

Name: _____

2017-2018 Mathematics Teacher: _____



Summer Review for incoming Algebra I students (all levels)

Please complete this review packet for the
FIRST DAY OF CLASS.

The problems included in this packet will provide you with the opportunity to practice the mathematical skills you have learned throughout the current school year and will help you to be prepared for the concepts you will learn in Algebra I next school year. You are responsible for **ALL** the concepts covered in the packet. If you do not remember how to complete a problem, look it up in your notes or online. If you should misplace this packet, you can find a copy posted on the district website:

<http://nbhs.northbranfordschools.org/>

Your first **quiz** will be based on the material within this packet.

You will receive a **double homework grade** on this packet based on the following criteria:

- Work is received on the first day of class
- All problems are completed
- All work is shown

Percents: Use the proportion $\frac{\text{is}}{\text{of}} = \frac{\%}{100}$ when working with percents.

$$\left(\text{or } \frac{\text{part}}{\text{whole}} = \frac{\%}{100} \right)$$

Examples:

a) What is 50% of 274?
number?

$$\frac{x}{274} = \frac{50}{100}$$

$$100x = 13700$$

$$x = 137$$

b) 7 out of 56 is what percent?

$$\frac{7}{56} = \frac{x}{100}$$

$$56x = 700$$

$$x = 12.5\%$$

c) 3 is 5% of what

$$\frac{3}{x} = \frac{5}{100}$$

$$5x = 300$$

$$x = 60$$

1. What is 30% of 80?

2. 6 out of 25 is what percent?

3. 27 is 30% of what number?

4. Write 175% as a fraction and as a decimal.

5. Write $\frac{13}{25}$ as a decimal and as a percent.

Algebraic Expressions and Phrases: Use numbers, variables and operations to

write an algebraic expression.

Examples:

a) 5 less than x

Answer: $x - 5$

b) the quotient of a number and 5.

Answer: $\frac{x}{5}$

Write an algebraic expression for each phrase.

6. Subtract x from 7, and add 3 to the difference

7. 3 times the quantity of x plus 4

8. 13 decreased by the product of 4 and a number

9. Twice a number less than 12

Order of Operations: Use when expressions/equations involve more than one arithmetic operation. (PEMDAS)

Example: Simplify $4 - (2 + 1)^2 \div 3$

Step 1: $4 - (3)^2 \div 3$

Step 2: $4 - 9 \div 3$

Step 3: $4 - 3$

Step 4: 1

Simplify the following.

10. $8 - (5 - 1)$

11. $36 \div 3 + 2$

12. $(9 \cdot 3)^2$

13. $6 + 4 \div 2 \cdot 4 - (6 + 2)$

14. -4^2

15. $4 \cdot 2^3$

16. $(-5)^2$

17. $-|3 - 7|$

Evaluate Expressions: To evaluate, substitute a number for each variable then simplify. Use parentheses when substituting.

Example: Evaluate $2x^2 + 3x$ when $x = -1$

Step 1: $2(-1)^2 + 3(-1)$

Step 2: $2(1) + 3(-1)$

Step 3: $2 + (-3)$

Step 4: -1

18. Evaluate the given expression when $x = -4$

a. $4x - 5$

b. $3x^2 - 5x + 12$

19. Evaluate $5(4x + 3) - 20x - 15$ for $x = -3$

Distributive Property:

Example: $4(x - 3) = 4x - 12$

Use the distributive property to simplify.

20. $3(1 - x)$

22. $(x + 6)(4)$

21. $-(2x - 7)$ *Hint: What # is in front of the parentheses?

23. $-4(10 - 2x) - 3x + 5$

Solving Equations:

Examples:

$$\begin{aligned} \text{a) } -5x + 15 &= -45 \\ -15 &= -15 \\ -5x &= -60 \\ x &= 12 \\ \text{one solution} \end{aligned}$$

$$\begin{aligned} \text{b) } 6x + 10 &= -30 + 6x \\ -6x &\quad -6x \\ 10 &= -30 \\ \text{no solution} \end{aligned}$$

$$\begin{aligned} \text{c) } -4(x - 2) &= -4x + 8 \\ -4x + 8 &= -4x + 8 \\ +4x &\quad +4x \\ 8 &= 8 \\ \text{infinite solutions} \end{aligned}$$

Solve the following equations OR indicate whether there is *no solution* or an *identity/infinite solutions*.

24. $x - 3 = 10$

25. $-2x = -16$

26. $\frac{x}{3} = 15$

27. $-x = 5$

28. $4x - 4 = 12$

29. $\frac{-2}{5}x = 10$

30. $8(x + 2) = 8x + 10$

31. $-4x - 4 = 2x + 8$

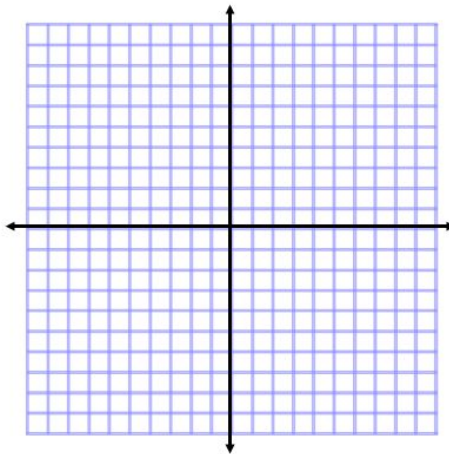
32. $8 + 2x = 2(x + 4)$

33. $2(2x - 4) = 8$

Graphing on the Coordinate Plane

34. Plot and label the points.

- a) A(4,-5)
- b) B(0,6)
- c) C(-1,-4)

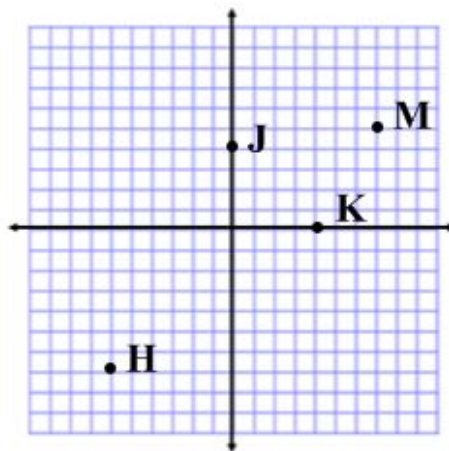


35. What quadrant is:

- a) point A in?
- b) point C in?

36. What are the coordinates of:

- a) Point H
- b) Point J
- c) the origin
- d) Point K



Estimate the value of the following radicals.

Example: $\sqrt{5}$ is between $\sqrt{4}$ and $\sqrt{9}$. Therefore, $\sqrt{5} \approx 2.2$

37. $\sqrt{14}$

38. $\sqrt{38}$

39. $\sqrt{104}$

40. $\sqrt{52}$

Simplify each expression completely (no negative exponents).

*You may want to review exponent rules from your notes or online.

Example: $\frac{x^4 \cdot x^3 y}{y^{-2}} = x^{4+3} \cdot y^{1-(-2)} = x^7 y^3$

41. $x^{-3}y \cdot x^4y^{-5}$

42. $(x^4y^2z^{-1})^3$

43. $\frac{x^4y^7}{x^{-3}y^8}$

44. $-10x^0$