Campus Community Middle School

Summer Math Enrichment Program 2017

GRADE 7

Class of 2019 and Families:

Welcome to the seventh grade mathematics! I realize that summer plans are being organized, camp spots are being reserved, and vacations are being planned. Still, research shows that the break from school and structured academic activities often results in students being behind upon their return to school in fall. Months of work from the previous year can be lost during the summer. To add to this, the transition to middle school can be already be demanding and even difficult for some students. This summer program was designed to help make the transition to grade 7 more seamless, to allow briefly introduce students to grade-seven content, and to give students ample opportunity to practices as well as refine the sixth grade "bridge skills".

The summer enrichment has four parts: (1) computation problems, (2) application activities, (3) Khan Academy, and (4) individualized targeted skills. Computation problems should be completed by hand (using calculators to check work if anything). The application activities are a deeper thinking problems that require students to apply their math skills to real-world situations. Regarding Khan Academy, students should have mastered 100% of the grade 6 grade-level skills by now. If not, this should be the initial focus on Khan. Once all 6th grade skills are mastered, students should move on to the "Mission Foundations" in Khan Academy and have it complete by the first day of class. The individualized targeted skills will be given to your student during his or her exit interview. These skills can also be targeted using Khan. The overall goal of the program is to enhance your student's mathematical foundation and help ensure he or she will step confidently into their next grade level of mathematics.

Though a lot of independent work is expected of your student this summer, please feel free to contact me whenever questions arise. I can be reached at rdsmith684@gmail.com or robin.smith@ccs.k12.de.us as well as via cell at (202) 276-2470. Please continue to check Remind for important updates and information. Thank you for making Campus Community School your choice. We look forward to teaching your student in the fall! Have an amazing math-filled summer!

Mathematically Yours,

Robin D. Smith, MBA

6/7 Math Teacher

Part 1: Computation Problems

Multiplying and Dividing Fractions

DIRECTIONS: Solve the following using an appropriate process. Show <u>all</u> steps. Reduce your final answer.

1) $\frac{4}{9} \times \frac{7}{4}$

2) $2\frac{1}{5} \times 1\frac{3}{4}$

3) $\frac{1}{5} \div \frac{7}{4}$

4) $\frac{1}{9} \div 1\frac{1}{3}$

Equivalent Ratios

DIRECTIONS: Using an appropriate strategy, find equivalent ratios for each of the following. Identify the rule (scale factor) you used to create your new ratio.

5) 7 boys to 5 girls
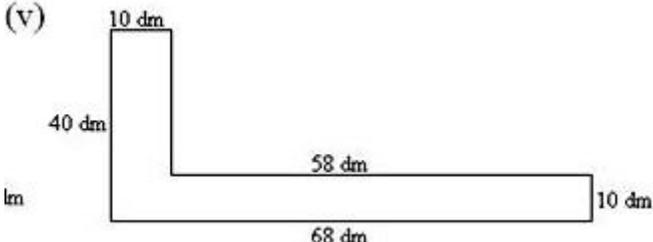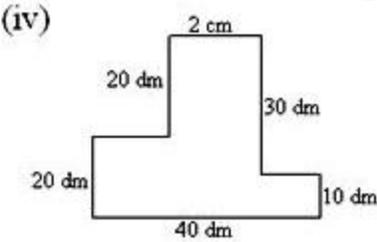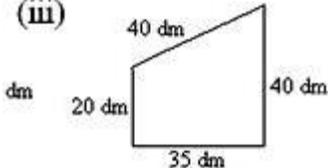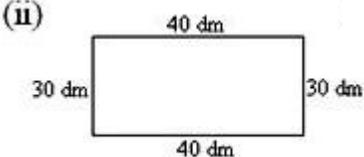
6) 28 minnows: 12 frogs

7) $\frac{72 \text{ people with blue eyes}}{128 \text{ people with brown eyes}}$

8)

Distance (km)	0	10	40	
Time (s)	0	2.5	10	

Geometry: Perimeter, Surface Area, and Volume

9) Calculate the perimeter for the following shapes. Show your process and don't forget to use correct units.

(i)

12 dm

12 dm   12 dm

(ii)

40 dm

30 dm   30 dm

40 dm

(iii)

40 dm

dm   20 dm   40 dm

35 dm

(iv)

2 cm

20 dm

30 dm

20 dm

10 dm

40 dm

(v)

10 dm

40 dm

58 dm

lm   10 dm

68 dm
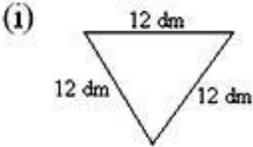
10) Calculate the surface area for the following shapes. Show your process and don't forget to use correct units.

i)

4 cm   5 cm

3 cm

4 cm   3 cm   5 cm

4 cm

ii)

7.2 cm

≈ 27.63 cm

4.4 cm   4.4 cm

4
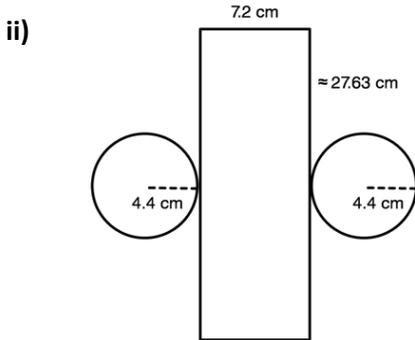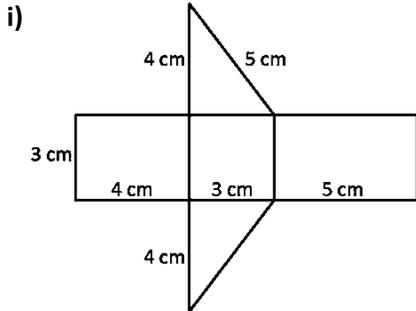
11) Calculate the volume of the following shapes. Show <u>all</u> steps and include appropriate units.

i)

7 cm

7 cm

7 cm

ii)

4 cm   10 cm

9 cm

iii)   5 cm

21 cm

7 cm
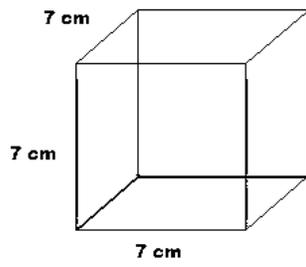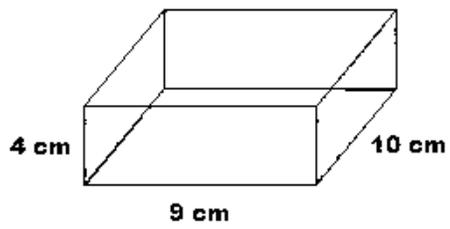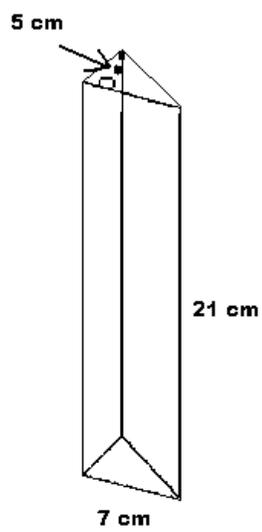
Complementary and Supplementary Angles

BACKGROUND: Linear pairs are two (or more) angles, whose total angles measure 180 degrees (the measure of a straight line). The relationship of this angle relationship is called supplementary. Another angle relationship is known as complementary. This is when the sum of two angle measures is 90 degrees. (Also see the Definitions below.)

DEFINITIONS:

Supplementary angles

Two angles that make up 180°,
or two right angles,
are **supplementary**

Complementary angles

Two angles that make up 90°,
or one right angle,
are **complementary**
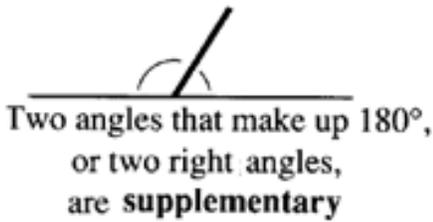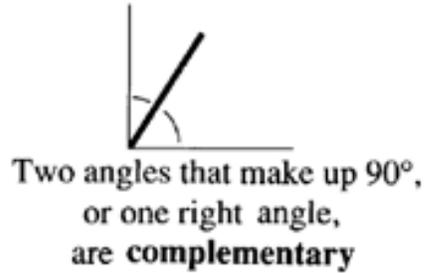
DIRECTIONS: For each of the following angle pairs, identify the relationship type AND find the missing angle measure. Show your process or explain how you found the missing angle measures.
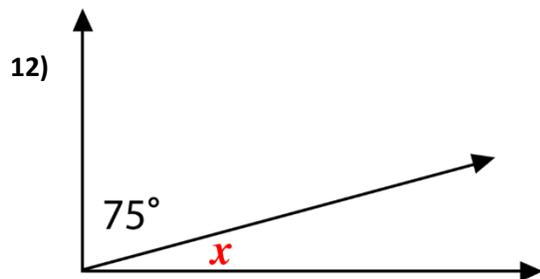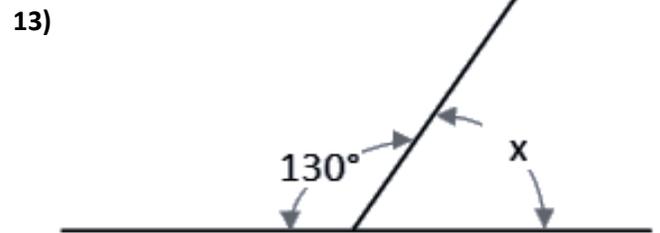
12)

75°

x

Angle Relationships: _____

Measure of angle x: _____

13)

130°   X

Angle Relationships: _____

Measure of angle x: _____

14)

X

62°

Angle Relationships: _____

Measure of angle x: _____

15)

46°   y°

35°
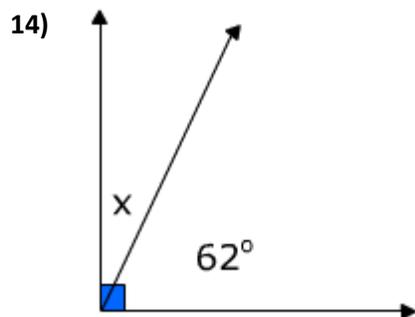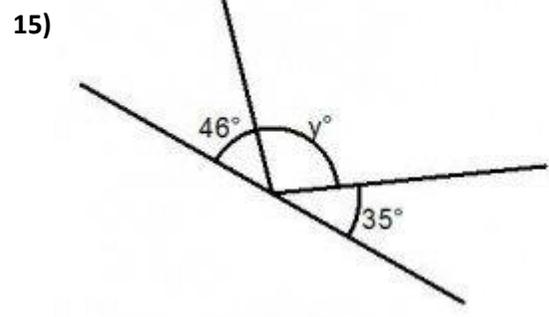
Angle Relationships: _____

Measure of angle y: _____

6

One Step Equations & Evaluating Expressions

17) DIRECTIONS: Solve the following using an appropriate (algebraic) process. Show <u>all</u> steps. If necessary use fact families to help you isolate the variables.

a) $y + 5 = 10$

b) $3w = 18$

c) $v - 25 = 75$

d) $\frac{1}{3}k = 15$

e) $12z = 48$

f) $2a = 110$

g) Let $d = 4$

$3(d - 3)$

h) Let $h = \frac{3}{4}$

$4 \times h$

i) Let $t = 7$

$\frac{42}{t}$

j) Let $j = 8$

$9j$

k) Let $e = 3$

$\frac{5}{15}e$

l) Let $s = \frac{2}{3}$

$3s$

Part II: Application Activities

18) *Statistics Activity: "Summer Reading Challenge"*

DIRECTIONS: Use the summer reading assignment and visit your local library or book store to select the books you will be reading this summer. Keep track of the minutes that you read each day for one week. At the end of the week, find the mean number of minutes you spent reading. Also, find the median number of minutes and the range of the number of minutes. If there is a mode, also find it. Be prepared to discuss whether the mean or median is a better representation of the average number of minutes spent reading and why. Use the chart below to record your data.

My Summer Reading Record	
Day	Time Spent Reading (in minutes)
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	
Saturday	
Sunday	

Mean:

Median:

Range:

Mode:

BACKGROUND:

The Fundamental Counting Principle is a method for finding the number of ways that two or more events can occur by multiplying the number of ways that each event can occur. The Principle states that, if successive choices are made, then the total number of choices is the product of the number of choices at each stage.

For example, if you have 3 shirts and 2 pairs of jeans, then you have a total of 6 different outfits to wear. Each shirt may be worn with each pair of jeans. There are 3 shirts times 2 pairs of jeans for a total of 6 outfits.

DIRECTIONS: Use a tree diagram and the Fundamental Counting Principle to determine the sample space of an event for both the "Clothing Choices", "Pizza Topping Choices", and "The Real Meal Deal" activities.

19) *Probability Activity: "Tree Diagrams"*

<u>Clothing Choices Tree Diagram Activity</u>

Choose three people to assist you with this activity. Try to choose people who are wearing different types of outfits.

Construct a tree diagram (as a total group) of all the possible combinations of outfits that can be made from the clothes the participants are wearing. For example, blue shirt (person 1), jeans (person 2), sneakers (person 3). See Figure A – Tree Diagram Sample below.

Figure A – Tree Diagram Sample
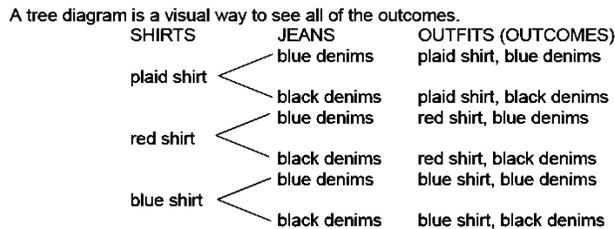
Clothing Combination Tree Diagram:

Analysis:

Analyze your Clothing Choices Tree Diagram. Now think about how the sample space changed when you added additional choices.

You are trying to decide which pizza to order for dinner. Your choices for crust are: regular, thin, and deep dish. You only want one topping and will either choose pepperoni or sausage.

Construct a tree diagram to show the possibilities you have when choosing one crust and one topping.

Pizza Toppings Tree Diagram:

Analysis:

How would your sample space change if you added bacon as a third topping choice?

<u>The Real Meal Deal Tree Diagram Activity</u>

Based on the menu of the Real Meal Restaurant, use the Fundamental Counting Principles to determine the number of different meals that can be served.

Construct a tree diagram to show the possibilities based on customer wishes.

REAL MEAL RESTAURANT

<u>SANDWICHES</u>:   Ham and Turkey Club   Hamburger
                               Rachael on Rye   Deli Cold Cut Special
                               Sliced BBQ Pork   BLT

<u>FRENCH FRIES</u>:   small   medium   large

<u>SALADS</u>:   Garden Salad   <u>DRESSINGS</u>: Ranch
                        Chef Salad   French
                        Cobb Salad   Creamy Italian

<u>BEVERAGES</u>:
      Soft Drinks: small   medium   large
             Coke
             Pepsi
             Sprite
      Tea: medium   large
      Coffee: medium   large
      Milk: regular   low-fat

The Real Meal Deal Tree Diagrams:

How many choices are there if a customer wants the following?

        a.   A soft drink, sandwich, and fries? Display the choices with a tree diagram.

        b.   A sandwich, fries, and milk? Display the choices with a tree diagram.

c. A salad with dressing and tea? Display the choices with a tree diagram.

d. A sandwich, salad with dressing, and coffee? Display the choices with a tree diagram.

Analysis:

How many possible meals can be served at the Real Meal, choosing only one item from each category?

Part III: Khan Academy Log

DIRECTIONS: As you attempt, practice, and complete pre or current grade level skills, complete the following:

Date	Skill (Grade)	Date Mastered	Date	Skill (Grade)	Date Mastered
	Exponents (7)				
	Order of Operations (7)				
	Negative numbers on the number line (7)				
	Ordering negative numbers (7)				
	Ordering rational numbers (7)				
	Evaluating expressions with one variable (7)				
	Combining like terms (7)				
	One-step addition & subtraction equations (7)				
	One-step multiplication & division equations (7)				