

Summer Activity Packet for Incoming 8th Graders



This five week Summer Activity Packet contains links to video resources as well as some concepts and topics that students should be familiar with.

This resource is designed to help students review concepts and skills to ensure their readiness for the next grade level. Please encourage your student to do the best they can with this content—the most important thing is that they continue developing their mathematical fluency and skills!

During the course of your math work this summer, you may need some assistance with deepening your understanding of the skills and concepts.

Here are some sites you can visit online:

<https://www.engageny.org/>

<https://www.khanacademy.org/>

<https://www.mathantics.com/>

<https://www.mashupmath.com/>

<https://www.thatquiz.org/>

WEEK 1

Equations & Expressions

Standards 7.EE.3-7.EE.4: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

1. The Mason Family loved to have parties. Last Friday, they had a party and the doorbell rang 15 times. At the first ring, one guest arrived. Each time the doorbell rang after that, two more guests arrived than the time before. On Saturday, they had another party. At the first ring of the doorbell a single guest arrived, at the second ring two guests appeared, at the third ring three guests and so on. If the doorbell rang 20 times Saturday night, how many guests attended? Was this party bigger than Friday's party? How do you know?
2. Draw a picture to show one way to solve this problem.
3. Draw a table to show another way to solve this problem.
4. Write your answer below and describe what you think is the best way to solve this problem.

WEEK 2

Ratios & Proportions

Standards 7.RP.1-7.RP.3: Analyze proportional relationships and use them to solve real-world and mathematical problems.

1. For Problems 1-3, use any method to solve.

Problem #1: Jesse's Awesome Autos advertised a special sale on cars – Dealer cost plus 5%! Quinten and Shapera bought a luxury sedan for \$23,727.90. What was the dealer's cost?

Problem #2: You and some friends went out to T.G.I. Fridays for dinner. You ordered a root beer, sweet potato fries, and cheese quesadillas. The total bill came to \$21.86. Your dad has told you many times that it's important to leave a good tip; about 20%. You have \$26.00 in your wallet. How much would the total be if you left a 20% tip? Can you cover the cost?

Problem #3: Builders have observed that windows in a home are most attractive if they have the width to length ratio 3:5. If a window is to be 48 inches wide, what should its length be for the most attractive appearance?

2. Create your own problems. Write them in the space below or on a separate page.

- Create one original problem involving a percentage (discount or tax).
- Create one original problem involving a ratio or part/whole relationship
- Solve both and keep the answer key.
- Challenge a friend or family member to solve your problems.

WEEK 3

(YOU WILL NEED GRAPH PAPER)

Ratios & Proportional Reasoning

Standards 7.RP.1-7.RP.3: Analyze proportional relationships and use them to solve real-world and mathematical problems.

The students in Ms. Brown's art class were mixing yellow and blue paint. She told them that two mixtures will be the same shade of green if the blue and yellow paint are in the same ratio. The table below shows the different mixtures of paint that the students made.

COLOR	A	B	C	D	E
YELLOW	1 parts	2 parts	3 parts	4 parts	6 parts
BLUE	2 parts	3 parts	6 parts	6 parts	9 parts

- How many different shades of paint did the students make?
- Some of the shades of paint were bluer than others. Which mixture(s) were the bluest? Show your work or explain how you know.
- Carefully plot a point for each mixture on a coordinate plane. (Use graph paper)
- Draw a line connecting each point to $(0,0)$. What do the mixtures that are the same shade of green have in common?

WEEK 3

Expressions & Equations

Standards 7.EE.3 -7.EE.4: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

1. Kristin was given \$100 for her birthday. She spent some money on a new pair of headphones and was left with \$27.
 - a) Write an equation using a variable that can represent this situation.

 - b) How much did Kristin spend on the headphones? Solve the problem algebraically.

2. Deon was offered a job at the nearby recreation center. The owner offered him \$600 per week or \$50 the first day and agreed to double it for each following day. • How could Deon make the most money? • Which deal should he accept and why?

3. Create three real-world mathematical problems involving variables to represent unknown numbers. *Be sure to create an answer key with explanations of how to solve each of your problems*

WEEK 4

Number System

Standards 7.NS.1-7.NS.3: Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers.

Problem:

Find three different ways to fill in operations in the blanks below to make the equations true. *Hint: Operations include: +, −, x, ÷, ()

$$6 \underline{\quad} 1 \underline{\quad} 2 \underline{\quad} 2 = 5$$

$$6 \underline{\quad} 1 \underline{\quad} 2 \underline{\quad} 2 = 5$$

$$6 \underline{\quad} 1 \underline{\quad} 2 \underline{\quad} 2 = 5$$

WEEK 5

Expressions & Equations

Standards 7.EE.3 -7.EE.4: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

****CHALLENGE****

You have tried many ways to solve problems throughout this Math Summer Packet. Already you know that when one strategy does not lead you to a solution, you back up and try something else. Sometimes you can find a smaller problem inside the larger one that must be solved first. Sometimes you need to think about the information that is missing rather than what is there. Sometimes you need to read the problem again and look for a different point of view. Sometimes you need to tell your brain to try to think about the problem in an entirely different way – perhaps a way you have never used before. Looking for different ways to solve problems is like brainstorming. Try to solve this problem. You may need to change your point of view.

Fishing Adventures rents small fishing boats to tourists for day-long fishing trips. Each boat can only carry 1,200 pounds of people and gear for safety reasons. Assume the average weight of a person is 150 pounds. Each group will require 200 lbs. of gear for the boat plus 10 lbs. of gear for each person.

1. Create an inequality describing the restrictions on the number of people possible in a rented boat. Graph the solution set.

2. Several groups of people wish to rent a boat. Group 1 has 4 people. Group 2 has 5 people. Group 3 has 8 people. Which of the groups, if any, can safely rent a boat? What is the maximum number of people that may rent a boat?