

Unit 6 Study Guide

Finding the Part

a. What is 15% of 23?

$$.15 \times 23$$

$$\boxed{3.45}$$

B. What is 25% of 86?

$$.25 \times 86$$

$$\boxed{21.5}$$

C. What is 30% of 79?

$$.3 \times 79$$

$$\boxed{23.7}$$

Finding the Percent

a. 30 is what percent of 70?

$$100 \cdot \frac{30}{70} = 42\frac{6}{7}\%$$

B. 15 is what percent of 45?

$$100 \cdot \frac{15}{45} = \boxed{33\frac{1}{3}\%}$$

C. 22 is what percent of 120?

$$100 \cdot \frac{22}{120} = \boxed{18\frac{1}{3}\%}$$

Finding the Whole

a. 30 is 60% of what number?

$$30 = .6x$$

$$\boxed{50}$$

B. 50 is 40% of what number?

$$50 = .4x$$

$$\boxed{125}$$

C. 75 is 20% of what number?

$$\frac{75}{.2} = \boxed{375}$$

Discount

a. A pair of shoes is normally \$60, but is on sale for 30% off. If I have a coupon for an additional 10% off the discounted price, what will I pay for the jacket?

$$\begin{array}{r} 60 \\ \times .7 \\ \hline 42 \end{array} \quad \begin{array}{r} 42 \\ - 4.20 \\ \hline \boxed{\$37.80} \end{array}$$

b. A cookies is normally \$1.50, but is on sale for 25% off. If I have a coupon for an additional 50% off the discounted price, what will I pay for the cookie?

$$\begin{array}{r} 1.50 \\ \times .75 \\ \hline 1.125 \end{array} \quad \begin{array}{r} .5625 \\ \times .5 \\ \hline \boxed{\$.56} \end{array}$$

c. A pair of shoes is normally \$120, but is on sale for 60% off. If I have a coupon for an additional 30% off the discounted price, what will I pay for the shoes?

$$\begin{array}{r} 120 \\ \times .4 \\ \hline 48 \end{array} \quad \begin{array}{r} 48 \\ \times .7 \\ \hline \boxed{\$33.60} \end{array}$$

d. A store is having a 20% off sale. If I bought a necklace for \$37.60, what was the original price?

$$\frac{37.60}{.8} = \boxed{\$47}$$

e. A amusement park is having a special where all their tickets are 60% off. If I paid \$48 to go, how much was full price?

$$\frac{48}{.4} = \boxed{\$120}$$

Mark Up

- a. A store buys a pot for \$5. They need to make 40% profit. How much should they sell it for?

$$5 \times 1.4 = \text{\$7}$$

- b. A store buys a towel for \$3. They want to make 50% profit. How much should they sell it for?

$$3 + 1.50 = \text{\$4.50}$$

- c. A store makes 60% profit. If they sold a pair of glasses for \$19.20, how much did they buy them for?

$$\frac{19.20}{1.6} = 1.6x \quad \text{\$12}$$

Percent Change

Find the percent change of each:

a. $5 \rightarrow 7$

$$\frac{2}{5} = 40\% \text{ increase}$$

b. $6 \rightarrow 2$

$$\frac{4}{6} = 66\frac{2}{3}\% \text{ decrease}$$

c. $10 \rightarrow 13$

$$\frac{3}{10} = 30\% \text{ increase}$$

d. $38 \rightarrow 57$

$$\frac{19}{38} = 50\% \text{ increase}$$

e. $80 \rightarrow 25$

$$\frac{55}{80} = 68\frac{3}{4}\% \text{ decrease}$$

f. $12 \rightarrow 8$

$$\frac{4}{12} = 33\frac{1}{3}\% \text{ decrease}$$

Interest

- a. If Bob borrows \$500 and agrees to pay 3% simple interest weekly, how much interest will he pay after 3 weeks?

$$500 \cdot .03 \cdot 3 = \text{\$45} \text{ in interest}$$

- b. If Bob borrows \$200 and agrees to pay 0.3% interest weekly, how much interest will he pay after 3 weeks?

$$200 \cdot .003 \cdot 3 = \text{\$1.80}$$

- c. If Bob borrows \$500 and agrees to pay 0.3% interest weekly, how much interest will he pay after 12 weeks?

$$500 \cdot .003 \cdot 12 = \text{\$1.80}$$

Proprtions

- a. If 5lbs of dog food costs \$12.50, how much will 7lbs of dog food cost?

$$\textcircled{917.50} \quad \frac{5\text{lb}}{12.50} = \frac{7\text{lb}}{x} \quad \underline{5x = 87.50}$$

- b. A shade of purple is made from mixing 1 part red to 2 parts blue. If I use 3 gallons of blue, how much red will I need?

$$\frac{1\text{ red}}{2\text{ blue}} = \frac{x\text{ gallons red}}{3\text{ gallons blue}} \quad \underline{\frac{3}{2} = 2x} \quad \textcircled{3/2 \text{ or } 1.5\text{ gallons}}$$

- c. If a car gets 22 miles per gallon, how much gas is used to go 100 miles?

$$\frac{22\text{ miles}}{1\text{ gallon}} = \frac{100\text{ miles}}{x\text{ gallons}} \quad \underline{\frac{100}{22} = 22x}$$

- d. $\frac{5}{x} = \frac{10.5}{6}$

$$\frac{100}{22} = \frac{50}{11} \quad \textcircled{4 \frac{4}{11}\text{ gallons}}$$

$$\frac{30 = 10.5x}{10.5} \quad \frac{-30 = 60}{10.5} \quad \frac{-3}{21} \quad \frac{20}{7} = \textcircled{2 \frac{6}{7}}$$

- e. $\frac{3}{8.2} = \frac{x}{9}$

$$\frac{15 = 8.2x}{8.2} = \frac{15}{8.2} = \frac{150}{82} = \frac{75}{41} = \textcircled{1 \frac{34}{41}}$$

Review- Graphs, Equations, Order of Operations

- a. Graph $y = 2x$, graph $y = 3x + 2$ graph $y = 3x - 1$

see attached

- b. Solve for x: $3x + 2x - 6 = -2x + 6$

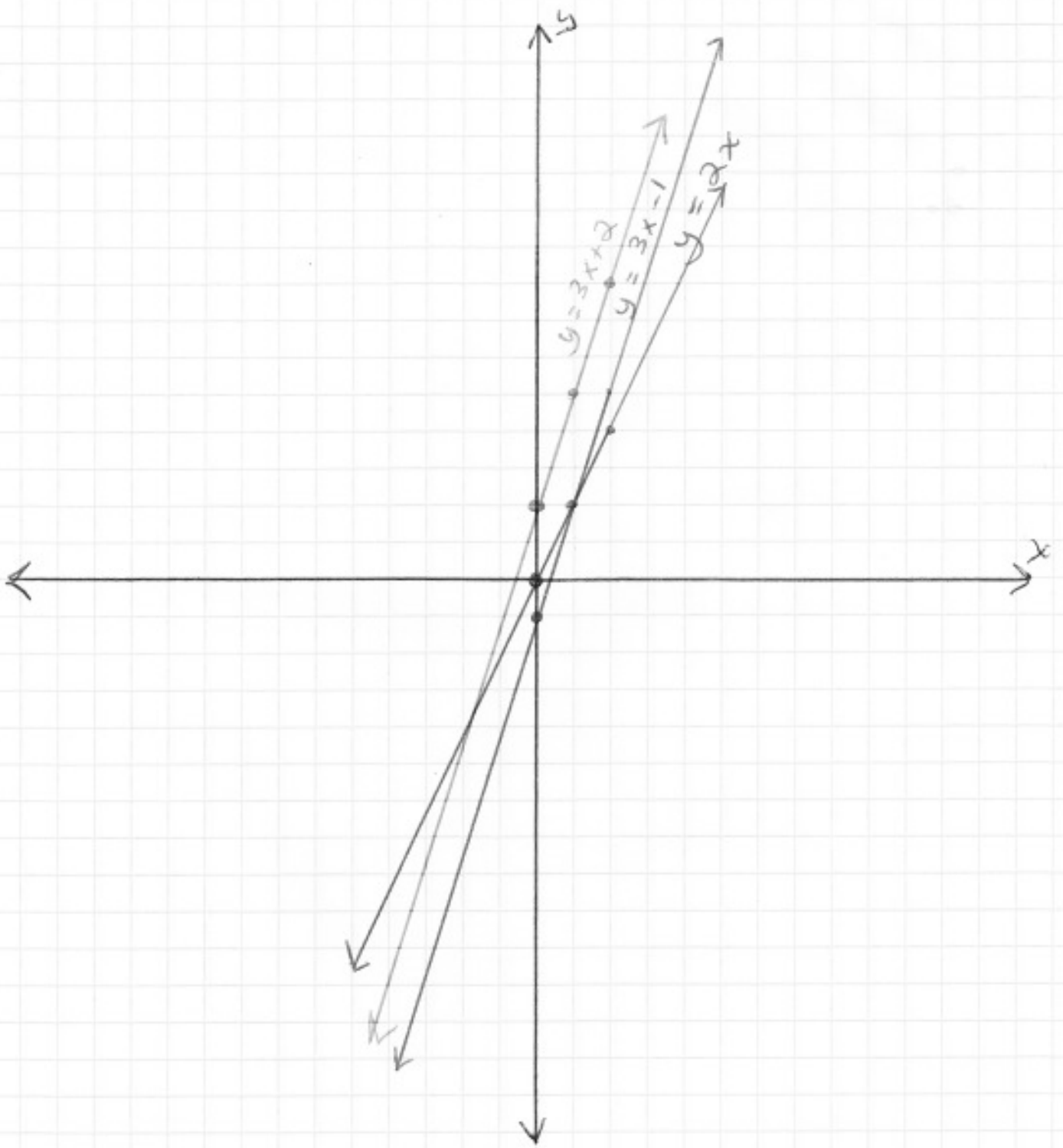
$$\begin{array}{r} 5x - 6 = -2x + 6 \\ +2x + 6 \quad +2x + 6 \\ \hline 7x = 12 \end{array} \quad \textcircled{x = 12/7 \text{ or } 15/7}$$

- c. Solve for x: $2 - (3x + 2) = x + 5$

$$\begin{array}{r} 2 - 3x - 2 = x + 5 \\ -3x = x + 5 \\ -x \quad -x + 6 \\ \hline -4x = 5 \end{array} \quad \textcircled{x = -\frac{5}{4} \text{ or } -1 \frac{1}{4}}$$

- d. Solve for x: $2 - 2(3x - 2) = x + 2$

$$\begin{array}{r} 2 - 6x + 4 = x + 2 \\ -6x + 6 = x + 2 \\ +6x \quad +6x \\ \hline 6 = 7x + 2 \\ -2 \quad -2 \\ \hline 4 = 7x \end{array} \quad \textcircled{x = 4/7}$$



e. Solve for p: $m + 2p = 6$

$$\begin{array}{r} -m \\ -m \end{array}$$

$$\frac{2p = 6 - m}{2}$$

$$p = 3 - \frac{m}{2}$$

f. Solve for U: $2x + 3U = 6$

$$\begin{array}{r} -2x \\ -2x \end{array}$$

$$\frac{3U = 6 - 2x}{3}$$

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

g. Solve for T: $2T + 3T - (x + 2) = T + 3$

$$\begin{array}{r} 3 \\ 5T - x - 2 = T + 3 \\ -T \qquad -T \end{array}$$

$$\frac{4T - x - 2 = 3}{+x + 2 \quad +x + 2}$$

$$4T = x + 5$$

+

$$T = \frac{x}{4} + \frac{5}{4}$$

h. Simplify $6 - 3 + 6 \cdot 2$

$$6 - 12 + 12$$

$$6 - 1 = 5$$

i. Simplify $\frac{12 \div 2(3+2)}{6-7(0-1) \div 2}$

$$\frac{6(3+2)}{6-7(-1) \div 2}$$

$$= \frac{6 \cdot 5}{6+7 \div 2}$$

$$= \frac{35}{6 + \frac{7}{2}}$$

$$= \frac{35}{3.5}$$

$$\frac{35}{3.5} \cdot \frac{2}{2} = \frac{70}{7}$$

$$\frac{70}{7} \text{ or } 3 \frac{13}{19}$$