

## Waring School Summer Math Packet

*for students completed Geometry and Algebra 1*

Hello folks,

Here is a packet of problems for you to ponder and work on over the summer, in order to keep your math skills fresh. Try all of the problems, and on your own paper, please write up your solutions (make sure the number of each problem is written clearly!). This means not just writing your answers, but showing your steps and your thinking! This is the work you will hand in during the first week of classes.

Sometimes when we return to something we've learned before, it can feel unfamiliar again the second time around but it will come back to you more quickly! **Our message to you is - please just do your best!** Make note of ideas that feel unfamiliar to you. Make use of worked-out examples (at end of packet) to help you and you can check out our [Summer Resources](#) page. We so appreciate your willingness to spend some time doing math this summer!

*“What kind of calculator do I need to do this work?”*

No calculators necessary--just use your brain! :)

*“How will I get all of these problems done this summer?”*

We recommend that you pace yourself throughout the summer by working through about **half of a page each week**.

*“I don't know the answers to some of these!”*

That's OK! You aren't supposed to be perfect and may not yet know how to do all of these problems. This is school, after all, and everybody's learning. Please just do your best! Check out our [FAQ and Resources](#) for resources on what to do if you feel stuck.

If you have questions about specific problems, or anything else in this packet, you can look at our [FAQ and Resources](#) page, or E-mail our department chair Joan Sullivan at [jsullivan@waringschool.org](mailto:jsullivan@waringschool.org).

We hope you and your family have a good summer,  
*The Waring Math Teaching Team*

Name \_\_\_\_\_

1. Evaluate each expression for the given values of the variables:

a)  $2x - y$  for  $x = 3$  and  $y = 8$

b)  $-12m - 14n$  for  $m = -\frac{1}{3}$  and  $n = \frac{1}{7}$

c)  $3ab^2$  for  $a = 2$  and  $b = -1$

d)  $3x^2 - 5x - 2$  for  $x = 5$

e)  $\frac{y}{3-x}$  for  $x = 11$  and  $y = 4$

g)  $\frac{1}{2}(7 - x)^2$  for  $x = -3$

2. Rewrite the expressions as sums in simplest form, by distributing and combining like terms.

a)  $4n - 2 + 4n + 2$

b)  $4(2y - 6) - 3y$

c)  $2(x + 2y) + 3(x + 5y)$

d)  $t^2 - 32t + 47 - 22t^2 + 27t$

g)  $5n(n + 1) - (n^2 + 12) + 2n$

h)  $\frac{2y^2 + 4y - 3}{3} + y$

3. Solve the equations.

a)  $4f + 17 = 73$

b)  $-2x - 3 = 14x - 51$

c)  $15 = 25 + 2(2x - 3)$

d)  $16x - 3(x + 5) = 3x + 35$

**4. Solve the problem by writing a mathematical equation to model the situation and solve.**

- a) You have \$90 and your sister has \$130. You are saving \$8 per week and your sister is saving \$4 per week. How long will it be before you and your sister have the same amount of money?
- b) 65.52 is 42% of what number?

**5. Solve the inequality**

- a)  $x + 8 > 15$
- b)  $4x \leq 32$
- c)  $-3x + 4 < 28$
- d)  $14x - 15 < 2x + 21$

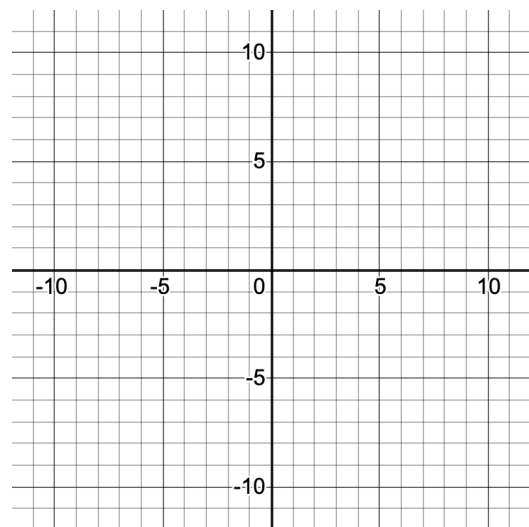
**6. Complete the table of values and sketch a graph of the equation.**

a)  $y = 3x + 2$

x	$y = 3x + 2$
-2	
-1	
0	
1	
2	

b)  $y = -\frac{1}{2}x - 5$

x	$y = -\frac{1}{2}x - 5$
-2	
0	
1	
2	

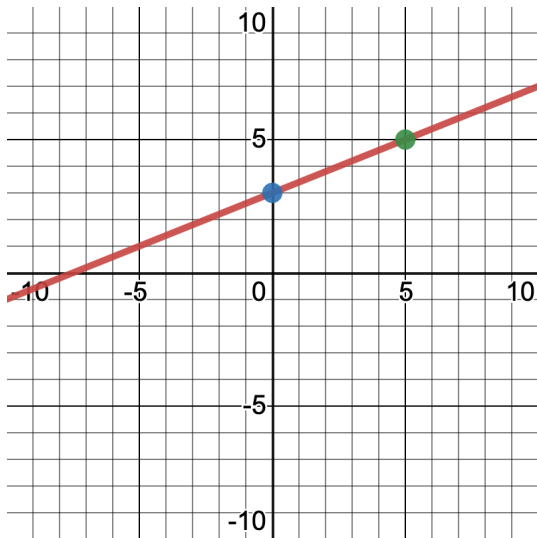


- c) Graph the line that contains the point (1,9) and has a slope of  $-\frac{1}{3}$
- d) Graph the line that is parallel to the line in c) and includes the point (0,0).  
(Use the same coordinate grid.)

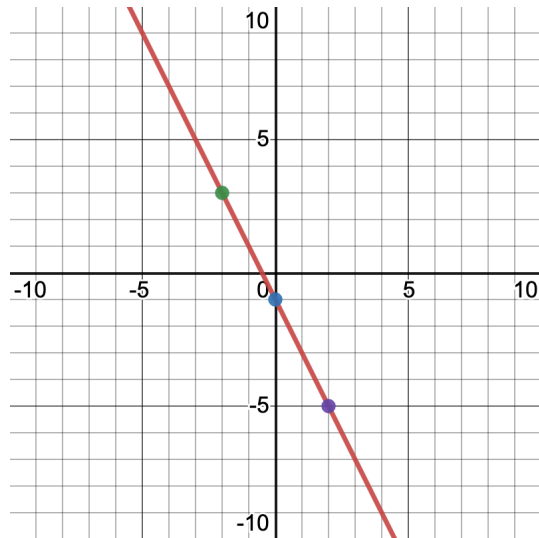
What is the equation for the parallel line you just sketched?

7. Write an equation for each graph by identifying its slope and its y-intercept.

a)



b)



8. Solve the system of equation by using substitution or elimination methods

a)  $3y - 10 = x$   
 $x = -4y$

b)  $2x - 4y = 6$   
 $7x + 4y = 12$

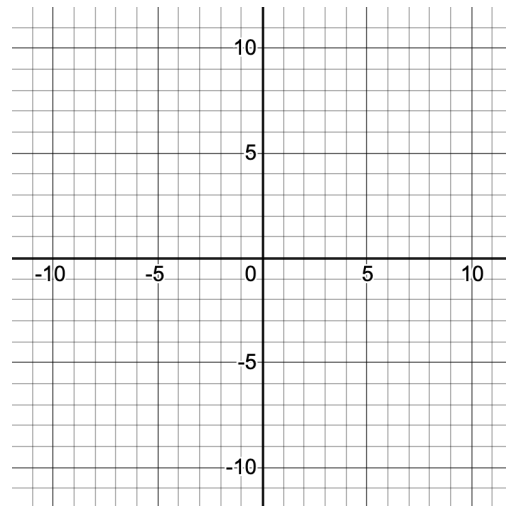
9. Quadratics

a) Fill in the table of values and sketch a graph of the equation  $y = x^2 - 4x - 5$   
*(hint: the graph will not be a straight line)*

b) What are the x-intercepts of the graph?

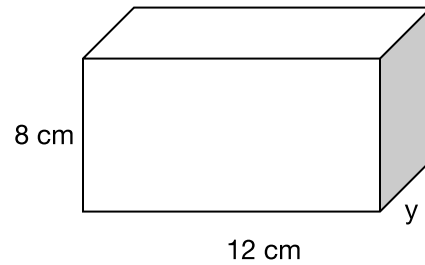
c) What are the coordinates of the vertex?

x	$y = x^2 - 4x - 3$
-1	
0	
1	
2	
3	



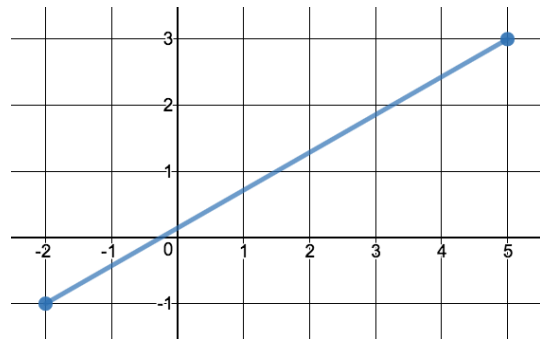
**10. Volume and Surface Area**

- a) If the volume is  $480 \text{ cm}^3$ , what is the length of the missing side labeled  $y$ ?



**13. Coordinate Geometry**

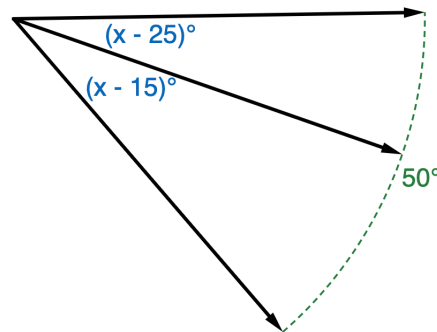
- a) What are the coordinates of the midpoint of this segment?
- b) Use the Pythagorean Theorem to calculate the distance between the two points. Leave your answer in radical form.



Point A:  $(4, 3)$  and Point B:  $(9, -1)$

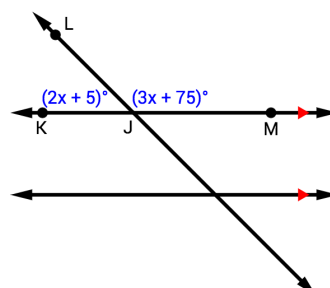
**14. Angle Relationships**

- a) What is the value of  $x$  in the figure?

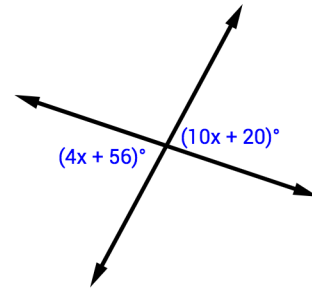


- b) Find the value of  $x$  in the figure.

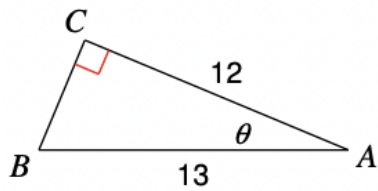
What is the measure of  $\angle KJL$ ?



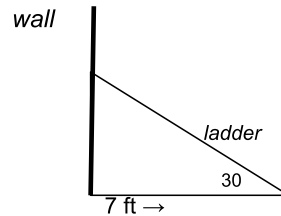
- c) What is the value of  $x$ ? What are the measures of each angle?



**16. Right Triangle Trigonometry. (you may use a calculator)**



- What is the length of side  $CB$ ?
- What is  $\sin(\theta)$ ?
- What is  $\cos(\theta)$ ?
- What is  $\tan(\theta)$ ?



- A ladder leaning against a house makes an angle of  $30^\circ$  with the ground. The foot of the ladder is 7 feet from the foot of the house. How long is the ladder?