

North Hunterdon HS – CP Algebra 1

Due: First Day of School



- This summer packet must be completed **BEFORE** the first day of school. This is prerequisite material needed to be successful in Algebra 1 and will only be reviewed in class – NOT retaught.
- The packet is worth 10 points towards your first HW assignment for the 1st marking period.
- You may use a calculator for all problems, but it is **HIGHLY** recommended that you do most of the work **WITHOUT** a calculator. You can use the calculator to check your work when you are done. You must also show your work!!!
- The material covered ~~within this packet~~ involves mastery of concepts required for Algebra I, such as order of operations, working with fractions, solving simple algebraic equations and inequalities, simplifying expressions, and solving word problems.
- Do not expect to complete this packet in one sitting. It is recommended that you work on 10 to 15 problems at a time. Plan to take your time when working on these problems and carefully read through each question, underline key points and information when working on word problems, and **show all steps** when solving equations or simplifying expressions.
- Use another piece of paper if there is not enough room on the worksheet.
- If you are having trouble with some of these topics you can go to <http://www.khanacademy.org/> and sign up to begin using this on-line learning tool. Each group of problems is described with the concept it is testing so you can search for that topic if you so desire



1-1

Practice

Variables and Expressions

Write an algebraic expression for each word phrase.

1. 11 more than y

2. 5 less than n

5. a number b divided by 8

6. q multiplied by 2

Write an algebraic expression for each word phrase.

17. 14 minus the quotient of 25 and p

19. the product of 13 and m plus the product of 2.7 and n

1-2

Practice

Order of Operations and Evaluating Expressions

Simplify each expression.

1. 9^2

2. 8^3

5. $8 + 5(7)$

6. $\left(\frac{21}{3}\right) - 2(3)$

9. $(3(4))^3$

10. $3^4 - 2^4 \div 2^2$

Evaluate each expression for $x = 3$ and $y = 2$.

11. $x + 7$

12. $8 - y$

15. $-6(x)^2 + y^3 - 8$

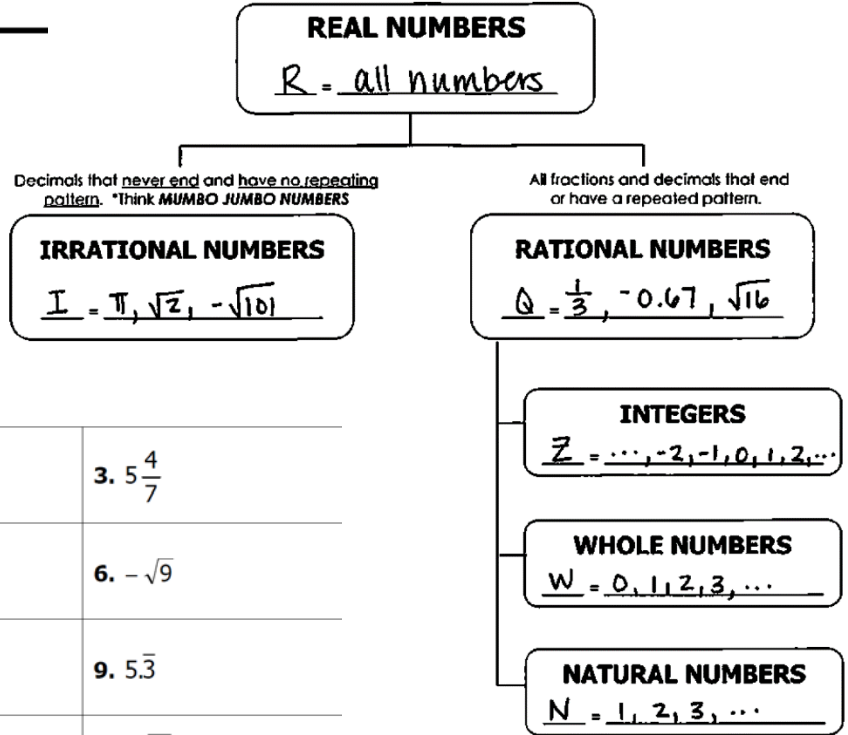
16. $\left(\frac{x+1}{y^2}\right)^2$

1-3

Practice

Real Numbers and the Number Line

The Real Number System



Name the subset(s) of the real numbers to which each number belongs.

1. 30	2. -11	3. $5\frac{4}{7}$
4. $\sqrt{21}$	5. 0	6. $-\sqrt{9}$
7. $\frac{6}{3}$	8. π	9. $5\bar{3}$
10. $\frac{\sqrt{144}}{-3}$	11. -2.875	12. $\frac{\sqrt{17}}{\sqrt{17}}$

Compare the numbers in each exercise using an inequality symbol.

25. $\sqrt{36}, \sqrt{49}$

26. $\frac{1}{3}, \sqrt{1.25}$

27. $\sqrt{100}, -\sqrt{169}$

28. $\frac{34}{19}, 1.8$

Order the numbers in each exercise from least to greatest.

29. $2.75, \sqrt{25}, -\sqrt{36}$

30. $1.25, \frac{1}{3}, \sqrt{1.25}$

31. $\frac{3}{5}, -0.6, \sqrt{1}$

32. $\frac{80}{25}, \sqrt{9}, \frac{30}{9}$

1-5

Practice

Adding and Subtracting Real Numbers

Find each sum.

9. $12 + (-4)$

10. $-22 + (-10)$

11. $-25 + 27$

15. $-1.5 + 3.6$

16. $-2.2 + (-16.7)$

17. $-\frac{1}{7} + \left(-\frac{4}{7}\right)$

18. Which addition problem is equivalent to $-5 - (-8)$?

A. $5 + 8$

C. $5 + (-8)$

B. $-5 + 8$

D. $-5 + (-8)$

Find each difference.

19. $6 - 12$

20. $-5 - 6$

21. $-7 - (-10)$

25. $1.2 - (-1.3)$

26. $-\frac{7}{9} - \left(-\frac{2}{9}\right)$

27. $\frac{1}{2} - \frac{1}{4}$

1-6

Practice

Multiplying and Dividing Real Numbers

Find each product. Simplify, if necessary.

6. $(-5)^2$

7. -3×7

8. $-4(-6)$

9. $-3(1.2)$

10. $-\frac{1}{2} \cdot \frac{1}{3}$

11. $-\frac{2}{5} \left(-\frac{1}{4} \right)$

Find each quotient. Simplify, if necessary.

21. $-12 \div 3$

22. $-25 \div (-5)$

23. $18 \div 2$

24. $24 \div (-8)$

25. $-27 \div (-3)$

26. $\frac{-35}{5}$

1-7

Practice

The Distributive Property

Use the Distributive Property to simplify each expression.

1. $7(z - 4)$

2. $3(2 + w)$

3. $(2h - 4)11$

4. $(6y - 3)5$

5. $17(2b + 3)$

6. $12(4 - 8p)$

Simplify each expression.

13. $-1(p + 6)$

14. $-(-9 - 4y)$

15. $-(a - 15)$

16. $-(-z - 12)$

Simplify each expression by combining like terms.



23. $9y + 11y$

24. $23b - 19b$

27. $-10x^2 - 14x^2$

28. $-5k^2 + 6k^2$

29. $7w^2 - 14w^2$

30. $6a - 7 + 4 - a$

Simplify each expression.

41. $3(x + 4) + 2(5x + 2)$

42. $3(2n - 7) + 7(4 - 2n)$

43. $5(5 + t) - 3(t - 6)$

1-8 Practice

An Introduction to Equations

Tell whether the given number is a solution of each equation.

7. $5x + 10 = -35$; -9

8. $8p - 3 = 13$; -2

Write an equation for each sentence.

19. The sum of a number and 11 is -12 .

20. -4 times the sum of 6 times a number and 3 is 15

1-9 Practice

Patterns, Equations, and Graphs

Tell whether the given ordered pair is a solution of the equation.

14. $y = -6x + 1$; $(-1, -5)$

15. $y = -\frac{1}{2}x + 4$; $(-8, 8)$

16. $y = -0.1x + 5$; $(10, 4)$

17. $y = 0.25 + 5.5x$; $(-1, -5.75)$

2-1

Practice

Solving One-Step Equations

Solve each equation using addition or subtraction. Check your answer.

1. $6 = p - 8$

2. $z + 5 = 4$

5. $n + 14 = -5$

6. $2 = a + 7$

Solve each equation using multiplication or division. Check your answer.

9. $-3.2k = 16$

10. $2.8r = 16.8$

11. $\frac{m}{7} = 4$

12. $25 = \frac{z}{-4}$

Solve each equation. Check your answer.

13. $\frac{3}{4}b = 15$

14. $-8 = \frac{2}{5}t$

15. $\frac{9}{10}y = -36$

16. $\frac{1}{2}m = \frac{6}{11}$

2-2 Practice

Solving Two-Step Equations

Solve each equation. Check your answer.

1. $4x + 5 = 13$

2. $-8 + 3h = 1$

5. $-5 = -8 + \frac{y}{10}$

6. $7 = -6m + 7$

7. $\frac{n}{-8} - 5 = -2$

8. $-14 = -6 + 4w$

Solve each equation. Check your answer.

13. $\frac{f+4}{2} = 5$

14. $\frac{p-6}{3} = -15$

15. $\frac{c+5}{-6} = -4$

16. $\frac{1}{4}z + 9 = -1$

2-3

Practice

Solving Multi-Step Equations

Solve each equation. Check your answer.

1. $20 + g + g = 14$

2. $7 + 4x - 9 = -6$

5. $8 = 8p + 13 - 3p$

6. $4y - 16 + 8y = -4$

Solve each equation. Check your answer.

11. $-2(a + 6) = -22$

12. $60 = 6(6 - 2n)$

13. $-14 = -4(9x - 1)$

14. $-(5z + 12) = 18$

18. $\frac{w}{9} - 6 = \frac{7}{9}$

19. $1.75t - 4.5 = 7.75$

20. $6z + 0.36 = 24.72$

21. $7.85 - 2.15c = 20.75$

2-4 Practice

Solving Equations With Variables on Both Sides

Solve each equation. Check your answer.

1. $4y + 15 = 6y - 11$

2. $5p + 6 = -4p - 8$

5. $25h + 40 = -15h - 80$

6. $-2m + 13 = 2m - 3$

Solve each equation. Check your answer.

9. $4(h + 2) = 3(h - 2)$

10. $-(3b - 15) = 6(2b + 5)$

11. $5x + 7 + 3x = -8 + 3x$

12. $18 - 6a = 4a - 4(a + 3)$

2-7

Practice

Solving Proportions

Solve each proportion.

1. $\frac{3}{4} = \frac{a}{12}$

2. $\frac{1}{3} = \frac{m}{21}$

3. $\frac{x}{5} = \frac{2}{3}$

4. $\frac{f}{24} = \frac{3}{8}$

9. $\frac{q}{-15} = \frac{1}{3}$

10. $\frac{4}{d} = \frac{-1}{4}$

Set up a proportion for the word problem. Then solve your proportion.

13. A cookie recipe calls for a half cup of chocolate chips per 3 dozen cookies. How many cups of chocolate chips should be used for 10 dozen cookies?

2-9

Practice

Percents

$$\frac{\%}{100} = \frac{is}{of}$$

Find each percent.

1. What percent of 58 is 18?

2. What percent of 36 is 27?

Find each part.

5. What is 40% of 120?

6. What is 62% of 500?

7. What is 150% of 84?

8. What is 33% of 171?

10. A friend purchases items from a wholesale website and resells them on her own website. She typically marks up her merchandise 40%. If she purchased an item for \$15, what price should she set for the item?

Find each base.

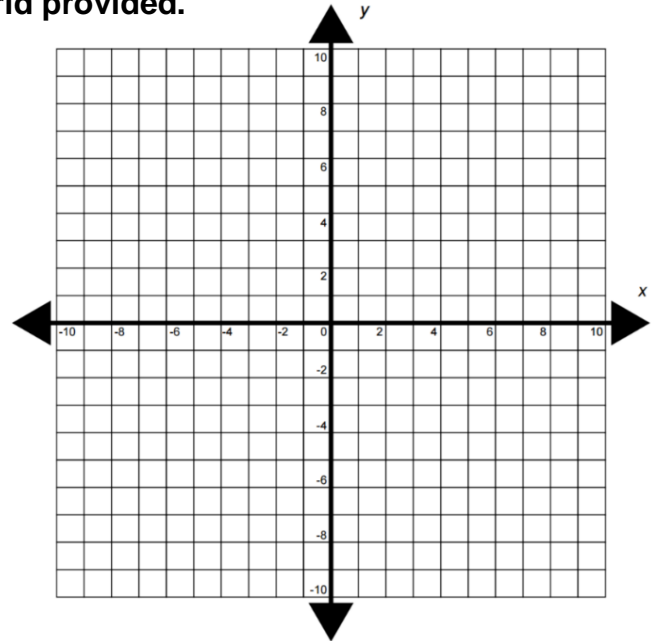
11. 70% of what number is 63?

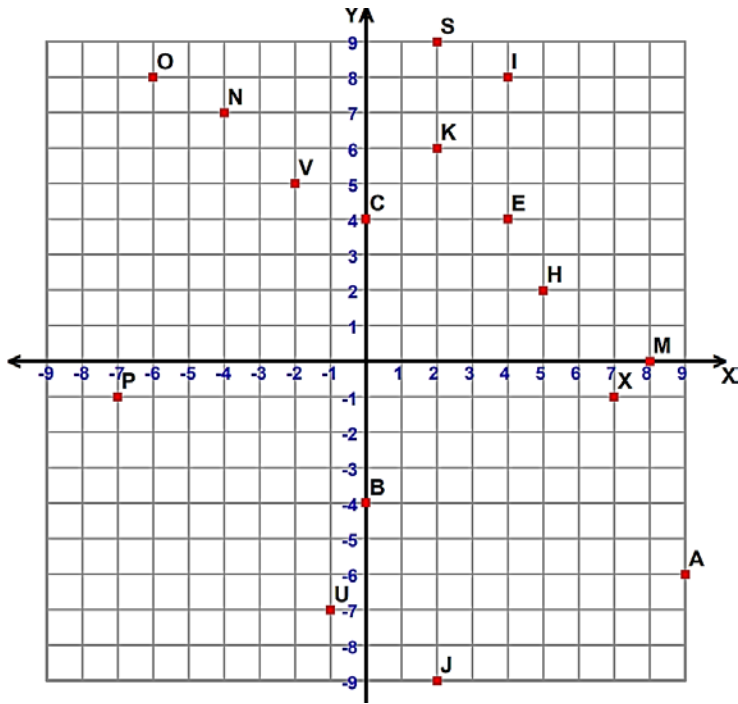
12. 55% of what number is 231?

Plotting Coordinates on the Coordinate Plane

Plot and label the following coordinates on the grid provided.

- 38. A (- 2, 5)
- 39. B (4, - 3)
- 40. C (- 1, - 2)
- 41. D (0, 4)
- 42. E (5, 0)





Tell what point is located at each ordered pair.

- 1) $(-7, -1)$ _____ 3) $(+4, +8)$ _____ 5) $(-2, +5)$ _____ 7) $(-1, -7)$ _____
 2) $(+4, +4)$ _____ 4) $(+7, -1)$ _____ 6) $(+0, +4)$ _____ 8) $(+2, +6)$ _____

Write the ordered pair for each given point.

- 9) **O** _____ 11) **N** _____ 13) **J** _____ 15) **S** _____
 10) **H** _____ 12) **B** _____ 14) **A** _____ 16) **M** _____

Absolute Value & Order of Operations

Directions: Evaluate each expression.		
1. $ -13 =$	2. $ 21 =$	3. $ -3 + -5 =$
4. $ 9 + -8 =$	5. $ -12 + 15 =$	6. $ 21 - 17 =$
7. $ -11 - -5 =$	8. $ 4 - -4 =$	9. $ 15 - 23 =$

Directions: Evaluate each expression.

13. $7 + 54 \div 3(2)$

14. $17 - 2^5 \div 4 + 6$

15. $24 - 4^2 \cdot 3 + 15$

16. $\frac{(7 - 2^2) + 17}{-14 + 2 \cdot 5}$

17. $(8 - 5)^3 - |5^2 - 4^3| \div 3$

18. $|-7^2 + 3^2 \cdot 4| + 18 \div 2 \cdot 5$