

# **Campus Community Middle School**

*Summer Math Enrichment Program 2017*

## **GRADE 8**

Class of 2018 and Families:

Welcome to grade 8 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 preparation to transition from middle to high school can be already be demanding and even difficult for some students. This summer program was designed to help make the transition to grade 8 more seamless, to allow briefly introduce students to grade-eight content, and to give students ample opportunity to practices as well as refine the seventh grade “bridge skills”.

The summer enrichment has three parts: (1) computation problems, (2) application activities, and (3) Khan Academy. 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. We also encourage students to utilize Khan Academy, which is aligned with grade-level standards and skills, to assist with additional practice of any other grade-level concepts and skills with which they are still struggling. Ideally, students headed into 8<sup>th</sup> grade should have mastered 100% of the 7<sup>th</sup> grade skills. From here, the focus becomes finishing “Mission Foundations” prior to the start of school. The overall goal of the program is to enhance your student’s mathematical foundation and help ensure he or she will step confidently into eighth grade 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 via email at [rdsmith684@gmail.com](mailto:rdsmith684@gmail.com) or [robin.smith@ccs.k12.de.us](mailto:robin.smith@ccs.k12.de.us) as well as *via* cell: (202) 276-2470. Please also check Remind for continuous updates and posts. Thank you for making Campus Community School your choice. I look forward to seeing your student in the fall! Have an amazing math-filled summer!

Mathematically Yours,



Robin D. Smith, MBA

Middle School Mathematics Teacher

## Part 1: Computation Problems

### *One & Two-Step Equations*

**DIRECTIONS:** Solve the following using an appropriate (algebraic) process. Show all steps.

1)  $p - 6 = -5$

2)  $15 + b = 23$

3)  $-104 = 8x$

4)  $-6 = \frac{b}{18}$

5)  $6 = \frac{a}{4} + 2$

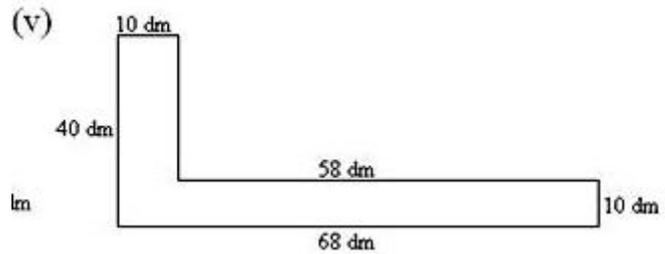
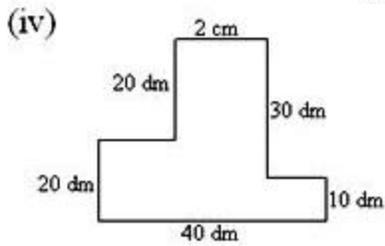
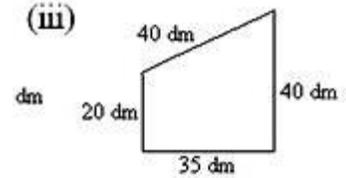
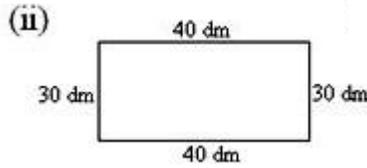
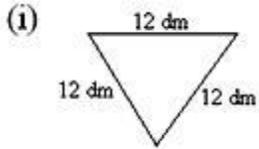
6)  $144 = -12(x + 5)$

7)  $10 - 6v = -104$

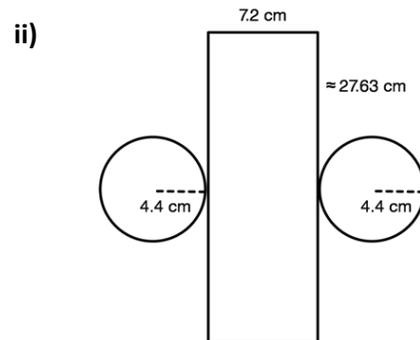
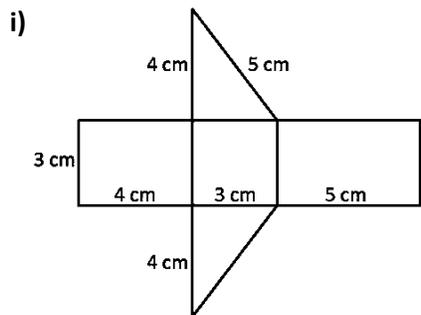
8)  $8n + 7 = 31$

**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.

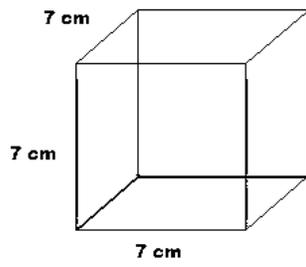


10) Calculate the surface area for the following shapes. Show your process and don't forget to use correct units.

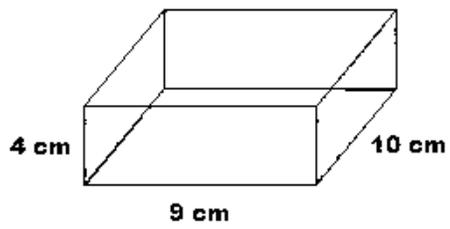


11) Calculate the volume of the following shapes. Show all steps and include appropriate units.

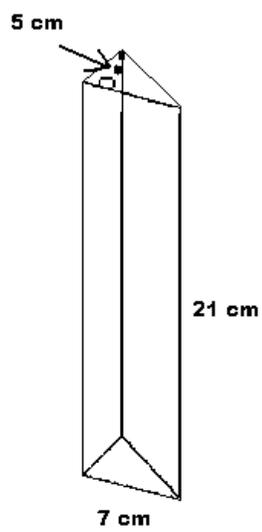
i)



ii)



iii)



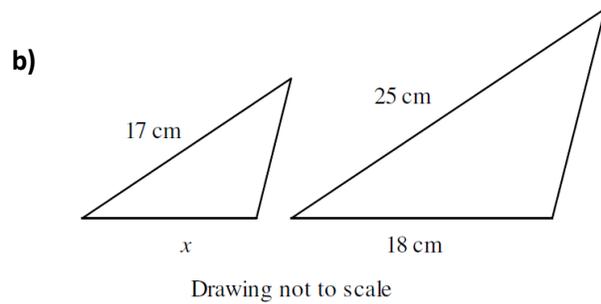
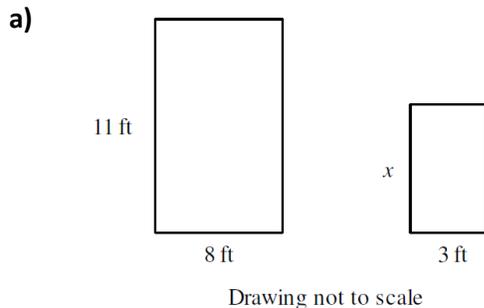
**Scale Factors & Proportions**

**DIRECTIONS:** Solve the following proportions using an appropriate process. Show all steps.

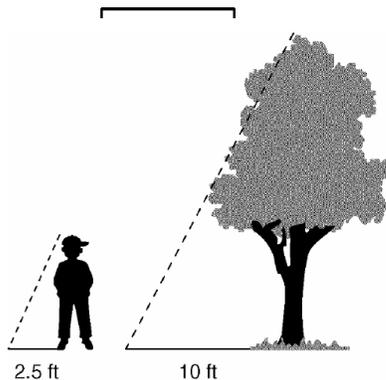
12)  $\frac{2}{10} = \frac{11}{x}$

13)  $\frac{x-8}{5} = \frac{2}{4}$

14) The pair of figures is similar. Find  $x$ . Round to the nearest tenth if necessary.

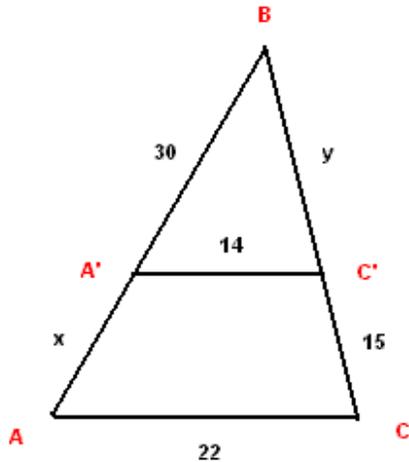


15) A tree casts a shadow 10 feet long. A boy standing next to the tree casts a shadow of 2.5 feet long. The triangle shown for the tree and its shadow is similar to the triangle shown for the boy and his shadow. If the boy is 5 feet tall, how tall is the tree?



Drawing not to scale

16) Triangles  $ABC$  and  $A'BC'$  are similar. Use principles of proportionality and find the length of  $x$ .



17) Answer each question and round your answer to the nearest whole number. Show all work.

- a) Yasmine is making fruit salad. She went to Produce Junction and learned she could purchase 32 kiwi fruit for \$16. She realized she only has \$4 budgeted for kiwi. How many kiwi can Yasmine afford for her salad?
- b) Bernie is planning a trip to Western Samoa. Before going, he does some research and learned that the exchange rate is 6 Tala for \$2. How many Tala would Bernie get if he exchanged everything in his savings account – a total of \$838.60?

**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”**

Clothing Choices Tree Diagram Activity

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**

**A tree diagram is a visual way to see all of the outcomes.**



### **Clothing Combination Tree Diagram:**

#### **Analysis:**

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

### Pizza Toppings Tree Diagram Activity

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?



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?

