for students who 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. You are expected to hand in completed solutions during the first week of classes (after camping trip).

You may notice that a lot of these problems relate to skills you learned in Algebra 1, and then were reinforced in Geometry. This is because the next course is called Advanced Algebra, and - you guessed it - requires a lot of the skills you learned in Algebra 1. So we are asking you to continue to remind yourself of those skills.

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 us more quickly! ***Our message to you is - please do your best!*** 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- applying your brainpower is enough! :)

"How will I get all of these problems done this summer?"

We recommend that you pace yourself throughout the summer by working through about **one page each week (for 7 weeks)**. Try all of the problems and write up your solutions on separate sheets next to the problem number. Please write enough to show your steps and your thinking!

"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. Make note of those problems - and 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.

We wish you and your family a good summer,
The Waring Math Teaching Team

TOPIC: Algebraic procedures

1. **Solve the equations.**

a) $4f + 17 = 73$

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

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

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

2. **Evaluate each expression for the given values of the variables. This means "plug in" the given numbers for the variables and simplify. You will need your math facts to do this without a calculator. If this is a challenge for you - please review your math facts this summer!**

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

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

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

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

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

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

There is LOTS of math vocabulary in the problems below. You may need to refresh the meanings of some of the words below. MathisFun is a website which has an excellent visual dictionary of math terms. We recommend you consult this if you get stuck.

3. **Rewrite the expressions as sums in simplest form. This means that you use the order of operations and rewrite without parentheses and all like terms are combined.**

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

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) $x + 8 > 15$
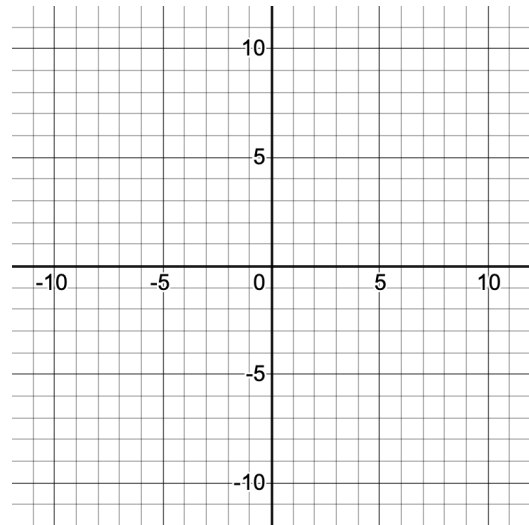
b) $4x \leq 32$

c) $-3x + 4 < 28$

d) $14x - 15 < 2x + 21$

TOPIC: Linear Equations

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

a) $y = 3x + 2$

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

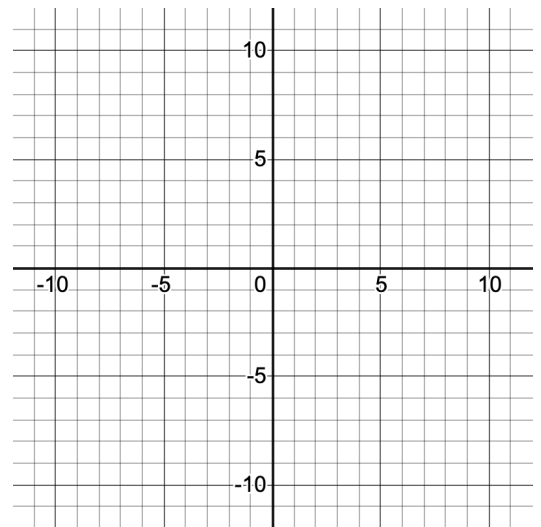b) $y = -\frac{1}{2}x - 5$

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 $-\dfrac{1}{3}$

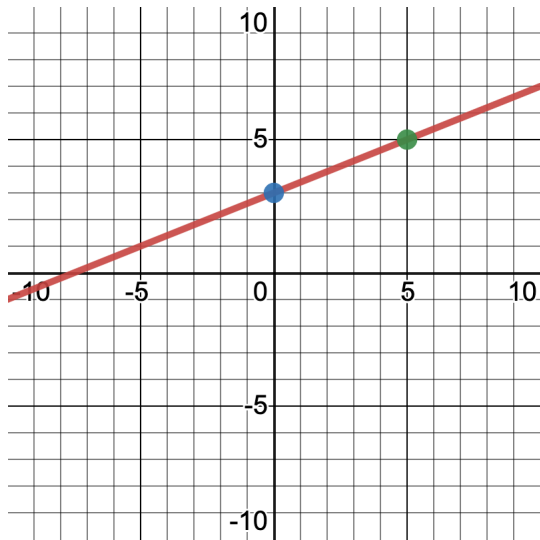d) Graph the line that is parallel to the line in c) and includes the point (0,0).

(Use the same coordinate grid.)

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

3

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

a)

b)

_____

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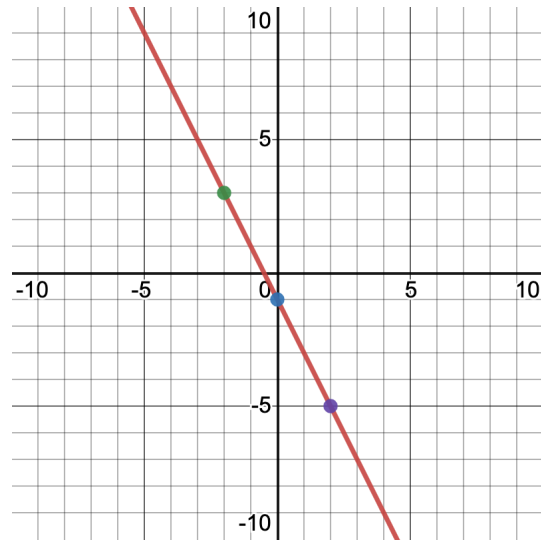
8. **Solve the system of equation by using substitution or elimination methods**

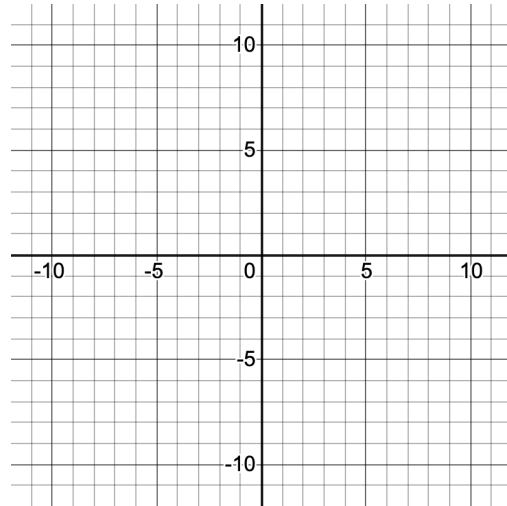a) 3y - 10 = x
    x = -4y

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

TOPIC: Quadratic Equations

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)

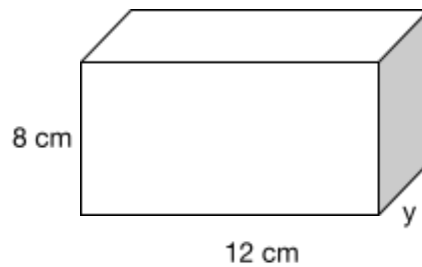| x	$y = x^2 - 4x - 5$
-1	
0	
1	
2	
3	

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

TOPIC: Geometry

10.   **Volume and Surface Area**

a)   If the <u>volume</u> is 480 cm^3, what is the length of the missing side labeled y?

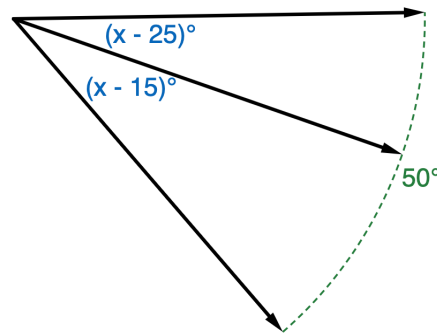8 cm

12 cm

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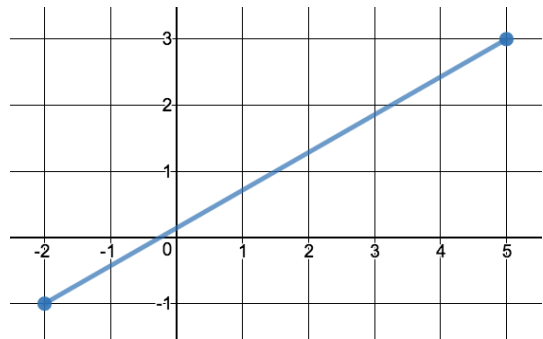
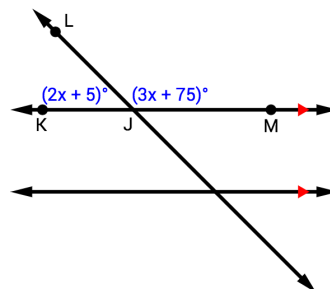   Point A: (4, 3)   and   Point B: (9, -1)

14. Angle Relationships
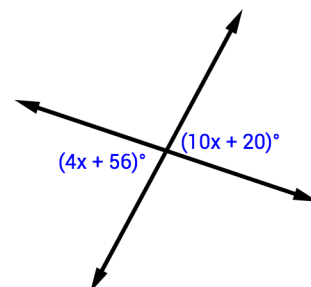
    a)   What is the value of x in the figure?

$(x - 25)°$

$(x - 15)°$

$50°$

    b) Find the value of x in the figure.

        What is the measure of $\angle KJL$?

L

$(2x + 5)°$ $(3x + 75)°$

K   J   M

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

TOPIC: Right Triangle Trigonometry

$(10x + 20)°$

$(4x + 56)°$

6

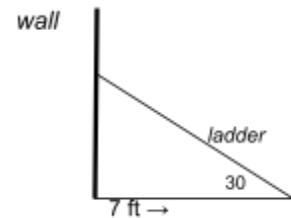**Reminder: Refresh your understanding of Trigonometric Ratios SOH-CAH-TOA**

16. Right Triangle Trigonometry. (you may use a calculator)
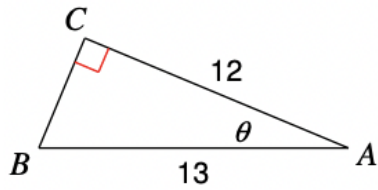
a) What is the length of side CB?
b) What is $\sin(\theta)$?
c) What is $\cos(\theta)$?
d) What is $\tan(\theta)$?

e) A ladder leaning against a house makes an angle of 30° with the ground. The foot of the ladder is 7 feet from the foot of the house. How long is the ladder?

Whew!!
You have given your brain a math workout and tried all the problems!!
Thank you for your efforts!