Name _____

The problems in this packet are designed to help you review topics from previous mathematics courses that are important to your success in Algebra I. DO NOT USE A CALCULATOR ON ANY QUESTION.

Order of Operations

1. $14 \div 7 + 3^2$ **2.** $42 \div 2(-12 + 9)$ **3.** $\sqrt{49}$ **4.** $|-14|$

Reduce each of the following to simplest form.

5.
$$\frac{20}{35}$$

6.
$$\frac{7}{28}$$

7.
$$\frac{24}{60}$$

Adding/Subtracting/Multiplying/Dividing Positive and Negative Numbers

8. $-2 + 11 - 7$

9. $5 - 3 + 12 - (-9)$

10. $\dfrac{-4}{\left(\dfrac{3}{4}\right)}$

11. $(-2)(4)(-5)(-1)$

12. $-4 + -9 - 3(-6)$

13. $\left(\dfrac{3}{5}\right)\left(-\dfrac{7}{12}\right)$

14. $\dfrac{3}{4} + \dfrac{1}{6}$

15. $2\dfrac{1}{3} - \dfrac{7}{9}$

16. $\left(\dfrac{2}{3}\right) \div \left(1\dfrac{5}{9}\right)$

Evaluating Expressions

17. $3x^2 + 5x + 1$, when x = -2

18. $\dfrac{2r}{t} + 7$, when r = 12 and t = 3

19. $(3x)^2 - 7y^2$, when x = 3 and y = 2

20. $4(3d + 6) - 2d$, when d = -6

Solving Equations

Here is an example:

$3b + 2 = 6(3 - b)$	Check:
$3b + 2 = 18 - 6b$ $\underline{- 2 \quad - 2}$ $3b = 16 - 6b$ $\underline{+6b \qquad + 6b}$ $9b = 16$ $\overline{9 \qquad 9}$ $b = \dfrac{16}{9}$	Does $3(\dfrac{16}{9}) + 2 = 6(3 - (\dfrac{16}{9}))$? $\dfrac{16}{3} + 2 = 6(\dfrac{11}{9})$ $\dfrac{16}{3} + \dfrac{6}{3} = \dfrac{22}{3}$ $\dfrac{22}{3} = \dfrac{22}{3}$ ✓

Solve the equation. Include a check

21. $14 = b + 5$

22. $\dfrac{x}{4} = -9$

23. $3x - 5 = 13$

24. $\dfrac{1}{4}d + 2 = 3$

25. $3y + 2y = 81 - 6$

26. $\dfrac{2a}{7} = \dfrac{2}{3}$

Subsets of Real Numbers and Number Sense

27. List all the perfect squares between 1 and 250

28. What is the smallest prime number? The smallest composite number?

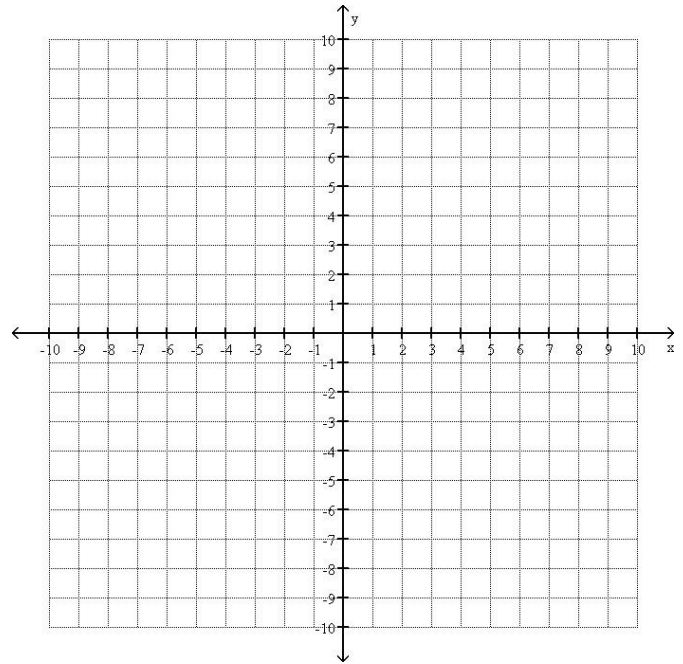**29.** List 4 factors of 24. List 4 multiples of 24.

30. Are both 7 and –½ integers? Why or why not?

31. Are both 7 and –½ rational numbers? Why or why not?

32. Round 43.77301 to the nearest hundredth.

33. Plot the following points on the coordinate plane below:

(2,5) $(\frac{2}{3},10)$ (−7,4)   (−8,−2)

Distributive Property

Simplify each expression using the distributive property.
Example: 4(x + 5) = 4(x) + 4(5) = 4x + 20

34. 3(b + 9)   **35.**   5(2x − 3)   **36.**   -3(4x + 9)

37. x(2x + 4)   **38.**   ½(4r + 12)   **39.**   -(6p − 11)

Simplifying Expressions

Simplify each expression by distributing and combining like terms.

40.   4x + 7y − 14x + 2y

41.   9(2x + 4) − 2(3x − 1)

42.   20xy + 3x²y − 10x²y − 30xy

43.   -3(2x − 5y)

3

Translating Expressions and Equations

Write an algebraic expression or equation to represent each verbal expression.

Example: 18 less than the quotient of a number and 3. → $\dfrac{n}{3} - 18$

44. The sum of six times a number and 25

45. 7 less than fifteen times a number

47. The sum of a number and 23 is 78.

46. Four times the square of a number increased by five times the same number

Pythagorean Theorem

48. A ladder is leaning against the side of a 10m house. If the base of the ladder is 3m away from the house, how tall is the ladder? Round your answer to the nearest hundredth. **Please draw a diagram and show all work**.

Word Problems

Write an equation to mode each word problem. Include let statements and checks for each problem.

Ex. Joelle had $24 to spend on seven pencils. After buying them she had $10. How much did each pencil cost?

Example:
Let x = cost per pencil

$7x + 10 = 24$

   -10 -10

$\dfrac{7x}{7} = \dfrac{14}{7}$

   $x = 2$

Check:
Does 7(2) + 10 = 24?

   14 + 10 = 24

      24 = 24 ✓

Each pencil cost 2 dollars.

49. Marla bought seven boxes. A week later half of all her boxes were destroyed in a fire. There are now only 22 boxes left. With how many did she start?

50. Coral spent half of her weekly allowance playing mini-golf. To earn more money her parents let her wash the car for $4. What is her weekly allowance if she ended with $12?

51. 331 students went on a field trip. Six buses were filled and 7 students traveled in cars. How many students were in each bus?

52. You bought a magazine for $5 and four erasers. You spent a total of $25. How much did each eraser cost?