

Name: _____ Hr: _____

Ch. 2 Pre-Test - Algebra 1

_____ / 45 points

Multiple Choice.

Identify the choice that best completes the statement or answers the question.

- D** 1 (1 point) During basketball practice you take a bunch of free throw shots. You make 65 shots and miss 35. What is the **simplified** ratio of how many you made to how many you missed? $\frac{65}{35} = \frac{13}{7}$
- A 65:100 B 35:65 C 65:35 **D 13:7**
- B** 2 (1 point) Which equation has no solution?
- A $11 - (6v + 3) = 6v - 8$ C $3w + 4 - w = 5w - 2(w - 2)$
B $5x + 3 = 5x - 6$ D $6m - 6 = 8m + 7 - m$
 $3 = -6$
- D** 3 (1 point) Solve for y. $3(-z = x) \xrightarrow{+z + z} 3y = x + z \xrightarrow{y = \frac{x+z}{3}}$
- A $y = \frac{x-z}{3}$ B $y = \frac{x}{3} + z$ C $y = x + z - 3$ **D $y = \frac{x+z}{3}$**
- C** 4 (1 point) A factory worker can package 180 games in 12 minutes. How many games can he package per minute?
- A 168 B 30 **C 15** D 45 $\frac{180 \text{ g}}{12 \text{ min}} = \frac{15 \text{ g}}{1 \text{ min}}$
- C** 5 (1 point) Car A travels 160 miles in 4 hours. Car B travels 210 miles in 5 hours. Car C travels 300 miles in 6 hours. Which car has the fastest average speed?
- A They all have the same average speed **C Car C** $\frac{160}{4} = 40$ $\frac{210}{5} = 42$ $\frac{300}{6} = 50$
 B Car B D Car A
- B** 6 (1 point) A car is driving at a speed of 70 mi/h. What is the speed of the car in feet per minute? (1 mi. = 5280 feet. 1 hr. = 60 min.)
- A 3,010 ft/min **B 6,160 ft/min** C 4,200 ft/min D 369,600 ft/min $\frac{70 \text{ mi}}{1 \text{ hr}} \times \frac{5280 \text{ ft}}{1 \text{ mi}} \times \frac{1 \text{ hr}}{60 \text{ min}} = \frac{369600}{60} = \frac{6160 \text{ ft}}{1 \text{ min}}$

Short Answer. Show all work to earn credit.

7 (2 points) $\frac{1}{2+6} + \frac{3}{5} - \frac{4}{3} = \frac{1}{8} + \frac{3}{5} - \frac{4}{3} = \frac{15}{120} + \frac{72}{120} - \frac{160}{120} = \frac{-73}{120}$

8 (2 points) Solve the proportion $\frac{3 \times 7}{7} = \frac{x}{49}$ $x = 21$

- 9 (2 points) This formula relates degrees Celcius to degrees fahrenheit. $F = \frac{9}{5}C + 32$

<p>a. Solve for C.</p> $F = \frac{9}{5}C + 32$ $\frac{9}{5}(F - 32) = C$ $C = \frac{5}{9}(F - 32)$	<p>b. If it is 55° F, what is the temperature in Celcius?</p> $C = \frac{5}{9}(55 - 32)$ $C = \frac{5}{9}(23)$ $C = 12\frac{7}{9}^{\circ}$ $12.\bar{7}$
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- 10 (4 points) School guidelines require that there must be at least 2 chaperones for every 25 students going on a school trip. How many chaperones must there be for 87 students?

<p>a. Define your variable. (1 pt)</p> $x = \text{chaperones}$	<p>b. Write a proportion using your variable that models the situation. (1 pt)</p> $\frac{2c}{25s} = \frac{x}{87s}$	<p>c. Solve the proportion. (2 pts)</p> $\frac{25x}{25} = \frac{174}{25}$ $x = 6\frac{24}{25}$ $x = 7 \text{ chaperones}$
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- 11 (5 points) Painters Plus charges \$60 per hour. Spiffy Painter Co. charges a fee of \$90 and then \$40 per hour. After how many hours will the companys cost the same?

<p>a. Define your variable. (1 point)</p> $x = \text{hours}$	<p>b. Write an equation. (1 point)</p> $\begin{array}{r} \text{P.P.} \quad \text{S.P.C.} \\ 60x = 90 + 40x \\ -40x \quad -40x \end{array}$	<p>c. Solve the equation. (2 points)</p> $\frac{20x}{20} = \frac{90}{20}$ $x = 4\frac{1}{2} \text{ hrs}$
<p>d. <u>Give Advice:</u> If you estimate it will take 8 hours, which company should you choose? (1 point)</p> <p>PP: $60 \cdot 8 = \\$480$</p> <p>S.P.C: $90 + 40(8) = \\$410$</p> <p>Spiffy Cheaper</p>		

- 12 (4 points) A package delivery company has determined that they can meet their schedules if they have 4 drivers for every 30 square miles of area they cover. If they want to offer service to a county of 75 square miles, how many drivers must they have?

<p>a. Define your variable. (1 pt)</p> $x = \text{drivers}$	<p>b. Write a proportion using your variable that models the situation. (1 pt)</p> $\frac{4d}{30 \text{ mi}^2} = \frac{x}{75 \text{ mi}^2}$	<p>c. Solve the proportion. (2 pts)</p> $\frac{30x}{30} = \frac{300}{30}$ $x = 10 \text{ drivers}$
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13 (20 points) Solve each equation. SHOW YOUR WORK at each step. (2 points each)

<p>a. $41 = 7 - 2b$</p> $\begin{array}{r} -7 \quad -7 \\ \hline 34 = -2b \\ \frac{-2}{-2} \quad \frac{-2}{-2} \\ \hline -17 = b \end{array}$	<p>b. $-6 = \frac{x}{8} + 4$</p> $\begin{array}{r} -4 \quad -4 \\ \hline (-8) -10 = \frac{x}{8} (-8) \\ \hline -80 = x \end{array}$
<p>c. $3x - 5 = 6x - 2$</p> $\begin{array}{r} -3x \quad -3x \\ \hline -5 = 3x - 2 \\ \frac{+2}{+2} \quad \frac{+2}{+2} \\ \hline -3 = 3x \\ \frac{-3}{3} \quad \frac{-3}{3} \\ \hline -1 = x \end{array}$	<p>d. $9 = 6h - 3(h + 1)$</p> $\begin{array}{r} 9 = 6h - 3h - 3 \\ 9 = 3h - 3 \\ \frac{+3}{+3} \quad \frac{+3}{+3} \\ \hline 12 = 3h \\ \frac{12}{3} \quad \frac{3h}{3} \end{array} \quad 4 = h$
<p>e. $2d + 7 = 3d = 2$</p> $\begin{array}{r} -d + 7 = 2 \\ \frac{-7}{-7} \quad \frac{-7}{-7} \\ \hline -d = -5 \\ \hline d = 5 \end{array}$	<p>f. $(-4) 3 = \frac{11 + z}{-4} (-4)$</p> $\begin{array}{r} -12 = 11 + z \\ \frac{-11}{-11} \quad \frac{-11}{-11} \\ \hline -23 = z \end{array}$
<p>g. $\frac{2}{9}x + 7 = 13$</p> $\begin{array}{r} -7 \quad -7 \\ \hline (\frac{9}{2}) \frac{2}{9}x = 6 (\frac{9}{2}) \\ \hline x = 27 \end{array}$	<p>h. $2x - 8 = 2(4 + x)$</p> $\begin{array}{r} 2x - 8 = 8 + 2x \\ -2x \quad -2x \\ \hline -8 = 8 \end{array}$ <p>No Solution</p>
<p>i. $-3(4x - 3) = 2x + 23$</p> $\begin{array}{r} -12x + 9 = 2x + 23 \\ +12x \quad +12x \\ \hline 9 = 14x + 23 \\ -23 \quad -23 \\ \hline -14 = 14x \\ \frac{-14}{14} \quad \frac{14x}{14} \\ \hline -1 = x \end{array}$ <p>Show work.</p>	<p>j. Check your solution from question "i" here: plug the solution into equation to see if true.</p> $\begin{array}{l} -3(4 \cdot 1 - 3) = 2 \cdot 1 + 23 \\ -3(-4 + -3) = -2 + 23 \\ -3(-7) = 21 \\ \hline 21 = 21 \end{array}$ <p>Show work. <i>yes</i></p>