Algebra I
Chapter 2 Review

Name: __KEY__

Directions: Solve each equation practicing PROPER FORMATTING!
If appropriate, write _All Real #s_ (identity) or _no solution_. (All answers should be EXACT!!)

1. $8\left(\dfrac{3y}{8}\right) = 8(-6)$

$\dfrac{3y}{3} = \dfrac{-48}{3}$

$y = -16$

2. $-2x - 5 = 9$

$+5 +5$

$\dfrac{-2x}{-2} = \dfrac{14}{-2}$

$x = -7$

3. $\dfrac{1}{4}x + 10 = 12$

$\phantom{\dfrac{1}{4}x}-10 -10$

$4\left(\dfrac{1}{4}x\right) = 4(2)$

$x = 8$

4. $\dfrac{3}{12} = \dfrac{11}{x}$

$\dfrac{3x}{3} = \dfrac{132}{3}$

$x = 44$

5. $45x - 9 - 12x = 33x + 15$

$33x - 9 = 33x + 15$

$-33x -33x$

$-9 = 15 \quad$ False

$\boxed{\text{No soln.}}$

6. $-6(3x - 5) = 120$

$-18x + 30 = 120$

$-30 -30$

$\dfrac{-18x}{-18} = \dfrac{90}{-18}$

$x = -5$

7. $10x + 6 = 2(5x + 3)$

$10x + 6 = 10x + 6$

$-10x -10x$

$6 = 6 \quad$ True

$\boxed{\text{All } \mathbb{R}}$

8. $4\left(\dfrac{1}{2}\right) + 4\left(\dfrac{2w}{4}\right) = 4\left(\dfrac{3}{4}\right)$

$2 + 2w = 3$

$-2 -2$

$\dfrac{2w}{2} = \dfrac{1}{2}$

$w = \dfrac{1}{2}$

9. $\dfrac{x+2}{3} = \dfrac{x-6}{4}$

$4(x+2) = 3(x-6)$

$4x + 8 = 3x - 18$

$\underline{-3x \qquad\quad -3x}$

$x + 8 = -18$

$\underline{\;\; -8 \qquad -8}$

$x = -26$

10. $2x + 14 = 3(x + 5)$

$2x + 14 = 3x + 15$

$\underline{-2x \qquad\quad -2x}$

$14 = x + 15$

$\underline{-15 \qquad\quad -15}$

$-1 = x$

11. $2 - 3x = -6 - 4x$

$\underline{+4x \qquad\quad +4x}$

$2 + x = -6$

$\underline{-2 \qquad -2}$

$x = -8$

12. $4(2x - 1) = 3(3 + x) + 12$

$8x - 4 = 9 + 3x + 12$

$8x - 4 = 3x + 21$

$\underline{-3x \qquad\quad -3x}$

$5x - 4 = 21$

$\underline{\;\; +4 \qquad +4}$

$\dfrac{5x}{5} = \dfrac{25}{5}$

$x = 5$

Solve each equation for y.

13. $9x - 3y = 15$

$\underline{-9x \qquad -9x}$

$\dfrac{-3y}{-3} = \dfrac{-9x}{-3} + \dfrac{15}{-3}$

$y = 3x - 5$

14. $3x + 4y = 8$

$\underline{-3x \qquad -3x}$

$\dfrac{4y}{4} = \dfrac{-3x + 8}{4}$

$y = \dfrac{-3x + 8}{4}$

15. $\left(\dfrac{-x - 2y}{\cancel{3}}\right)\cancel{3} = (6)\,3$

$-x - 2y = 18$

$\underline{+x \qquad\qquad +x}$

$\dfrac{-2y}{-2} = \dfrac{x + 18}{-2}$

$y = \dfrac{-x - 18}{2}$

Distribute (-) to the numerator

Use a conversion factor to change to the given units.

16. 6 ft 5 in. = _____77_____ in.

$6\,ft\left(\dfrac{12\ in}{1\ ft}\right) = 72\ in$

so, 6 ft 5 in

$= 72\ in + 5\ in$

$= 77\ in$

17. 5 miles/hr = _____440_____ ft/min

$\dfrac{5\ miles}{1\ hr}\left(\dfrac{5280\ ft}{1\ mi}\right)\left(\dfrac{1\ hr}{60\ min}\right)$

$= 440\ \dfrac{ft}{min}$

18. **Solve using a proportion**.

Eric is planning to bake approximately 305 cookies.
If 3 pounds of cookie dough make 96 cookies, about how many pounds of cookie dough will he need? Round to the nearest tenth.

$$\frac{cookies}{lbs} \quad \frac{305}{X} = \frac{96}{3} \quad \frac{cookies}{lbs}$$

$$\frac{915}{96} = \frac{96X}{96}$$

$$9.5 \approx X$$

He will need about 9.5 lbs of cookie dough.

Set up a _proportion_ and solve. Round to the nearest tenth.

19. What percent of 99 is 72?

$$\frac{72}{99} = \frac{X}{100}$$

$$\frac{7200}{99} = \frac{99x}{99}$$

$$72.7\% \approx X$$

20. What is 16.5% of 33?

$$\frac{X}{33} = \frac{16.5}{100}$$

$$\frac{100X}{100} = \frac{544.5}{100}$$

$$X = 5.445$$

$$X \approx 5.4$$

Set up an _equation_ and solve. Round to the nearest tenth.

21. 68% of what number is 64.6?

% | base | amt

$$(\%)(base) = amt$$

$$\frac{(0.68)(X)}{0.68} = \frac{64.6}{0.68}$$

$$X = 95$$

22. What percent of 28 is 12.5?

% | base | amt

$$(\%)(base) = amt$$

$$\frac{(X)(28)}{28} = \frac{12.5}{28}$$

$$X = 0.446... \times 100\%$$

$$X \approx 44.6\%$$

23. The price of an outfit was originally \$130. The outfit was on sale for \$90. Find the percent decrease. **Round to the nearest tenth.**

$$\% \ decrease = \frac{130-90}{130}$$

$$= \frac{40}{130}$$

$$= 0.30769... \times 100\%$$

$$\approx 30.8\%$$

24. You bought 15 apples and 2 bags of caramel for \$16.60. The two bags of caramel cost \$5.35. How much does each apple cost?

Define a variable. _let a = cost of each apple_

Write an equation. $15a + 5.35 = 16.60$

$$-5.35 \quad -5.35$$

Solve.

$$\frac{15a}{15} = \frac{11.25}{15}$$

$$a = 0.75$$

Answer in a sentence. _Each apple costs $\$0.75$._

25. Sonia bought \$25 concert tickets online, and paid a total of \$267. To purchase the tickets online, there was a service fee of \$17. How many tickets did Sonia buy?

Define a variable. _let t = # of tickets_

cost of tickets + service fee = total cost

Write an equation. $25t + 17 = 267$

$$-17 \quad -17$$

Solve.

$$\frac{25t}{25} = \frac{250}{25}$$

$$t = 10$$

Answer in a sentence. _Each ticket costs $\$10$._