Name: Key Per: Date:

Pre Algebra Ch. 7 Group Review

1) Solve each percent problem by setting up a proportion equation or writing a one-step equation then solving it showing all support work.

a) 24 is what percent of 60 ?

$24 = x\%(60)$

OR

$\frac{24}{60} = \frac{x}{100}$

$\frac{60x}{60} = \frac{2400}{60}$

$x = 40\%$

Ans: 40%

b) 80% of what number is 24?

$.8x = 24$

OR

$\frac{24}{x} = \frac{80}{100}$

$\frac{2400}{80} = \frac{80x}{80}$

$x = 30$

Ans: 30

c) 270 is what percent of 300?

$270 = x\%(300)$

OR

$\frac{270}{300} = \frac{x}{100}$ (÷3)

÷3

$x = 90$

Ans: 90

2) The price of one pound of chocolate rose from $1.25 to $2.75.

a) What is the percent increase?

$2.75 - 1.25 = 1.50$ ← change

1.25 ← original

$125\overline{)150.0}$ (1.2)

125

250

-250

0

$1.2 \times 100 = 120\%$

Ans: 120%

b) If the price reverses from $2.75 to $1.25, would this be a percent increase or decrease?

$2.75 - 1.25 = 1.50$ ← change

2.75 ← original

$275\overline{)150.00}$ ($.\overline{54}$)

1375

1250

1100

150

$.\overline{54} \times 100 = 54.\overline{54}\%$

Ans: $54.\overline{54}\%$

3) The formula for simple interest is I = Prt. Find the principal (P) if you earn $500 in interest (I) at a rate of 7% (r) for 6 years. Then determine the total amount of money (principal + interest).

$500 = P(.07)(6)$

$\frac{500}{.42} = \frac{.42P}{.42}$

round because it's $

$P = 1190.48$

$I = +\ 500$

$1,690.48$

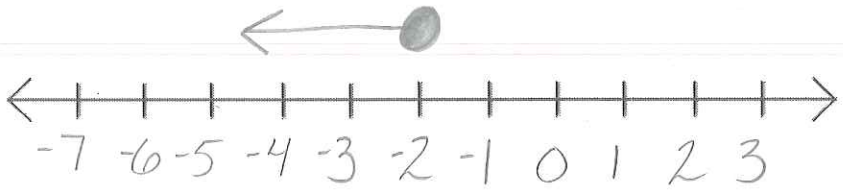
Ans: $1,690.48

4) Solve and graph each inequality:

a) $2a + 3 \leq -1$

$-3 \quad -3$

$\frac{2a}{2} \leq \frac{-4}{2}$

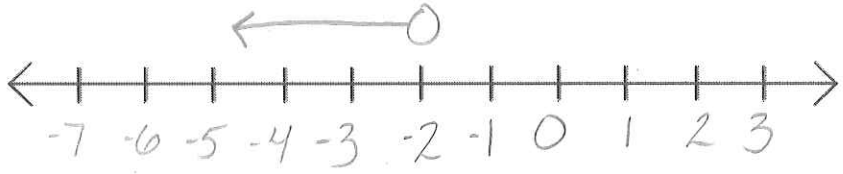


Inequality: $a \leq -2$

b) $-3m - 1 > 5$

$+1 \quad +1$

$\frac{-3m}{-3} > \frac{6}{-3}$



Inequality: $m < -2$

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c) $3x - 1 \geq 3x + 3$

$-3x \quad -3x$

$-1 \geq 3$

That's not true!

any numbers you want

Inequality: No Solution

5) Write the inequality and solve it: Three times the sum of five and a number is less than or equal to 30.

"a" for my variable

Original Inequality: $3(5+a) \leq 30$

$15 + 3a \leq 30$

$-15 \quad -15$

$\frac{3a}{3} \leq \frac{15}{3}$

Ans (as a final inequality): $a \leq 5$

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6) Mr. Ornelas needed to travel 400 miles to reach Chicago from his home. He went to Chicago in 8 hours and came back at an average speed of 52 miles per hour. Which part of his trip was faster and how do you know?

Driving to Chicago

$d = rt$

$\frac{400}{8} = \frac{r(8)}{8}$ $r = 50$ mph

Driving back

$r = 52$ mph

$50 < 52$

Ans: Driving back

Mr. Ornelas drove 50 mph there but 52 mph back. The trip back was therefore faster.

7) An airplane is flying at an elevation of 20,000 feet and descends at a rate of 325 feet per minute for 8 minutes. Write an equation and solve it to find the new elevation of the airplane.

$d = rt$

$d = 325(8)$

$d = 2600$ feet down

$20000 - 2600$

one option

Equation: $20{,}000 - rt = x$ (x: new elevation) Ans: 17,400

8) Mr. Webb gave his waiter a $5.60 tip on a $40 bill. What percent tip did he give the waiter? Show your work!

one option →

$\frac{5.6}{40} = \frac{x}{100}$

$\frac{40x}{40} = \frac{560}{40}$

$x = 14$

% Tip: 14

9) On December 17, 1903, Orville Wright flew the first powered airplane 120 feet. The flight lasted 12 seconds. What was Orville's speed in feet per second?

$d = rt$

$\frac{120}{12} = \frac{r(12)}{12}$

$r = 10$ feet per second

Ans: 10 f/s

10) Solve each equation. Check your solutions.

a) $\frac{e}{8} - 20 = 105$

$+20 \quad +20$

$8 \cdot \frac{e}{8} = 125 \cdot 8$

$e = 1000$

Ans: 1,000

b) $32 + \frac{h}{12} = 25$

$-32 \quad -32$

$(12)\ \frac{h}{12} = 7(12)$

Ans: 84

c) $35 = \frac{x}{5} + 17$

$-17 \quad -17$

$5 \cdot 18 = \frac{x}{5} \cdot 5$

Ans: 90

d) $-\frac{m}{6} - 12 = -8$

$+12 \quad +12$

$(-6) -\frac{m}{6} = 4(-6)$

Ans: -24

11) Solve each equation, or proportion. Check your solution.

a) $\frac{8}{10} = \frac{x}{25}$ (→ ×2.5)

(→ ×2.5)

$x = 20$

check

$\frac{8}{10} = \frac{20}{25}$

200 200

b) $\frac{12}{9} = \frac{20}{y}$

$\frac{180}{12} = \frac{12y}{12}$

$y = 15$

check

$\frac{12}{9} = \frac{20}{15}$

↓ ↓

$\frac{4}{3} \quad \frac{4}{3}$

Ans: 20

Ans: 15

Lots of ways to solve & to check your answers!

c) $\frac{2}{3} = \frac{x+1}{9}$

$3(x+1) = 18$

$3x+3 = 18$

$-3 \quad -3$

$\frac{3x}{3} = \frac{15}{3}$

Check

$\frac{2}{3} = \frac{(5)+1}{9}$

$\frac{2}{3} = \frac{6}{9}$ yes!

Ans: 5

d) $\frac{9}{7} = \frac{18}{2y-4}$ (×2)

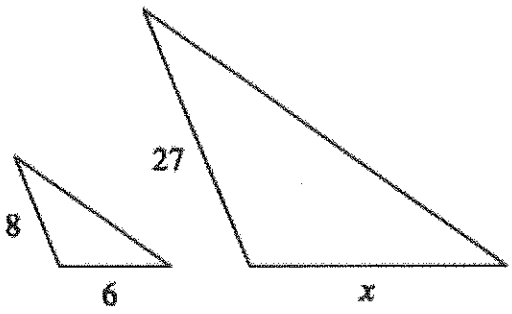
$14 = 2y - 4$ OR $7(18) = 9(2y-4)$

$+4 \quad +4$

$\frac{18}{2} = \frac{2y}{2}$

Ans: 9

12) Find the multiplier (scale factor), then solve for the missing side length in the similar shapes below.



Option 1

$\frac{8}{6} \times \frac{27}{8} = \frac{27}{x}$

$\frac{3\cancel{6}}{1} \times \frac{27}{\cancel{8}4} = \frac{81}{4}$

Option 2

$\frac{8}{6} = \frac{27}{x}$

$\frac{8x}{8} = \frac{162}{8}$

$x = \frac{81}{4}$ or 20.25

k (scale factor/multiplier) = $\frac{27}{8}$ or $3\frac{3}{8}$ x = $\frac{81}{4}$ or 20.25

13) Simplify each of the following expressions.

a) $(x^2 + 5x + 6) + (2x^2 + x + 7)$

Ans: $3x^2 + 6x + 13$

b) $(3x^2 + 6x + 5) - (x^2 + 8x + 5)$

$3x^2 + 6x + 5 - x^2 - 8x - 5$

Ans: $2x^2 - 2x$

c) $-3(2k-12)+5(9+3k)$

$-6k+36+45+15k$

Ans: $9k+81$

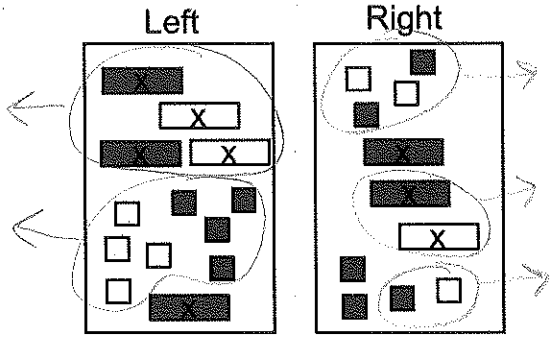
d) $\frac{1}{3}(6k-15)+\frac{2}{5}(10+5k)-|2-7|$

$2k-5+4+2k-|-5|$

$2k-5+4+2k-5$

Ans: $4k-6$

14) Consider the comparison mats below. Which side is greater? Right, left, or neither? Show your work by writing and "umsimplified" version and a fully simplified version for each mat.



Left mat (unsimplified) $3x-2x+4-4$

Right mat (unsimplified) $2x-x+5-3$

Left mat (simplified) x

Right mat (simplified) $x+2$

Which mat has a greater value? Right mat

15)

a. You waited too long to buy the new fuzzy socks you wanted. They just went up from \$8 to \$13 because they are so awesome. Find the percent increase.

$13-8=\frac{5}{8}=\frac{x}{100}$

Ans: 62.5%

b. A new Groupon became available for your favorite frozen yogurt place. How much money will you save if you purchase a \$5 gift card for \$3?

$5-3=\frac{2}{5}=40\%$

Ans: 40%

10

16) My family of six eats 24 meatballs and four pounds of pasta on spaghetti night. How many meatballs and how much pasta will we need when my grandparents (just two people) join our family of six for spaghetti night? Show your work. [Round your answer(s) to one decimal place]

Meatballs

6 people : 8 people

24 meatballs : x meatballs

1 person eats 4 meatballs

8 people will need 8(4) = 32 meatballs

Pasta

6 people : 8 people

4 lbs : x lbs

$\frac{32}{6} = \frac{6x}{6}$

$x = 5\frac{1}{3}$

Ans: 32 meatballs and $5\frac{1}{3}$ lbs of pasta

17) Solve each of the following equations. Check at least one of the solutions.

a) $-2(-3x-7) = 2x-2$

$6x+14 = 2x-2$

$-2x \quad -2x$

$4x+14 = -2$

$-14 \quad -14$

$\frac{4x}{4} = \frac{-16}{4}$

Check

$-2(-3(-4)-7) = 2(-4)-2$

$-2(12-7) = -8-2$

$-2(5) = -10$

$-10 = -10$ ☺

Ans: -4

b) $3-4(5-x) = -(2x+3)$

$3-20+4x = -2x-3$

$-17+4x = -2x-3$

$+2x \quad +2x$

$-17+6x = -3$

$+17 \quad +17$

$\frac{6x}{6} = \frac{14}{6}$

Check

$3-4(5-\frac{7}{3}) = -(2(\frac{7}{3})+3)$

$3-4(\frac{8}{3}) = -(\frac{14}{3}+3)$

$3-\frac{32}{3} = -\frac{23}{3}$

$-\frac{23}{3} = -\frac{23}{3}$ ☺

Ans: $\frac{7}{3}$

c) $3+\frac{1}{4}(8x+24)-5x = -2(x-7)+4x$

$3+2x+6-5x = -2x+14+4x$

$9-3x = 2x+14$

$+3x \quad +3x$

$9 = 5x+14$

$-14 \quad -14$

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

Check

$3+\frac{1}{4}(8(-1)+24)-5(-1) = -2((-1)-7)+4(-1)$

$3+\frac{1}{4}(-8+24)+5 = -2(-8)+-4$

$3+\frac{1}{4}(16)+5 = 16+-4$

$3+4+5 = 12$

$12 = 12$ ☺

Ans: -1

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18) Find the answer to each expression! **DON'T DISTRIBUTE, THERE ARE NO VARIABLES**!!!

a. $-4+4-3(3\bullet 2+1)$

$-4+4-3(6+1)$

$-4+4-3(7)$

Ans: -21

b. $15-\sqrt{16}+\sqrt{9}+5(-2+7)$

$15-4+3+5(5)$

$15-4+3+25$

Ans: 39

c. $\frac{5(3+4\bullet 1)}{7}$ $\frac{5(3+4)}{7}$ $\frac{5(7)}{7}$

Ans: 5

d. $3-(-2+7-14\div 2)+5$

$3-(-2+7-7)+5$

$3-(5-7)+5$

$3-(-2)+5=5+5$

Ans: 10

19) If I put $500 into an account and left it alone for three years earning simple interest, and at the end of three years I withdrew $650, what interest rate was I earning?

$I=Prt$

$150=500(r)(3)$

$\frac{150}{1500}=\frac{1500r}{1500}$

$r=.10=10\%$

650 = Principal + interest

Ans: 10%

20) I can't believe I found a bank that will pay 3% simple interest! I'll deposit $7,500 in the account and leave it there for five years. How much will I have when I take it all out in five years? Show your work.

$I=Prt$

$I=7500(.03)(5)$

$I=1125$

Total = Interest + Principal

$1125+7500$

Ans: $8625

Challenge question hint: between 10000 < x < 14000

21) Margo's parents started a saving account for her when she started high school. She will have $16,000 when she graduates. If the account earns 7% simple interest every year, how much did her parents deposit into the account when she started high school (four years before she graduates)?

Ans: _____

See me if you want a challenge!