Algebra 0507 Name _____

Chapter 3 Review - WS #18-24

Date _____

Solve each proportion.

1) $\frac{8}{2} = \frac{n}{6}$

$\frac{48}{2} = \frac{2n}{2}$

$24 = n$

2) $\frac{9}{10} = \frac{6}{r}$

$\frac{9r}{9} = \frac{60}{9}$

$r = 6\frac{2}{3}$

3) $\frac{8}{x} = \frac{4}{6}$

$48 = 4x$

$12 = x$

4) $\frac{(x+1)}{2} = \frac{2}{3}$

$3(x+1) = 4$

$3x + 3 = 4$

$-3 \quad -3$

$\frac{3x}{3} = \frac{1}{3}$

$x = \frac{1}{3}$

5) $\frac{12}{(b+3)} = \frac{9}{2}$

$24 = 9(b+3)$

$24 = 9b + 27$

$-27 \quad -27$

$\frac{-3}{9} = \frac{9b}{9}$

$-\frac{1}{3} = b$

6) $\frac{(v+2)}{2} = \frac{7}{3}$

$3(v+2) = 14$

$3v + 6 = 14$

$-6 \quad -6$

$\frac{3v}{3} = \frac{8}{3}$

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

7) $\frac{k}{k+7} = \frac{8}{2}$

$2k = 8(k+7)$

$2k = 8k + 56$

$-8k \quad -8k$

$\frac{-6k}{-6} = \frac{56}{-6}$

$k = -9\frac{1}{3}$

8) $\frac{8}{(n-3)} = \frac{6}{n}$

$8n = 6(n-3)$

$8n = 6n - 18$

$-6n \quad -6n$

$\frac{2n}{2} = \frac{-18}{2}$

$n = -9$

9) $\frac{3}{8} = \frac{a}{(a+11)}$

$3(a+11) = 8a$

$3a + 33 = 8a$

$-3a \quad -3a$

$\frac{33}{5} = \frac{5a}{5}$

$6\frac{3}{5} = a$

10) $\frac{6}{(x+3)} = \frac{4}{(x+7)}$

$6(x+7) = 4(x+3)$

$6x + 42 = 4x + 12$

$-4x \quad -4x$

$2x + 42 = 12$

$-42 \quad -42$

$\frac{2x}{2} = \frac{-30}{2}$

$x = -15$

11) $\frac{(n-4)}{(n-1)} = \frac{4}{5}$

$5(n-4) = 4(n-1)$

$5n - 20 = 4n - 4$

$-4n \quad -4n$

$n - 20 = -4$

$+20 \quad +20$

$n = 16$

12) $\frac{(x-8)}{(x-1)} = \frac{8}{9}$

$9(x-8) = 8(x-1)$

$9x - 72 = 8x - 8$

$-8x \quad -8x$

$x - 72 = -8$

$+72 \quad +72$

$x = 64$

Set up a proportion and solve.

1. If a basketball player scores 27 points over 3 games, how many games will it take for him to score 150 points?

$\frac{27 \text{ pts}}{3 \text{ games}} = \frac{150 \text{ pt}}{x \text{ games}}$.

$x = 16\frac{2}{3}$ games

It will take $16\frac{2}{3}$ games to score 150 points.

2. A restaurant uses 12 bottles of ketchup over 3 weeks. How many bottles of ketchup will it use in 10 weeks?

$\frac{12 \text{ bottles}}{3 \text{ weeks}} = \frac{x \text{ bottles}}{10 \text{ weeks}}$

$120 = 3x$

$40 = x$

They will use 40 bottles of ketchup in 10 weeks.

Given that y *varies directly* as x $\frac{y}{x}$

3. If $x = 3$ when $y = 21$, find x when $y = 1$

$\frac{21}{3} = \frac{1}{x}$

$21x = 3$

$x = \frac{1}{7}$

$x = \frac{1}{7}$ when $y = 1$.

3. If $x = 5$ when $y = -4$, find y when $x = 12$

$\frac{-4}{5} = \frac{y}{12}$

$-48 = 5y$

$-9\frac{3}{5} = y$ $y = -9\frac{3}{5}$ when $x = 12$.

$y = -9\frac{3}{5}$

Given that y *varies inversely* as x $x \cdot y$.

3. If $x = 2$ when $y = 6$, find x when $y = 24$

$2 \cdot 6 = x \cdot 24$

$12 = 24x$

$\frac{1}{2} = x$

$x = \frac{1}{2}$ when $y = 24$

3. If $x = -4$ when $y = 3$, find y when $x = 6$

$-4 \cdot 3 = 6 \cdot y$

$-12 = 6y$

$-2 = y$

$y = -2$ when $x = 6$.

READ the problem and determine the formula needed in order to solve the problem.

y/x

The cost of bananas *varies directly* with their weight. Mark bought 3.5 pounds of bananas for $1.12. What would 4.5 pounds of bananas cost?

$\frac{3.5 \text{ lb}}{\$1.12} = \frac{4.5 \text{ lb}}{x}$

$3.5x = 5.04$

$x = 1.44$

4.5 pounds of bananas cost $1.44.

$x \cdot y$

The sound produced by a string inside a piano *varies inversely* as its length. Suppose a string 2 feet long vibrates 300 cycles per second. What would be the frequency of a string 4 feet long?

$2 \cdot 300 = 4 \cdot y$

$600 = 4y$

$150 = y$

The frequency of a string 4 feet long is 150 cycles per second.

y/x

Lauren's salary *varies directly* with the number of hours worked. If Lauren earns $9.50 and hour, how much will she earn after working 40 hours?

$\frac{9.50}{1 \text{ hour}} = \frac{x}{40 \text{ hours}}$

$380 = x$

She will earn $380 after working 40 hours.

$x \cdot y$

The number of employees scheduled *varies inversely* with the number of hours worked. If 6 employees take 8 hours to finish a job, how many hours will it take if 4 employees do the same job?

$6 \cdot 8 = 4 \cdot x$

$48 = 4x$

$12 = x$

It will take 4 employees 12 hours to do the job.