

Algebra II Honors

Summer Math
Skills Review



2017 - 2018

Please bring your completed packet to the first day of class on August 14, 2017 (A day) or August 15 (B Day).

Make sure to follow directions and show your thinking! Use a separate sheet of paper if needed!

Congratulations on your placement into Algebra II Honors!

This packet needs to be completed by the first day of school, August 14 (A day) or August 15 (B day).

To assist in your review, we suggest using Khanacademy.org to review concepts if needed.

Go to:

www.khanacademy.org -> subjects -> math -> Algebra -> search window in the top right corner. Type the keyword into the search bar.

Each section has a keyword with the directions to assist in finding the proper videos. These keywords are generic and one may need to search a few videos before finding the exact skill needing to be reviewed.

Required Calculator:

TI-84 Plus

If you lose your packet, you can pick up another copy in the main office at Central Campus. Call (815)467-2140 for office hours or visit www.mchs.net

Evaluate without a calculator. Write answers in simplified form. (keyword: fractions)

$$1) \frac{2}{11} + \frac{5}{8}$$

$$2) \frac{2}{5} - \frac{3}{2}$$

$$3) \frac{7}{9} + \frac{3}{5} - \frac{1}{2}$$

$$4) \frac{5}{8} \cdot \frac{2}{7}$$

$$5) \frac{6}{9} \cdot \frac{2}{3}$$

$$6) 12 \cdot \frac{5}{6}$$

$$7) \frac{6}{7} \div \frac{3}{2}$$

$$8) 8 \div \frac{1}{2}$$

$$9) \frac{5}{11} \div 2$$

Divide using long division. Write any remainders as a numerator of a simplified fraction with the divisor as the denominator. No Calculator.
(keyword: long division)

$$10) 890 \div 5$$

$$11) 5 \div 7$$

$$12) 20 \div 12$$

12. Describe the following sets of numbers, then list 5 examples of each.
(keyword: classifying numbers)

a) Real Numbers:

b) Rational Numbers:

c) Irrational Numbers:

d) Whole Numbers

e) Integers:

f) Natural Numbers:

13. Give a numeric example of each of the following properties of Addition and Multiplication. (keyword: Use the properties themselves as keywords)

Property	Addition	Multiplication
Closure		
Commutative		
Associative		
Identity		
Inverse		

14. The adding of a real number and its' inverse is _____.

15. The multiplication of a real number and its' inverse is _____.

16. Use the order of operations to evaluate the following when a) $x = 2$ and b) $x = -2$

a) $x^2 + 3x - 8$

b) $-x^2 - 8x + 11$

c) $3x^2 - x + 12$

d) $(5x)^3 + 5x^3$

17. Solve each equation. Write each answer as a simplified, improper fraction.
(keyword: solving linear equations)

a) $7x - 29 = -15$

b) $3(4x - 15) = 19$

c) $7x - 18 = 4x - 31$

d) $4 + 6(x + 2) = 2 - (x - 3)$

18. Clear the fractions first, then solve each equation. Write each answer as a simplified, improper fraction.

a) $\frac{7}{2}x - 1 = 2x + 5$

b) $\frac{3}{4}(x - 2) = x + 1$

c) $\frac{1}{2}x - \frac{5}{3} = -\frac{1}{2}x + \frac{19}{4}$

d) $-\frac{2}{3}\left(\frac{6}{5}x - \frac{7}{10}\right) = \frac{17}{20}$

19. You are organizing a benefit concert. You plan on having only two types of tickets: adult and child. Write an equation with five variables that represents the revenue (money made) from the concert. Identify what each variable represents.

20. Solve for the variable in parenthesis. (keyword: manipulating formulas)

a) $8x - 2y = 18$ (y)

b) $3x + 4y = 15$ (y)

c) $2w + 2l = P$ (w)

d) $A = bh$ (b)

e) $A = \frac{bh}{2}$ (h)

f) $A = \frac{1}{2}h(b_1 + b_2)$ (b_1)

g) $F = \frac{9}{5}C + 32$ (C)

h) $A = ht + vt$ (t)

21) Solve the inequality and graph the solutions on a number line. (keyword: solving inequalities)

- What happens when you multiply or divide by a negative number?
- How do you determine whether your graph needs an open circle or closed?

a) $4x + 5 > 25$

b) $7 - n \leq 19$

c) $3x + 8 < 5x - 12$

d) $3(x - 7) \geq x - 10$

22) Solve the compound inequality and graph the solutions.
(keyword: solving compound inequalities)

a) $-1 \leq x + 5 \leq 8$

b) $-16 < 3x - 4 \leq 2$

c) $3 \leq \frac{2}{3}x - 4 < 5$

d) $3x < 12$ or $x + 4 > 15$

e) $7x - 1 \leq 48$ or $-5x < -40$

f) $4x > 16$ or $2x - 8 < 4$

23) Solve the absolute value equation. (keyword: solving absolute value equations)

a) $|x| = 8$

b) $|x| = -9$

c) $|x - 9| = 8$

d) $2|3x - 5| = 20$

e) $\frac{1}{2}|x + 3| - 4 = 1$

24) Solve the absolute value inequality, then graph the solution set.
(keyword: solving absolute value inequalities)

a) $|x| \leq 6$

b) $|x| > 5$

c) $|x| < -2$

d) $|x| \geq -3$

e) $|x - 9| \geq 4$

f) $|x + 1| < 7$

g) $3|x - 4| + 2 \leq 11$

25) A cereal box needs to weigh between 28 ounces and 32 ounces in order to meet requirements for sale. Write an absolute value inequality describing the weights acceptable for sale.

26) You are a quality control inspector at a bowling pin company. A regulation pin must weigh between 50 ounces and 58 ounces, inclusive. Write an absolute value inequality describing the weights you should reject.

Rate of Change and Slope:

27) Sketch the graph of a line that would have the following:

a) positive slope

b) negative slope

c) slope of zero

c) undefined slope

28) What is the slope formula? (keyword: slope formula)

29) Use the slope formula to find the slope of the line passing through the following points. (keyword: finding slope from two points)

a) (3, 2) and (-4, 3)

b) (3, 4) and (12, 5)

c) (4, -8) and (4, 12)

d) (3, 5) and (-4, 5)

30) Consider the points on the following lines:

line 1: (-1, 9) and (-6, -6)

line 2: (-7, -23) and (0, -2)

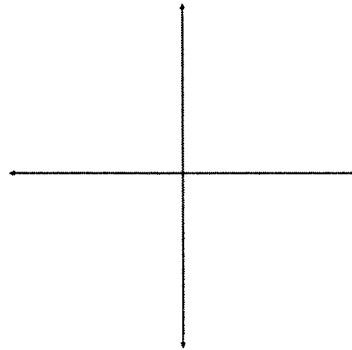
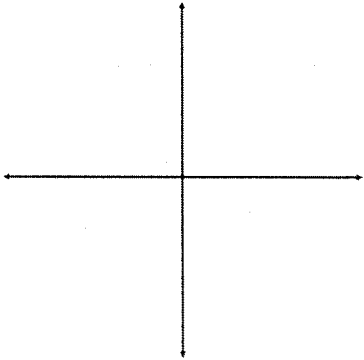
Use the slopes to determine whether the lines parallel, perpendicular or neither?
How do you know?

31) What is the slope intercept form of a line?(keyword: slope intercept form)

32) Graph the following using the slope intercept form of the line.
(keyword: graph from slope intercept form)

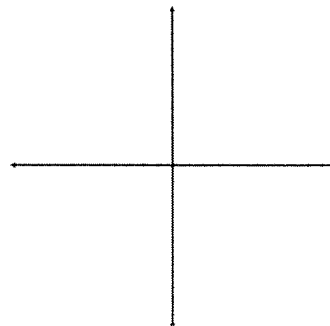
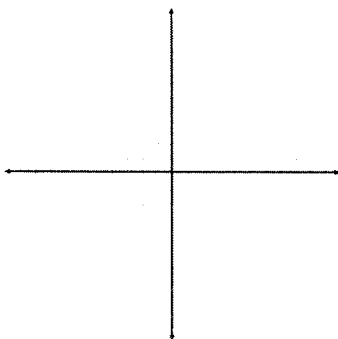
a) $y = \frac{2}{3}x - 7$

b) $y = -5x + 2$



c) $y = \frac{1}{2}x$

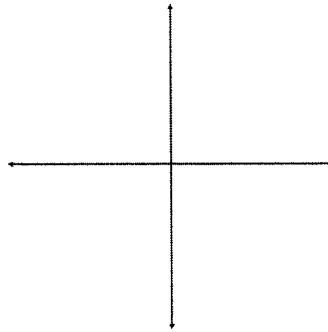
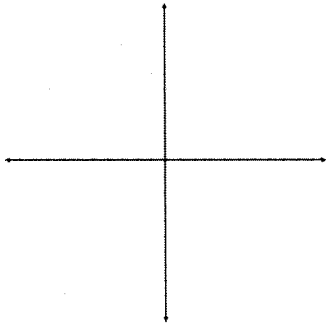
d) $x = 3$



33) Find the x and y intercepts and use them to graph the line.
(keyword: graph using x and y intercepts)

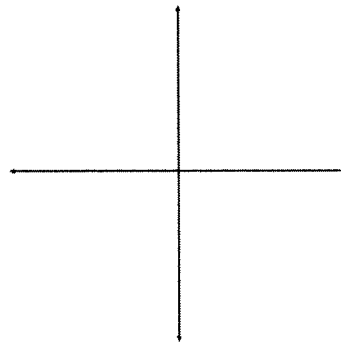
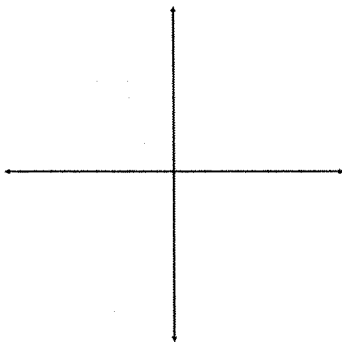
a) $2x + 3y = 12$

b) $3x - 5y = 15$



c) $2y = 5x - 20$

c) $y = 5$



34) Write the equations of the following lines in slope intercept form.
(keyword: slope intercept form problems)

- a) Write the equation of the line with a slope of -2 and a y-intercept of 8.
- b) Write the equation of the line that passes through (-3, 4) and has a slope of $\frac{2}{3}$.
- c) Write the equation of the line that passes through the points (-8, 8) and (0, 1).
- d) Write the equation of the line that passes through (4, 6) and is perpendicular to the line that passes through (6, -6) and (10, -4).
- e) Write the equation of the line that passes through (6, -3) and is parallel to the line that passes through (10, 5) and (4, 6).
- f) Write the equation of the line that passes through (5, -5) and is
(1) perpendicular to $y = 3x - 6$ and (2) parallel to the line $y = 3x - 6$