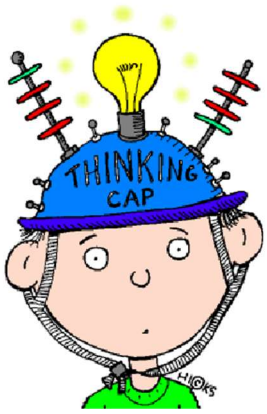
Voorhees HS – CP Algebra 1

packet

- 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*!!!**
- You will be given a **TEST** on this material within the first week of school that will count toward your first marking period grade.
- 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

3. the sum of 15 and w

4. 22 minus k

5. a number b divided by 8

6. q multiplied by 2

7. the product of 3.3 and a number x

8. one third of a number m

Write an algebraic expression for each word phrase.

17. 14 minus the quotient of 25 and p

18. a number w tripled plus t quadrupled

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

20. the product of 2 times a and 5 times b

1-2 Practice

Order of Operations and Evaluating Expressions

Simplify each expression.

1. 9^2

2. 8^3

3. $\left(\frac{7}{8}\right)^2$

4. $(4+3)^2$

5. $8+5(7)$

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

7. $11(3)-3^2$

8. $\left(\frac{15}{5}\right)^3-6(2)^2$

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. $8-y$

13. $\frac{x^3}{3}-8$

14. $5(y)^3-6$

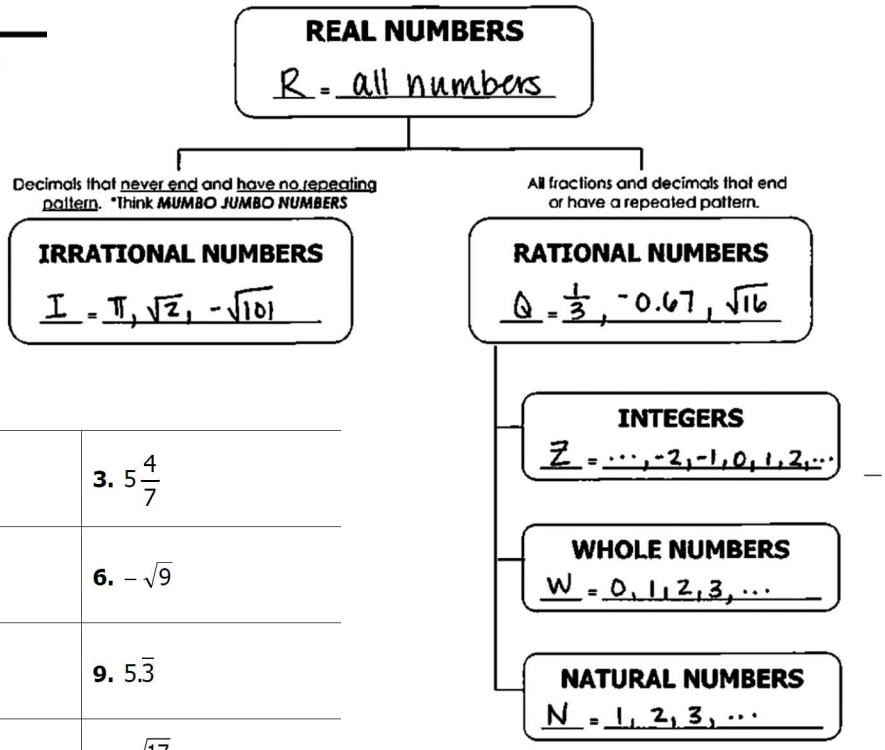
15. $-6(x)^2+y^3-8$

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.** $5.\overline{3}$
10. $\frac{\sqrt{144}}{-3}$	**11.** –2.875	**12.** $\frac{\sqrt{17}}{\sqrt{17}}$

19. $\frac{3}{4}$ **20.** -8 **21.** 2π

22. 45,368 **23.** $\sqrt{11}$ **24.** $-\frac{2}{3}$

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

12. 21 + 43

13. 15 + (–20)

14. –25 + (–25)

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

B. –5 + 8

C. 5 + (–8)

D. –5 + (–8)

Find each difference.

19. 6 – 12

20. –5 – 6

21. –7 – (–10)

22. 26 – (–14)

23. 30 – 50

24. –13 – (–13)

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.

3. $-2(-3)$

4. $4(-7)$

5. $5 \cdot 10$

6. $(-5)^2$

7. -3×7

8. $-4(-6)$

9. $-3(1.2)$

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

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

27. $4.4 \div (-2)$

28. $-\frac{1}{8} \div \left(-\frac{1}{2}\right)$

29. $-\frac{3}{4} \div \frac{1}{5}$

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. $12(4 - 8p)$

7. $7(11 - n)$

8. $(1 - 11j)4$

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. $23b - 19b$

25. $35t - 42t$

26. $-4p + 2p$

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. $z + 5 = 4$

3. $m - 4 = 12$

4. $-10 = h - 4$

5. $n + 14 = -5$

6. $2 = a + 7$

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

7. $4t = -32$

8. $-25 = -5x$

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. $-8 + 3h = 1$

3. $2j - 13 = 25$

4. $\frac{n}{5} - 1 = 7$

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

6. $7 = -6m + 7$

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

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

9. $15 - 3t = -12$

10. $13 + \frac{a}{11} = 7$

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

17. $\frac{1}{2} = \frac{1}{2}t + 3$

18. $4.52 - 5h = 2.8$

2-3 Practice

Solving Multi-Step Equations

Solve each equation. Check your answer.

1. $20 + g + g = 14$

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

3. $-12 = -5 - 6n + 11$

4. $t + 10 - 4t = -11$

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

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

Solve each equation. Check your answer.

9. $4(-2d - 3) = 12$

10. $5(5t - 2) = -35$

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

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

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

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

16. $\frac{m}{3} + \frac{1}{3} = \frac{2}{3}$

17. $5r - \frac{1}{5} = \frac{4}{5}$

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

3. $13k + 5 = k - 7$

4. $6q - 1 = -q + 20$

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

11. $\frac{-13}{15} = \frac{k}{-5}$

12. $\frac{-14}{h} = \frac{-2}{5}$

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?

3. What percent of 65 is 115?

4. What percent of 45 is 42?

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?

9. A pair of pants that regularly costs $55 are on sale for 35% of the regular price. What is the sale price of the pants?

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?

13. 165% of what number is 132?

14. 8% of what number is 1.2?

Plotting Coordinates on the Coordinate Plane

Plot and label the following coordinates on the grid provided.

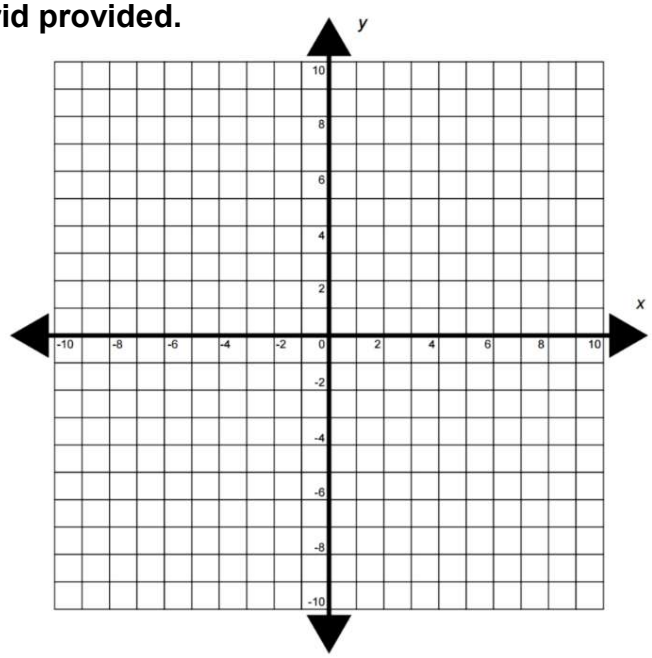
38. A (- 2, 5)

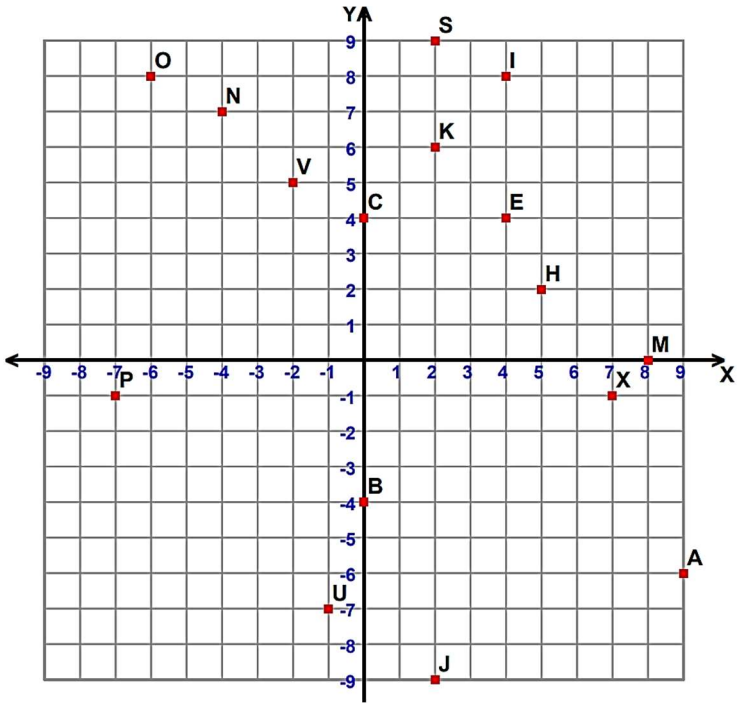
39. B (4, - 3)

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| =
10. |24| – |-15| =	**11.** |28| – |-26| =	**12.** |-3| – |19| =

Directions: Evaluate each expression.	
13. $7+54\div3(2)$	**14.** $17-2^5\div4+6$
15. $24-4^2\cdot3+15$	**16.** $\dfrac{(7-2^2)+17}{-14+2\cdot5}$

17. $(8-5)^3-\lvert5^2-4^3\rvert\div3$	**18.** $\left\lvert-7^2+3^2\cdot4\right\rvert+18\div2\cdot5$