

Review for Test 1

Solve the following equations.

1. $2b - 91 = 123$

$2b = 214$

$b = 107$

2. $8 = -\frac{4}{5}a - 12$

$20 = -\frac{4}{5}a$

$-25 = a$

3. $5 = 2k - \frac{2}{3}(6k + 18)$

$5 = 2k - 4k - 12$

$17 = -2k$

$-\frac{17}{2} = k = -8.5$

4. $|2m - 3| = 123$

$2m - 3 = 123$ $2m - 3 = -123$

$2m = 126$ $2m = -120$

$m = 63$ $m = -60$

5. $30 = 4|x + 3| - 2$

$32 = 4|x + 3|$

$8 = |x + 3|$

$8 = x + 3$ $-8 = x + 3$
 $x = 5$ $x = -11$

6. $|3x + 2| = x + 8$

$3x + 2 = x + 8$ $3x + 2 = -x - 8$

$2x = 6$ $4x = -10$

$x = 3$ $x = -2.5$

7. $x^2 + 7x = 8$

$x^2 + 7x - 8 = 0$

$(x + 8)(x - 1) = 0$

$x = -8, 1$

8. $x^2 = 13x - 42$

$x^2 - 13x + 42 = 0$

$(x - 6)(x - 7) = 0$

$x = 6, 7$

9. $3x^2 - 2x - 8 = 0$

$3x^2 - 6x + 4x - 8 = 0$

$3x(x - 2) + 4(x - 2) = 0$

$(3x + 4)(x - 2) = 0$

$x = -\frac{4}{3}, 2$

10. $4x^2 + 6x + 1 = 0$

$x = \frac{-6 \pm \sqrt{6^2 - 4 \cdot 4 \cdot 1}}{2 \cdot 4}$

$x = \frac{-6 \pm \sqrt{20}}{8} = \frac{-6 \pm 2\sqrt{5}}{8}$

$x = \frac{-3 \pm \sqrt{5}}{4}$

11. $x^2 + \frac{5}{2}x - 6 = 0$

$2x^2 + 5x - 12 = 0$

$2x^2 + 8x - 3x - 12 = 0$

$2x(x + 4) - 3(x + 4) = 0$

$(2x - 3)(x + 4) = 0$ $x = \frac{3}{2}, -4$

12. $8x^2 + 2x - 3 = 0$

$8x^2 + 6x - 4x - 3 = 0$

$2x(4x + 3) - 1(4x + 3) = 0$

$(2x - 1)(4x + 3) = 0$

$x = \frac{1}{2}, -\frac{3}{4}$

Solve the following inequalities, and graph the solutions on the number line.

13. $3x - 12 \geq 0$

$3x \geq 12$

$x \geq 4$

14. $3(x + 6) < x + 34$

$3x + 18 < x + 34$

$2x < 16$

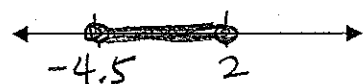
$x < 8$

15. $|4x + 5| \leq 13$

$4x + 5 \leq 13$ and $4x + 5 \geq -13$

$4x \leq 8$ $4x \geq -18$

$x \leq 2$ and $x \geq -4.5$



16. $|x + 4| - 9 > 1$

$|x + 4| > 10$

$x + 4 > 10$ or $x + 4 < -10$

$x > 6$ or $x < -14$

17. $x^2 - 6x > 16$

$x^2 - 6x - 16 > 0$

$(x - 8)(x + 2) > 0$

$x < -2$ or $x > 8$

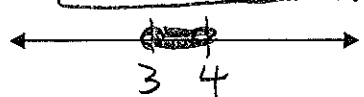
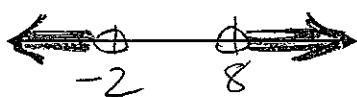
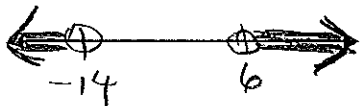
18. $-x^2 - 12 \geq 7x$

$x^2 + 12 \leq 7x$

$x^2 - 7x + 12 \leq 0$

$(x - 4)(x - 3) \leq 0$

$x \geq 3$ and $x \leq 4$



For each of the following, assign your variables, set up your equation and solve.

19. Two airplanes leave Houston at the same time and travel in opposite directions. One plane averages 300 mph and the other plane averages 350 mph. How long will it take them to be 2600 miles apart?

$$300h + 350h = 2600$$

$$h = \text{hours} \quad 650h = 2600$$

$$h = 4$$

4 hours

20. Three times a number increased by 6 is 81. Find the number.

$$n = \text{number} \quad 3n + 6 = 81$$

$$3n = 75$$

$$n = \boxed{25}$$

21. The sum of three integers is 242. The second number is three more than twice the first and the third number is nine less than five times the first. Find the numbers.

$$n = 1^{\text{st}} \text{ number} \quad n + 2n + 3 + 5n - 9 = 242$$

$$2n + 3 = 2^{\text{nd}} \text{ number} \quad 8n - 6 = 242$$

$$5n - 9 = 3^{\text{rd}} \text{ number} \quad 8n = 248$$

$$n = 31 \quad \boxed{31, 65, 146}$$

22. A cereal company fills every box with 16 ounces of cereal. The company allows each box of cereal to be within a tolerance level of 0.3 ounces above or below the 16 ounces. What is the range of values of acceptable levels of cereal in a box?

$$|x - 16| = 0.3$$

$$x - 16 = 0.3 \quad x - 16 = -0.3$$

$$x = 16.3 \quad x = 15.7 \quad \boxed{15.7\text{oz} - 16.3\text{oz}}$$

23. The length of a rectangle is 2 feet more than its width. Find the dimensions of the rectangle if its area is 63 square feet.

$$l = \text{length} = w + 2 \quad A = l \cdot w$$

$$w = \text{width} \quad 63 = (w + 2) \cdot w$$

$$63 = w^2 + 2w$$

$$0 = w^2 + 2w - 63$$

$$0 = (w + 9)(w - 7)$$

$$w = -9, 7 \quad \boxed{\text{width} = 7 \text{ ft}} \\ \boxed{\text{length} = 9 \text{ ft}}$$

24. Find two consecutive even integers whose product is 624.

$$x = 1^{\text{st}} \text{ number} \quad x(x + 2) = 624$$

$$x + 2 = 2^{\text{nd}} \text{ number} \quad x^2 + 2x = 624$$

$$x^2 + 2x - 624 = 0$$

$$(x + 26)(x - 24) = 0$$

$$x = -26, 24 \quad \boxed{24 \text{ and } 26}$$

$$\begin{array}{r} 1624 \\ 2 \overline{) 312} \\ \underline{156} \\ 2 \overline{) 78} \\ \underline{39} \\ 13 \end{array}$$