Unit 1 Study Guide **Name** _____

Solve the equation for the indicated variable.

1. $y = \frac{x-v}{b}$, for x.

A) $x = by - v$ B) $x = by + v$ C) $x = \frac{by}{v}$ D) $x = \frac{y+v}{b}$

2. $A = Bxt + C$, for t.

A) $t = A - C - Bx$ B) $t = \frac{A-C}{Bx}$ C) $t = C - A + Bx$ D) $t = \frac{C-A}{Bx}$

3. $N = \frac{d+h+z}{7}$, for h

A) $h = 7(N - d - z)$ B) $h = 7N + 7d + dz$

C) $h = 7N - d - z$ D) $h = 7N + d + z$

4. $2(x + a) = 4b$, for a

A) $a = 2b - x$ B) $a = 4b - 2x$ C) $a = \frac{4b}{2x}$ D) $a = 2b - 2x$

Solve for x. **SHOW ALL WORK!**

5) 3x - 11 = -7

A) x = $\frac{4}{3}$ B) x = $\frac{3}{4}$ C) All real numbers D) No Solution

6) $-3x - 12 = -5 + x$

A) x = $-\frac{4}{7}$ B) x = $-\frac{7}{4}$ C) All real numbers D) No Solution

Solve the following word problems. **Define your variable, set up your equation, and solve.**

7. Sarah's cell phone company charges her $35 a month for phone service plus $0.25 for every text message. How many txt messages does Sarah send in one month if her bill was $99?

8. Brian wants to buy some back to school clothes. He has $78 to spend. He buys 5 t-shirts and has $25.50 left. How much does each shirt cost?

Simplify each expression.

9) $-3 + 8x + 9 - 12x$

A) $20x + 6$ B) $20x - 6$ C) $-4x + 6$ D) $4x - 6$

10) $-5(-2 - 3n) + 4n$

A) $10 - 19n$ B) $-10 + 19n$ C) $-10 - 19n$ D) $10 + 19n$

11) $-2n^4 + 5n^3 - n^2 - 6 + 3n^2 + 8n^4$

A) $6n^4 + 5n^3 + 2n^2 - 6$ B) $10n^4 + 5n^3 - 4n^2 - 6$ C) $10n^4 + 15n - n^2 - 6$
D) $40n^4 + 5n^3 + 6n^2 - 6$

12) $7(x^3 + x^4) - x + 5x^3 + 5x - 6x^4$

A) $x^4 + 5x^3 + 4x$ B) $-13x^4 + 12x^3 - 4x$ C) $x^4 + 12x^3 + 4x$ D) $13x^4 + 12x^3 - 4x$

Solve each equation.

13) $p - 5 = -11$

14) $-7 = \frac{k}{8}$

15) $-11a = 99$

16) $1 = \frac{5-n}{17}$

17) $-3x - 17 = -29$

18) $-11 = \frac{x}{3} + 1$

19) $-2 + \frac{1}{2}(-8x + 10) = -153$

20) $13 - 3n = 6 - 11n + 8n$

21) $-4(n - 3) + 9(4n + 5) = 25$

22) Timothy bought 5 binders and a pack of paper for a total of $28. The paper cost $4.50. How much did each binder cost?

23) Uber charges $5.00 plus $.35/mile to take someone to a destination. Jen needed a ride to the airport. Her total cost was $17.60. How many miles was she away from the airport?

24) The sum of three consecutive numbers is 159. What is the smallest of these numbers?

25) Melissa started the new year with $148 in her piggy bank. On Valentine's day (7 weeks later), she had a total of $6 more than twice what she started with, just by saving her allowance each week. What is her weekly allowance?

For 26-27 use the following information.
The volume of a cone is 528 cubic feet. The radius of the base of the cone is 6 feet. Use the formula for volume of a cone: $V = \frac{1}{3}\pi r^2 h$.

26) Solve the volume formula for h first.

A) $h = \frac{\frac{1}{3}\pi r^2}{V}$ B) $h = \frac{3V}{\pi r^2}$ C) $h = \frac{3\pi r^2}{V}$ D) $h = 3V\pi r^2$

27) Find the height of the cone. (Round your answer to the nearest tenth)

28) The circumference of a circle with radius r can be found using the formula C=$2\pi r$. Find the radius of a circle with a 30cm. circumference. Round to the nearest tenth.