Ch 7
5.3

Name _____ (Key) Date _____

CHAPTER 5 Lessons 4-8 STUDY GUIDE 7th Grade

Complete the work under the problem. Write your answer on the line.
Calculators OK. Show setup.

Convert the following units or rates. Use your table from your notebook. One will be provided for you on your test.

1. 12 cm = 4.73 in (Rounded to nearest hundredth.)

$\frac{12\text{ cm}}{1} \times \frac{0.394\text{ in}}{1\text{ cm}} = 4.73\text{ in}$ (OR) $\frac{12\text{ cm}}{1} \times \frac{1\text{ in}}{2.54\text{ cm}} = 4.72\text{ in}$

★REMEMBER, set up units so they cancel out. ★

2. 4 qt = 3.78 L

$\frac{4\text{ qt.}}{1} \times \frac{0.946\text{ L}}{1\text{ qt.}} = 3.78\text{ L}$ (OR) $\frac{4\text{ qt}}{1} \times \frac{1\text{ L}}{1.057\text{ qt}} = 3.78\text{ L}$

3. 100 mi/hr = 1.67 mi/min

$\frac{100\text{ mi}}{1\text{ hr}} \times \frac{1\text{ hr}}{60\text{ min}} = \frac{100\text{ mi}}{60\text{ min}} = 100 \div 60\ \frac{\text{mi}}{\text{min}} = 1.67\ \frac{\text{mi}}{\text{min}}$

★ miles does not need to be converted; only hours needs changed to minutes.

4. 176 ft/s = 120 mi/hr

$\frac{176\text{ ft}}{1\text{ s}} \times \frac{1\text{ mi}}{5{,}280\text{ ft}} \times \frac{60\text{ s}}{1\text{ min}} \times \frac{60\text{ min}}{1\text{ hr}} = \frac{176 \times 1 \times 60 \times 60}{1 \times 5{,}280 \times 1 \times 1}$

$= 120\ \frac{\text{mi}}{\text{hr}}$

5. 300 gal/hr = 0.33 qt/s

$\frac{300\text{ gal}}{1\text{ hr}} \times \frac{4\text{ qt}}{1\text{ gal}} \times \frac{1\text{ hr}}{60\text{ min}} \times \frac{1\text{ min}}{60\text{ s}} = \frac{300 \times 4 \times 1 \times 1}{1 \times 1 \times 60 \times 60}$

$= 0.33$

9. Nina charges $34.50 for 6 days of pet sitting. Find the constant of proportionality. Then write an equation relating the cost of pet sitting to the number of days. What would be the cost of pet sitting for 4 days?

What is constant, or the same? The cost per day.
The cost per day is $34.50 ÷ 6 = $5.75.
If c = cost and d = number of days, the total cost would be the daily charge times the number of days.

The constant of proportionality is $5.75.

The equation is $c = 5.75d$.

The cost for 4 days would be $c = 5.75 \cdot 4 = 23$ dollars

10. Solve the following proportions.

$\frac{c}{36} = \frac{9}{15}$

$36 \cdot 9 = 15 \cdot c$
$324 = 15c$
$324 \div 15 = c$
$21.6 = c$

★ Cross-products must be equal

$\frac{b}{15} = \frac{66}{90}$ (÷6 on b, ÷6 on 66)

$b = 66 \div 6 = 11$

$b = 11$

★ Go left because we want to start with what we know and end at b.

$\frac{16}{v} = \frac{4.8}{1.5}$

$16 \cdot 1.5 = 4.8v$
$24 = 4.8v$
$24 \div 4.8 = v$
$5 = v$

$\frac{3.2}{9} = \frac{n}{36}$ (×4 on 9, ×4 on 36)

$n = 3.2 \times 4 = 12.8$

$n = 12.8$

11. The wait time to ride a roller coaster is 20 minutes long when 160 people are in line. At this rate, how long is the wait time when 220 people are in line?

* Set up a proportion comparing wait time to people in line. Solve for the missing wait time.

$$\frac{\text{wait}}{\text{people}} = \frac{20 \text{ min}}{160 \text{ people}} = \frac{x \text{ min}}{220 \text{ people}}$$

$20 \cdot 220 = 160 \cdot x$

$4400 = 160 \cdot x$

$4400 \div 160 = x$

$27.5 = x$ min

12. An architect builds a model of a building before the actual building is built. The model is 8 inches tall and the actual building will be 22 feet tall. The model is 20 inches wide. Find the actual width of the building.

* Set up a proportion comparing model size to actual size. One ratio will be for height and the other for width. Solve for the actual width.

$$\frac{\text{model}}{\text{actual}} = \frac{8 \text{ in.}}{22 \text{ ft.}} = \frac{20 \text{ in}}{x \text{ ft.}}$$

height width

$22 \cdot 20 = 8 \cdot x$

$440 = 8 \cdot x$

$440 \div 8 = x$

$55 = x$

The actual width is 55 ft.