

Hi Honors Algebra II Student,

The following problems are prerequisites for Honors Algebra II. This is a review of some of the information that you will need to know as a foundation to new content to come. It will help you refocus on the content needed for success, as well as help you feel more confident moving forward with the new content.

We will briefly go over the assignment when you return in September and you will be assessed on the material soon thereafter. Enjoy the summer, complete the packet, and be ready with any questions you may have on the first day of school.

Sincerely,
Your Honors Algebra II Teacher

1) For the linear equation $2x - 6y = 12$, answer the questions below.

a) Find the x and y intercepts

b) Convert the equation to slope intercept form

c) Identify the slope and y -intercept

d) Write the equation of the line parallel to this line that passes through the point $(-1, 4)$.

e) Write the equation of the line perpendicular to the original line that passes through $(-3, 0)$.

f) Find the point of intersection between the original line and the line $x = -2$.

Model each scenario below. Be sure to define any variables.

2) A rectangle is 3 feet longer than it is wide. Write the equation for the perimeter of the rectangle.

3) The literature club is printing a storybook to raise money. The print shop charges \$3 for each book if you pay the \$80 yearly membership charge. Write the equation to determine how much money the literature club will spend on the print shop.

4) An economist is studying the linear relationship between the selling price p , of a mobile phone and the number of persons buying the phone x . The table of values illustrates her findings. Write the equation that represents the relationship between the number of persons buying the phone and the price of the phone.

x	$p(\$)$
10	52.50
25	41.25
40	30.00
60	15.00

Solve each of the following equations and inequalities.

5) $2x - (5x - 3) = 15$

6) $2(5x - 3) = 5 - 2(x + 1)$

7) $2x + 5 \geq 2 - (x - 9)$

8) $-8 < 2x - 4 < 8$

9) $3x^2 - 4 = 44$

Solve the systems.

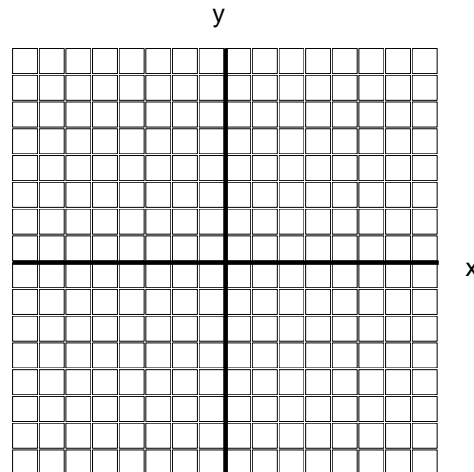
$$\begin{aligned} 10) \quad & 2x + 3y = 31 \\ & y = x + 7 \end{aligned}$$

$$\begin{aligned} 11) \quad & 2x + y = -1 \\ & -6x - 3y = -15 \end{aligned}$$

12) You are selling tickets for a high school play. Student tickets cost \$4 and general admission tickets cost \$6. You sell 525 tickets and collect \$2876. How many of each type of ticket did you sell?

13) Graph the piecewise function.

$$f(x) = \begin{cases} -3x + 6, & \text{if } x \geq 1 \\ x + 2, & \text{if } x < 1 \end{cases}$$



Write a piecewise function to model the following.

14) Hannah pays \$85 per month for her cell phone plan that gives her unlimited talk and 500 outgoing text messages. After the 500 text messages it costs \$.10 per outgoing text message. Write the equation that models how much she pays for her data.

Solve the following.

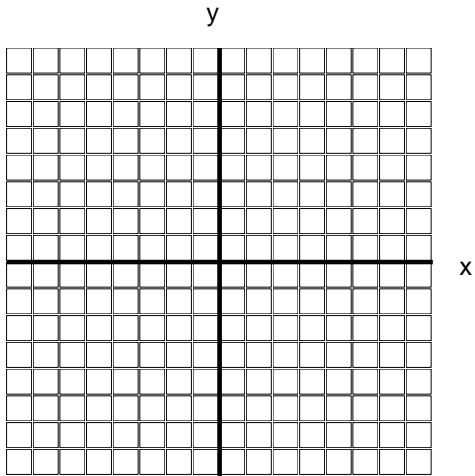
15) $|2x - 7| - 5 = 4$

16) $|2x + 1| - 3 \geq 6$

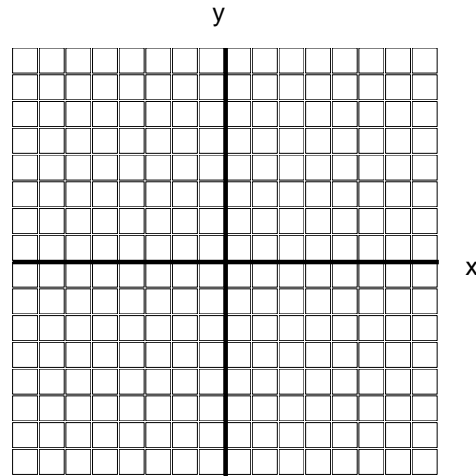
17) $|10 - 4x| \leq 2$

Graph the absolute value functions.

18) $f(x) = |x + 3| - 1$



19) $f(x) = |x| + 2$



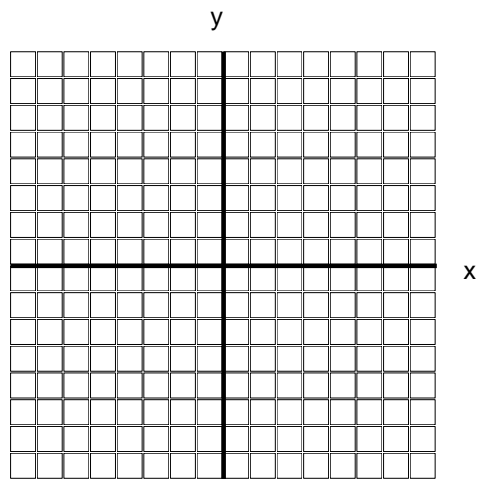
20) Answer the questions below for the quadratic function $y = x^2 + 4x - 5$.

a) Explain how you know whether the graph opens up or down.

b) Find the vertex of the function.

c) State the axis of symmetry.

d) Sketch a graph of the quadratic function.



Factor the following.

21) $x^2 - 7x - 30$

22) $x^2 + 5x - 24$

23) $x^2 + 13x + 36$

24) $x^2 - 36$

$$25) 8x^2 + 2x - 3$$

$$26) 6x^2 - 11x - 10$$

Simplify, leave no negative exponents.

$$27) x^4 \cdot x^5$$

$$28) (x^3y^8)^5$$

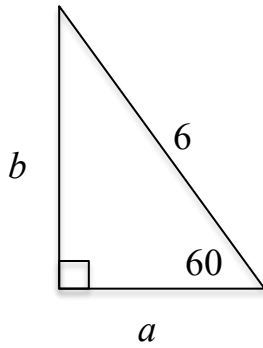
$$29) \frac{1}{9x^{-3}y^{-1}}$$

$$30) \frac{2x^2y}{3x} \cdot \frac{9xy^2}{y^4}$$

$$31) \left(\frac{-6x^2y}{2xy^3} \right)^3$$

Find the missing sides of the triangle. Answers in simplified radical form no decimals.

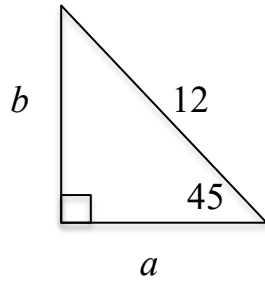
32)



$$a = \underline{\hspace{2cm}}$$

$$b = \underline{\hspace{2cm}}$$

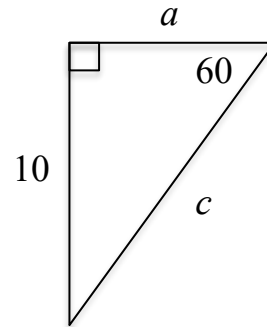
33)



$$a = \underline{\hspace{2cm}}$$

$$b = \underline{\hspace{2cm}}$$

34)



$$a = \underline{\hspace{2cm}}$$

$$c = \underline{\hspace{2cm}}$$