

Honors Algebra 2 Summer Review Packet

Due the first day of school

The problems in this packet are designed to help you review topics that are important to your success in Honors Algebra 2. All work must be shown for each problem – use the space provided and/or attach additional pages if necessary. Circle all final solutions. The problems should be done correctly, not just tried. You are expected to get each problem correct. Please DO NOT use your calculator to solve these problems. You must know how to do all these problems WITHOUT a calculator. You may choose to work alone or with others, but each person must submit his/her own work. If you need help with any of the problems check web sites for explanations and/or a help session is available at EHS this summer:

HELP SESSION DATE:
August 22nd

TIME:
10:00-11:30

All work should be completed and ready to turn in on the first day of school. Quarter 1 will review and expand these topics. If you are not prepared with having these skills the pace and demands of this honors course may not be a match for you.

Show all work for all problems.

1. Complete these fraction operations WITHOUT the use of a calculator. Answer in simplest form.

a. $\frac{2x}{3} + \frac{4}{9}$

b. $\frac{7}{4} - \frac{4y}{5}$

c. $\frac{2x}{3} \cdot \frac{4x}{9}$

d. $\frac{3x^2}{4} \cdot \frac{x}{6}$

e. $12 \cdot \frac{3x}{4}$

f. $4y \cdot \frac{4}{5}$

g. $10x \cdot \frac{2y}{5} \cdot \frac{7}{10}$

h. $3x^3 \cdot \frac{2}{3} \cdot 8x^5$

2. Evaluate the expression if $x = 3$ and $y = -2$




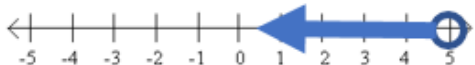
$$x + y^2(x + 5) - y$$

3. The length of a rectangle is 2 feet more than its width. If its perimeter is 40 feet, write an equation and solve to find the length and width of the rectangle.

4. Line l contains the points $(-2, 3)$ and $(1, 5)$. Write the equation of the line in slope-intercept form.

5. Convert the linear equation to standard form. ($Ax + By = C$ where A, B , and C are integers, A is positive, and greatest common factor of A, B and C is one)

$$\frac{2}{3}y = \frac{5}{12}x - \frac{3}{4}$$

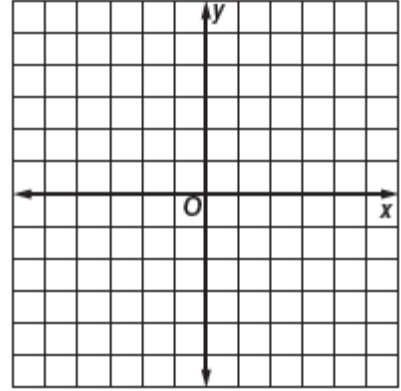
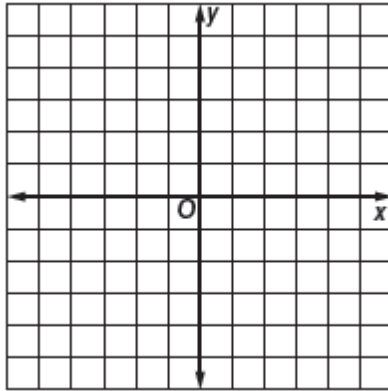
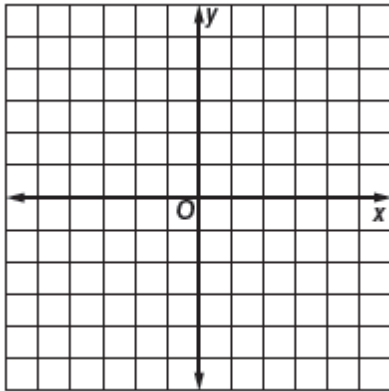
6. Line k passes through the point $(8, -3)$ and is parallel to the line $3x - y = 4$. Write an equation for line k .
7. Solve the following equations. Show your work AND check your answers. **Leave exact solutions.**
- a. $(x - 1) - (4x + 6) = 8$ b. $-2(3x - 1) - (2x + 3) = 5x + 3(x - 4)$
8. The cost for 7 dance lessons is \$82. The cost for 11 lessons is \$122.
- a. Write a linear equation to find the total cost C for d dance lessons.
- b. Use the equation to find the cost of 4 lessons.
9. Indicate the solutions shown on the number line using inequality statement(s).
- a. 
- b. 
- c. 
- d. 
10. Solve the following equations:
- a. $5(2 - x) = 3 - 2x + 7 - 3x$ b. $3 - (x - 3) = 2(x + 2) - 2$

11. Graph the following equations:

a. $y = 2x - 3$

b. $-2x + 3y = 6$

c. $x = -4$



12. Write the equation of a horizontal line that goes through the point $(-1, 3)$.

13. **MC** A line is graphed in the xy -plane. If the line has a positive slope and a negative y - *intercept*, which of the following points cannot lie on the line?

- $(-3, -3)$
- $(-3, 3)$
- $(3, -3)$
- $(3, 3)$

14. A car salesman's weekly salary is a base amount plus an additional amount for each car sold. The table below shows a person's weekly salary earned for the last three weeks.

Cars sold (c)	Weekly salary (S)
4	\$500
9	\$1000
12	\$1300

a. Write an equation to determine (S) the weekly salary for (c) number of cars sold.

b. What is the person's weekly salary when 13 cars are sold?

15. Solve the following equations by clearing fractions FIRST. **Leave exact solutions (improper fractions).**

a. $\frac{4}{9}x + 5 = -\frac{2}{3}x - 8$

b. $\frac{3}{4}x - \frac{1}{3} = \frac{2}{3}x - \frac{7}{12} - 2$

16. Write the equation for the line parallel to the given line and through the given point.

$4x - 3y = 9$ and $(3, -1)$

a. Write the answer in slope intercept form.

b. Write the answer in standard form.

17. Given a line through $(-2, 4)$ and $(8, -1)$, find the equation of the line perpendicular to that line through the midpoint of those points. Write the answer in slope intercept form.

18. Find the value of r so that the line that passes through the pair of points has the given slope.

a. $(11, 6), (-11, r), m = \frac{8}{11}$

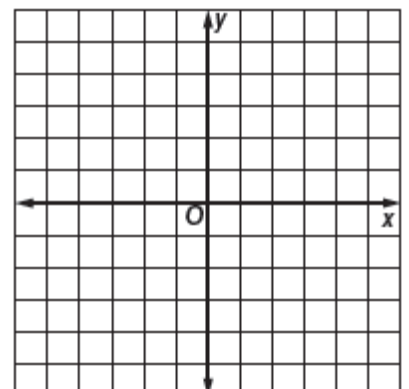
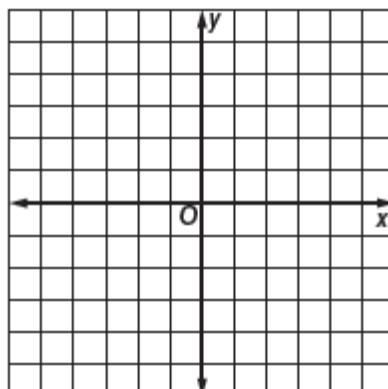
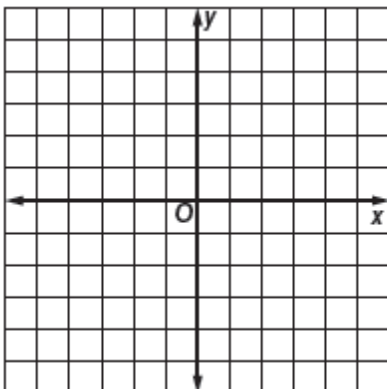
b. $(10, r), (4, -3), m = \frac{4}{3}$

19. Graph each of the following lines.

a. slope: $-\frac{3}{4}$, through $(-5, -1)$

b. slope: -3 , x-intercept: 4

c. slope: 0 y-intercept: -2

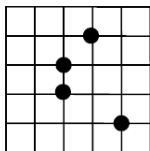


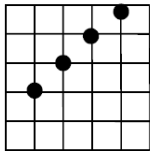
20. State whether each set is a function. Find the domain and range.

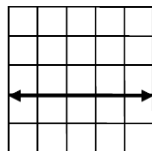
a. $\{(2, 5), (5, 6), (2, -6), (3, 8)\}$ _____ Domain: _____ Range: _____

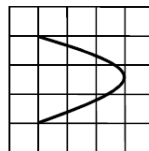
b. $\{(1, -2), (8, -4), (-3, 8), (-1, 2)\}$ _____ Domain: _____ Range: _____

21. Determine whether each graph is the graph of a function.









22. A rectangular prism has a volume of 82 cubic inches. What will be the volume if the length, width, and height of the prism are all doubled? $V = lwh$

23. Use $f(x) = x^2 - 3$ and $g(x) = 4x - 1$ to find each value.

- a. $f(-3)$ b. $g(-7)$ c. $f\left(\frac{4}{3}\right)$ d. $f(-5) + 8$
- e. $f(3c)$ f. $g(x - 7)$ g. $f(2m + 3)$ h. $-2[g(x) - 3]$

24. The function $g(x) = 160 + 1.5x$ models the weight gain of a basketball player as he starts a workout program where g is the weight in pounds after x weeks.

a. Explain the meaning of 160 in the context of this problem.

b. Explain the meaning of 1.5 in the context of this problem.

c. Evaluate $g(6)$ and explain its meaning.

25. Use the laws of exponents to simplify each expression (Negative exponents should be simplified)

a. $3a^4b(-5a^7b^3)$

b. $(-y^2)(3y^2z^2)(-5yz^4)$

c. x^0

d. $(2c^{-3})^2(4c^2)$

e. $(-2x^6)(4x^{-8})$

f. $-x^0$

g. $\frac{-40a^{-8}b^{20}}{25a^6b^{10}}$

h. $\frac{-22x^3y^6}{-14x^{13}y^{-3}}$

i. $(3x^4y)^3$

j. $\frac{(3x^{-2})^2}{3x^6}$

k. $\frac{(-4x^{-5}y^7)^3}{(-3x^3y^3)^2}$

l. $(-1)^9(-x^2)$

26. Simplify the radicals – answer in simplified radical form (not decimal!).

a. $\sqrt{100}$

b. $\sqrt{40}$

c. $\frac{3\sqrt{8}}{\sqrt{3}}$

d. $-\sqrt{80}$

e. $-3\sqrt{98}$

f. $\frac{4}{\sqrt{8}}$

g. $\sqrt{18} \cdot \sqrt{32}$

h. $\sqrt{10} \cdot \sqrt{20}$

27. Convert 20 feet per second into miles per hour.

28. Solve the following systems of equations by graphing.

a. $y = -\frac{1}{2}x + 4$

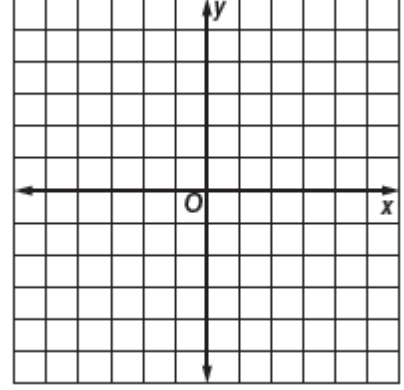
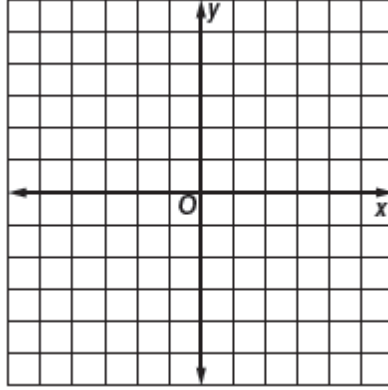
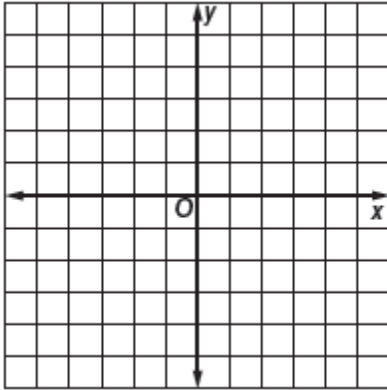
$y = 2x - 6$

b. $3x - y = 5$

$-x + 2y = 0$

c. $2x + 3y = 9$

$4x + 6y = 18$



29. Solve the following systems by substitution:

a. $a + 4b = -4$
 $3a - 5b = 22$

b. $6x - 7y = 23$
 $2x + y = 11$

c. $9y + 3x = 18$
 $-3y - x = -6$

30. Solve the following systems by elimination:

a. $5a - 2b = -19$
 $8a + 5b = -55$

b. $r - 6y = 44$
 $9r = -12y$

c. $11u = 5v + 35$
 $8u = -6v + 62$