in line in front of you. Determine how long you will have to wait to purchase tickets.

| Proportion: | y=kx: |
|---|---|
| $\frac{10 \text{ mins}}{3 \text{ people}} = \frac{x \text{ mins}}{11 \text{ people}}$ <br> $3x = 110$ <br> $x = 36\frac{2}{3}$ | $y = 3\frac{1}{3}x$ |
| **Constant of Variation:** <br> $y = kx$ <br> $10 = k3$ <br> $3\frac{1}{3} = k$ | **Answer:** <br> You will wait $36\frac{2}{3}$ minutes <br> (36 mins 40 seconds) |

4) A recipe for oatmeal raisin cookies calls for $1\frac{2}{3}$ cups of flour to make 4 dozen cookies. How many cups of flour are needed to make 6 dozen cookies?

| Proportion: | y=kx: |
|---|---|
| $\frac{5/3 \text{ cups}}{4 \text{ doz.}} = \frac{x \text{ cups}}{6 \text{ doz}}$ <br> $4x = \frac{5}{3}(\frac{6}{1})$ <br> $4x = 10$ <br> $x = 2\frac{1}{2}$ | $y = \frac{5}{12}x$ |
| **Constant of Variation:** <br> $y = kx$ <br> $5/3 = k(4)$ <br> $5/12 = k$ | **Answer:** <br> You will need $2\frac{1}{2}$ cups of flour. |

5) Shelley was following directions to build a box kite. She had to cut a 36 cm piece of balsa wood into two unequal pieces. The ratio of the longer piece of wood to the smaller piece had to be 7 to 2. How long should the smaller piece be?

| Proportion: | y=kx: |
|---|---|
| $\frac{\text{longer}}{\text{shorter}}$ $\frac{7}{2} = \frac{36-x}{x}$ <br> $7x = 2(36-x)$ <br> $7x = 72-2x$ <br> $9x = 72$ <br> $x = 8$ | $y = 3\frac{1}{2}x$ |
| **Constant of Variation:** <br> $y = kx$ <br> $7 = k(2)$ <br> $3\frac{1}{2} = k$ | **Answer:** <br> The shorter piece is 8 cm long. |