NAME_____ DATE_____ PER._____

Review #1 - Solving Equations

Solve each equation. Show ALL steps.

1. $7x + 2 = 5x + 8$

$-5x \quad -5x$

$2x + 2 = 8$

$-2 \quad -2$

$\frac{2x}{2} = \frac{6}{2}$

$\boxed{x = 3}$

2. $4(2x - 5) = 5x + 4$

$8x - 20 = 5x + 4$

$-5x \quad -5x$

$3x - 20 = 4$

$+20 \quad +20$

$\frac{3x}{3} = \frac{24}{3}$

$\boxed{x = 8}$

3. $\frac{n}{4} - 7 = -13$

$+7 \quad +7$

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

$\boxed{n = -24}$

4. $-3x + 7(x - 2) = 12$

$-3x + 7x - 14 = 12$

$4x - 14 = 12$

$+14 \quad +14$

$\frac{4x}{4} = \frac{26}{4}$

$\boxed{x = 6.5 \text{ OR } 13/2}$

5. $19 - (p + 3) = 17$

$19 - p - 3 = 17$

$16 - p = 17$

$-16 \quad -16$

$\frac{-p}{-1} = \frac{1}{-1}$

$\boxed{p = -1}$

6. $0.2t + 29 - 0.8t = 5$

$-0.6t + 29 = 5$

$-29 \quad -29$

$\frac{-0.6t}{-0.6} = \frac{-24}{-0.6}$

$\boxed{t = 40}$

7. $3(m - 2) - 5 = 8 + 3(m - 4)$

$3m - 6 - 5 = 8 + 3m - 12$

$3m - 11 = 3m - 4$

$-3m \quad -3m$

$-11 = -4$

No Solution $\emptyset$

8. $12 - 3(2w + 1) = 7w - 3(7 + w)$

$12 - 6w - 3 = 7w - 21 - 3w$

$9 - 6w = 4w - 21$

$+6w \quad +6w$

$9 = 10w - 21$

$+21 \quad +21$

$\frac{30}{10} = \frac{10w}{10}$

$\boxed{3 = w}$

9. $10 - 3x = 31$

$-10 \quad -10$

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

$x = -7$

10. $c - 3 = c + 3$

$-c \quad -c$

$-3 = 3$

No Solution $\emptyset$

11. $6 - 7(a + 1) = -2a - 6 + 5a$

$6 - 7a - 7 = 3a - 6$

$-1 - 7a = 3a - 6$

$+7a \quad +7a$

$-1 = 10a - 6$

$+6 \quad +6$

$\frac{5}{10} = \frac{10a}{10}$

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

12. $\frac{1}{3}(18x - 36) = 6x - 12$

$6x - 12 = 6x - 12$

$-6x \quad -6x$

$-12 = -12$

All real #'s, $\mathbb{R}$

Write an equation for each problem and solve.

13. To rent a car from The Car Rental Place Juan must pay $20 plus an additional $1.50 per mile that he drives. If Juan has a total of $350 to spend on renting a car, how many miles can he afford to drive it?

Equation: $20 + 1.5m = 350$

$-20 \quad -20$

$\frac{1.5m}{1.5} = \frac{330}{1.5}$

$m = 220$

220 miles

14. A moving company charges $1200 for the supplies needed to pack up a small house and an additional $90 per hour to do the loading and moving. If the cost of moving is $1740 how many hours did the moving company need to move the small house?

Equation: $1200 + 90h = 1740$

$-1200 \quad -1200$

$\frac{90h}{90} = \frac{540}{90}$

$h = 6$

6 hours

15. Seven decreased by twice a number is -19. Find the number.

Equation: $7 - 2n = -19$

$-7 \quad -7$

$-2n = -26$

$\frac{-2n}{-2} = \frac{-26}{-2}$

$n = 13$

13

16. Spencer begins a savings account with $100 and plans to add $55 to his account each month. His friend, Ethan decides to open a savings account as well but has no money to begin with. If Ethan adds $75 to his account each month, how long will it take for the two boys to have the same amount?

Equation: $100 + 55m = 75m$

$-55m \quad -55m$

$\frac{100}{20} = \frac{20m}{20}$

$5 = m$

5 months

17. Megan had a coupon for $5 off the purchase of one item. She decided to buy a shirt that was on sale for $\frac{3}{4}$ of its original price. After using the coupon Megan only paid $19 for the shirt before taxes. What was the original price of the shirt?

Equation: $\frac{3}{4}p - 5 = 19$

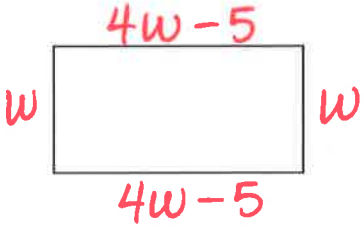
$+5 \quad +5$

$\frac{\frac{3}{4}p}{\frac{3}{4}} = \frac{24}{\frac{3}{4}}$

$p = 32$

$32

18. The length of a rectangle is 5 mm less than 4 times the width. If the perimeter is 75 mm, what is the length of the rectangle?



Equation: $10w - 10 = 75$

$+10 \quad +10$

$\frac{10w}{10} = \frac{85}{10}$

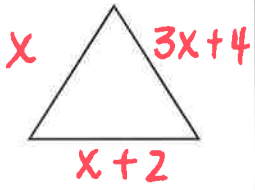
$w = 8.5$

$l = 4(8.5) - 5 =$ 29 mm

Write an equation for each situation, but do not solve.

19. The perimeter of a triangle is 36 inches. If the three sides of the triangle are ***x*** inches, ***3x + 4*** inches, and ***x + 2*** inches, what is the length of each side?

Equation: $5x + 6 = 36$



20. A house-painting company charges $376 plus $12 per hour. Another painting company charges $280 plus $15 per hour. How long is a job for which both companies charge the same amount?

Equation: $376 + 12h = 280 + 15h$

21. Devon wants to save $250 in time for his family's vacation. He currently has $65 and plans to mow lawns until he reaches his goal. If he receives $25 for each law that he mows, how many lawns does he have to mow in order to reach his goal?

Equation: $65 + 25x = 250$

22. Three more than 25% of a number is equivalent to the difference of that number and 9. Write an equation that can be used to find the number.

Equation: $.25n + 3 = n - 9$

23. Mr. James spent a total of $11.35 on four tacos and a drink. If all drinks are $0.99, what is the cost of each taco?

Equation: $4x + 0.99 = 11.35$

24.

Verbal Description	Equation
Four times a number decreased by 3 is -20.	$4n - 3 = -20$
Three less than 4 times a number is -20.	$4n - 3 = -20$
Three decreased by 4 times a number is -20.	$3 - 4n = -20$
The difference of 4 times a number and 3 is -20.	$4n - 3 = -20$

Answer the following. Show all work.

25. Which of the following statements does ***not*** represent the equation $\frac{x}{2} + 3 = 5$?

A. The quotient of a number and 2 increased by 3 is 5. ✓

B. Three added to half a number is 5. ✓

C. Three more than twice a number is 5.

D. The sum of half a number and 3 is 5. ✓

26. Which of the following represents the equation 3(x – 1) = 10?

A. Three times a number decreased by 1 is 10. $3x - 1 = 10$

B. Three times the difference of a number and 1 is 10. $3(x-1) = 10$

C. The product of three and the sum of a number and 1 is 10. $3(x+1) = 10$

D. One less than three times a number is 10. $3n - 1 = 10$

27. The equation $F = \frac{9}{5}C + 32$ changes Celsius temperature to Fahrenheit temperature. If the Fahrenheit temperature is -32.8°, what is the Celsius temperature?

Equation: $-32.8 = \frac{9}{5}C + 32$

$-32 \quad\quad -32$

$-64.8 = \frac{9}{5}C$

$\frac{9}{5} \quad\quad \frac{9}{5}$

$-36 = C$

$-36°C$

28. If 8 – (x + 5) = 12, find the value of x + 15.

$8 - x - 5 = 12$

$3 - x = 12$

$-3 \quad\quad -3$

$-x = 9$

$-1 \quad\quad -1$

$x = -9$

$-9 + 15$

$= 6$

29. Solve: $\frac{10}{r+1} = \frac{-2}{3}$

$30 = -2(r+1)$

$30 = -2r - 2$

$+2 \quad\quad +2$

$\frac{32}{-2} = \frac{-2r}{-2}$

$-16 = r$