

York Catholic Middle School Summer Math Assignment

Rising 8th Grade

THE SKILLS YOU NEED TO MASTER FROM
7TH GRADE TO BE SUCCESSFUL IN ALGEBRA I

Due Date: Friday, August 26, 2022

Name: _____

Welcome to the start of your 8th-grade year! Over the summer, we would like you to stay fluent in your math skills. We recommend breaking up this assignment into small but regular intervals rather than doing it all at once. Doing it all at the same time will not help you remember these skills as much as practicing a little each week.

Our recommendation is to do one page each week of your summer break:

JUNE:

- Integers on a Number Line
- Integer Addition Rules
- Add Integers
- Add + Subtract Integers

JULY:

- Add and Subtract Integers: Word Problems
- Multiply Integers
- Divide Integers
- Add and Subtract Fractions

AUGUST:

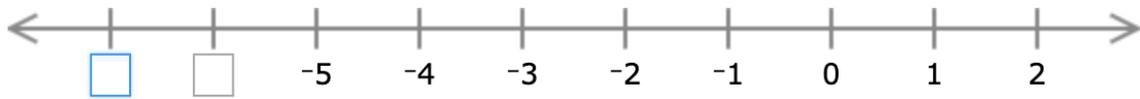
- Multiply Fractions
- Understanding Ratios
- Order of Operations
- Unit prices: find the total price

Show all your work. Only use calculators to check your thinking.

Integers on a Number Line

Write the missing number on the number line.

1.



2.



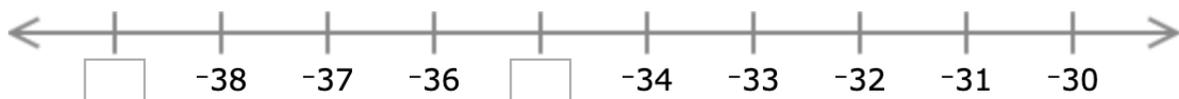
3.



4.



5.



6.



7.



8.



Integer Addition Rules

When you add a positive and negative number:

If the positive number has a bigger magnitude, the result is positive.

$$45 + -3 = 42$$

45 has a bigger magnitude,
so the answer will be positive 42.

If the negative number has a bigger magnitude, the result is negative.

$$-45 + 3 = -42$$

-45 has a bigger magnitude,
so the answer will be negative 42.

When in doubt, relate the problem you are working on to money.

If you had -\$10 in your bank account and deposited \$7, would you still have a negative amount in your account? Yes, you would still have -\$3 in your account.

Circle the sign of the answer to the problem, then answer the addition problem.

Is $-27 + 2$ positive or negative? The sum is _____

Is $47 + -91$ positive or negative? The sum is _____

Is $-5 + -82$ positive or negative? The sum is _____

Is $-3 + -34$ positive or negative? The sum is _____

Is $45 + -64$ positive or negative? The sum is _____

Is $5 + -19$ positive or negative? The sum is _____

Is $-3 + -24$ positive or negative? The sum is _____

Add Integers

<p>When the smaller number is negative, remember that you can add numbers in either order.</p> <p>$-2 + 4$ is the same as $4 - 2$.</p> <p>It makes sense to switch the order since the negative number is smaller. Just think about it like subtraction now.</p>	<p>When the bigger number is negative, think about subtraction.</p> <p>$-5 + 4$ is the same as $5 - 4$ with a negative on the answer.</p> <p>Ignore the negative on the 5 and do subtraction. $5 - 4$ is 1, but remember the answer will be <u>negative</u> 1 since the magnitude of the bigger number is negative.</p>	<p>If they are both negative, think about addition.</p> <p>$-3 + -7$ stays negative</p> <p>$3 + 7$ is 10, but since they were both negative amounts, it will be <u>negative</u> 10.</p>
--	--	---

Match the question to the answer by drawing a line to its sum.

$$-2 + 5$$

$$1 + -1$$

$$-4 + 8$$

$$-2 + 9$$

$$-5 + -9$$

$$10 + -9$$

$$4 + 10 + -8$$

$$-8 + 6 + -13$$

$$-18 + -17$$

$$-14$$

$$1$$

$$0$$

$$4$$

$$6$$

$$3$$

$$-35$$

$$7$$

$$-15$$

Add and Subtract Integers

Two negatives make a positive.
(Keep, change, change)

$$\begin{aligned} & -2 - -4 \\ & \text{Is the same as} \\ & -2 + 4 \end{aligned}$$

Remember: You can also switch the order,
just keep the sign with the number.

$$4 - 2 = 2$$

Write four different equations for each set of integers using the given signs.

Use 2 of the 3 integers listed to create an equation in the first two boxes. Then evaluate your equation in the third box.

22, 23, and -5

$$\square + \square = \square$$

$$\square + \square = \square$$

$$\square - \square = \square$$

$$\square - \square = \square$$

-47, 15, and -29

$$\square + \square = \square$$

$$\square + \square = \square$$

$$\square - \square = \square$$

$$\square - \square = \square$$

Add and Subtract Integers: Word Problems

When Ellie woke up in the morning, it was -9°F . By the afternoon, the temperature had risen to 2°F .

Draw a picture to represent how you would find the temperature change mathematically.

Show your work with an equation to solve the morning to afternoon temperature change.

In the *Mars Cars* video game, players gain and lose points by avoiding or hitting obstacles on a martian race track. First, Gary gained 20 points by jumping over a crater. Then, he lost 45 points for getting stuck in a dust storm.

Draw a picture to represent Gary's score change.

Write an equation to show how the game calculated Gary's score after getting stuck in the dust storm.

Multiply Integers

IF YOU MULTIPLY NUMBERS WITH DIFFERENT SIGNS, THE ANSWER WILL BE NEGATIVE.

negative x positive = negative

IF YOU MULTIPLY NUMBERS WITH THE SAME SIGNS, THE ANSWER WILL BE POSITIVE.

negative x negative = positive
positive x positive = positive

Complete the chart by multiplying the integers

	-5	-4	-3	-2	-1	0	1	2	3	4	5
-5											
-4											
-3											
-2											
-1											
0											
1											
2											
3											
4											
5											

Divide Integers

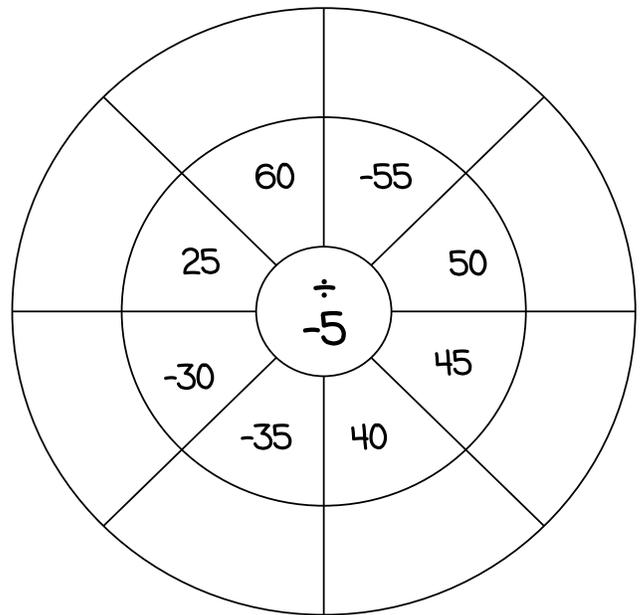
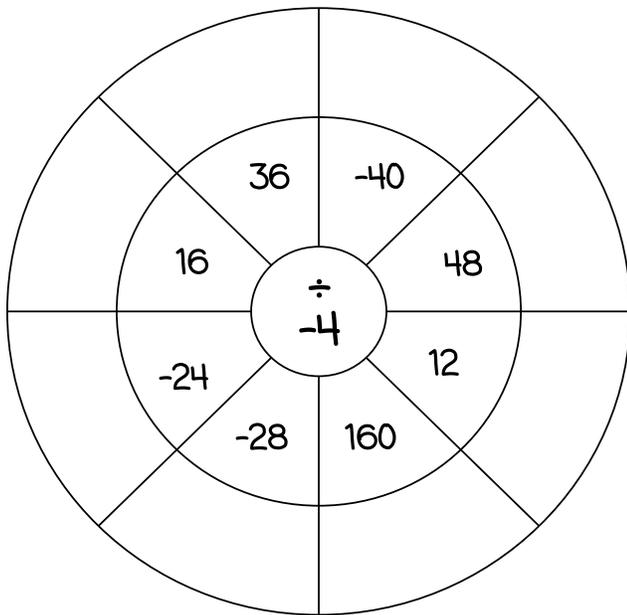
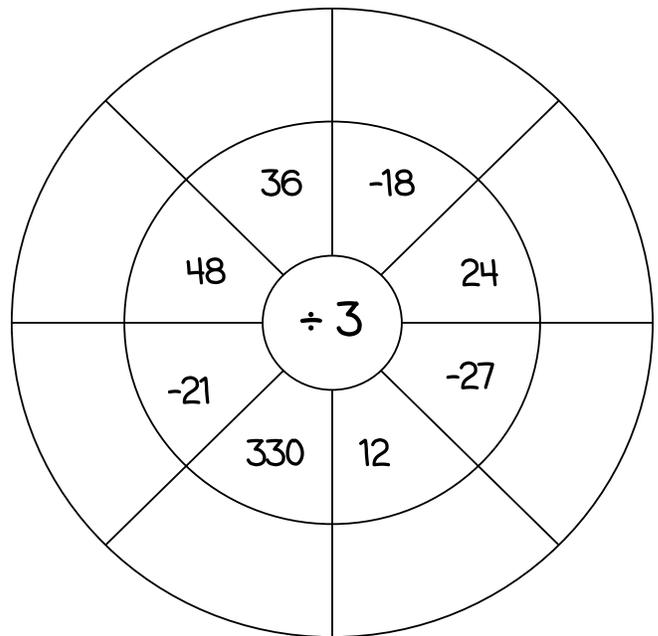
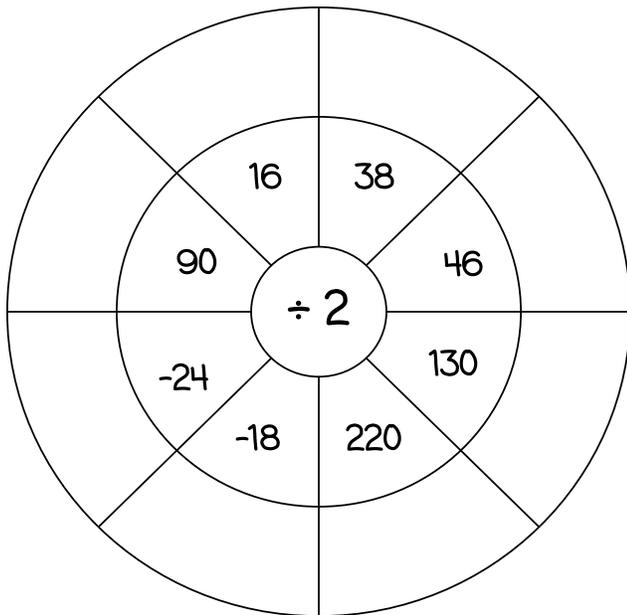
IF YOU DIVIDE NUMBERS WITH DIFFERENT SIGNS, THE ANSWER WILL BE NEGATIVE.

$$\text{negative} \div \text{positive} = \text{negative}$$

IF YOU MULTIPLY NUMBERS WITH THE SAME SIGNS, THE ANSWER WILL BE POSITIVE.

$$\begin{aligned} \text{negative} \div \text{negative} &= \text{positive} \\ \text{positive} \div \text{positive} &= \text{positive} \end{aligned}$$

Divide each number by the middle number, then write the quotient in the blank space around the wheel.



Add and Subtract Fractions

Common Denominators

JUST ADD THE NUMERATORS

$$\frac{2}{3} - \frac{1}{3} = \frac{\quad}{3}$$

$$\frac{1}{4} + \frac{1}{4} = \frac{\quad}{4} = \text{---}$$

$$\frac{3}{4} - \frac{2}{4} = \frac{\quad}{4}$$

$$\frac{3}{7} + \frac{1}{7} = \frac{\quad}{7}$$

Uncommon Denominators

CREATE A NEW FRACTION, SO THE DENOMINATORS ARE THE SAME,

THEN ADD THE NUMERATORS

$$\frac{5}{8} + \frac{3}{2} = \frac{5}{8} + \text{---} = \text{---}$$

$$\frac{4}{5} - \frac{5}{10} = \text{---} - \frac{5}{10} = \text{---}$$

$$\frac{1}{3} - \frac{1}{6} = \text{---} - \frac{1}{6} = \text{---}$$

$$\frac{3}{4} - \frac{4}{11} = \text{---} - \text{---} = \text{---}$$

Fractions and Whole Numbers

TURN THE WHOLE NUMBER INTO A FRACTION BY PUTTING 1 UNDER IT,

CREATE A NEW FRACTION, SO THE DENOMINATORS ARE THE SAME,

THEN ADD THE NUMERATORS

$$5 - \frac{13}{4} = \frac{5}{1} - \frac{13}{4} = \frac{\quad}{4} - \frac{13}{4} = \frac{\quad}{4}$$

$$2 - \frac{7}{2} =$$

Mixed Numbers

TURN THE MIXED NUMBER INTO AN IMPROPER FRACTION,

CREATE FRACTIONS WITH THE SAME DENOMINATORS,

THEN ADD THE NUMERATORS

$$8\frac{1}{8} - (-2\frac{1}{2}) =$$

$$-3\frac{1}{4} - (-1\frac{1}{6}) =$$

Multiply Fractions

You do not need common denominators to multiply fractions.
Just multiply straight across!

$$\frac{1}{6} \cdot \frac{4}{7} = \frac{4}{42} = \frac{2}{21}$$

ALWAYS REDUCE
YOUR ANSWER!

Complete the following squares by multiplying the numbers.

	$\frac{2}{3}$	$-\frac{5}{9}$	4
$\frac{3}{8}$			
$\frac{6}{7}$			
$\frac{1}{2}$			

	- 3	$\frac{10}{9}$	$\frac{3}{7}$
$-\frac{6}{5}$			
$\frac{12}{7}$			
$\frac{9}{4}$			

Use the space below to show your work:

Did you know if you can multiply fractions, that you can divide them too?

"Keep, change, flip" $\frac{3}{7} \div \frac{4}{5} = \frac{3}{7} \cdot \frac{5}{4} = \frac{15}{28}$

Understanding Ratios



Write the ratio of popcorn to pretzels:					
Words	Colon	Fraction			
<input type="text"/> to <input type="text"/>	<input type="text"/> : <input type="text"/>	<table style="margin: auto; border: none;"> <tr> <td style="border: 1px solid black; width: 40px; height: 40px; text-align: center; vertical-align: middle;">□</td> </tr> <tr> <td style="border: none; text-align: center;">—</td> </tr> <tr> <td style="border: 1px solid black; width: 40px; height: 40px; text-align: center; vertical-align: middle;">□</td> </tr> </table>	□	—	□
□					
—					
□					

Write the following ratios below using any method of your choice.

1. Popcorn to cupcakes

4. Cupcake to pretzels

2. Pretzels to popsicles

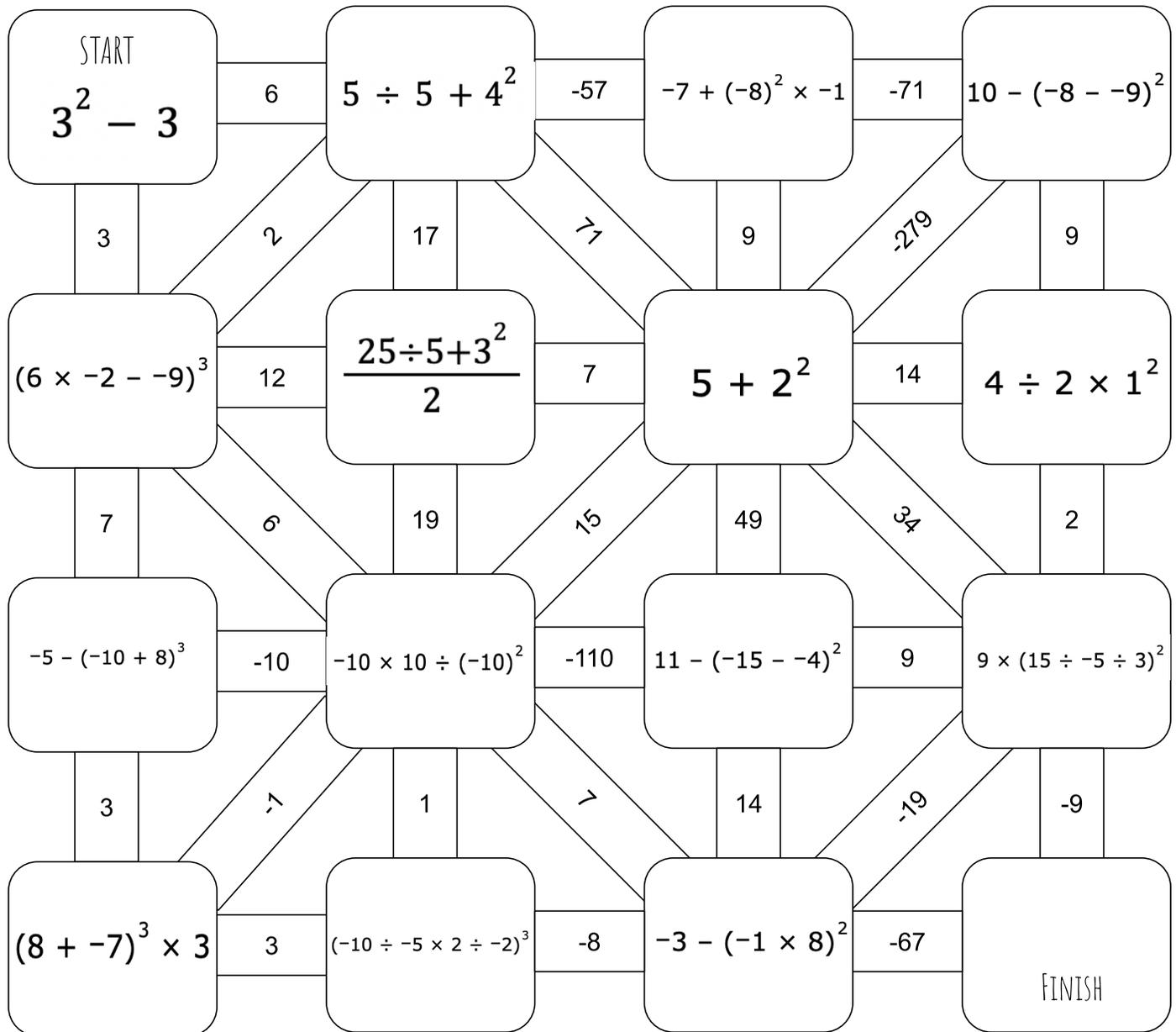
5. Popcorn to total

3. Cupcake to total

6. Popsicles to popcorn

Order of Operations

Find the answer to the math problem in the box labeled "start." The answer will be one of the numbers branching off of it. Color in the correct answer and then solve the math problem in the box that's connected to the answer. Continue the process until you reach the "finish" box.



Unit prices: find the total price

Use the menu to find the total price for each guest check.

Guest Check #1	
1 Donut	_____
1 Iced Coffee	_____
Subtotal	

Guest Check #2	
1 Half Dozen Donuts	_____
1 Donut Holes	_____
2 Vanilla Lattes	_____
Subtotal	

Guest Check #3	
2 Donuts	_____
1 Hot Chocolate	_____
Subtotal	



Daisy's Donuts



1 Donut	\$1.29
Half Dozen Donuts	\$6.59
Dozen Donuts	\$12.00
Donut Holes	\$4.89
Coffee <i>hot or iced</i>	\$2.19
Latte <i>vanilla, caramel, or mocha</i>	\$3.49
Hot Chocolate	\$2.79







Guest Check #4	
1 Dozen Donuts	_____
2 Hot Coffees	_____
1 Mocha Latte	_____
Subtotal	

What is the total of all four guest checks? _____