

# Teaneck Public Schools

## Incoming 7<sup>th</sup> Grade Summer Math Packet

### PURPOSE:

This math packet was created not only to offer students entering 7<sup>th</sup> grade an opportunity to practice the necessary skills needed to excel in mathematics in the upcoming school year, but also to apply these skills to real-life situations.

### PARENT/GUARDIAN RESPONSIBILITIES

#### HOW TO SUPPORT YOUR CHILD:

- Set up a schedule with your child to break the assignment into manageable parts throughout the summer.
- Monitor your child's progress on a weekly basis.
- Encourage your child to attempt the entire packet. See Math Websites Resource Page for assistance.
- **Due date: First day of school**
- **Late assignment will lose 10 points a day**

PARENT SIGNATURE: \_\_\_\_\_

### STUDENT RESPONSIBILITIES:

- ❖ Attempt to answer every question. Show all your work. Leave nothing blank.
- ❖ Do the best you can *without* a calculator.
- ❖ If you need help, ask your parent/guardian to use the Math Websites Resource Page for assistance.
- ❖ **Turn in your completed summer packet to your 7<sup>th</sup> grade math teacher by the first day of school. Late homework will lose 10 points a day.**

### GRADING:

This summer assignment will count as a **homework grade for the first marking period of 7<sup>th</sup> grade.**



ENJOY YOUR SUMMER!





# Math Resource Websites



## Moby Max

<https://www.mobymax.com/signin>

Moby Math finds and fixes missing math skills that are essential for math comprehension. Students increase an average of 1.5 grade levels with just 40 hours of practice. Moby Math is a comprehensive math curriculum for kindergarten to 8th grade.

## Math is Fun

<http://mathisfun.com/>

Math is Fun is an excellent source for supporting the learning of middle school math; concepts, puzzles, games as well as an interactive dictionary. Math is explained in easy language, plus puzzles, games, worksheets, and a forum. For K-12 kids, teachers, parents.

## Jenny Eather's a Math Dictionary for Kids

<http://www.amathsdictionaryforkids.com/>

A Math Dictionary for Kids is an animated, interactive online math dictionary for students, which explains over 600 common mathematical terms and math words in simple language.

## Math.com – World of Math Online

<http://math.com/>

Free math lessons and math homework help from basic math to algebra, geometry and beyond. Students, teacher, parents and everyone can find solutions to their math problems.

## Math Drills

<http://www.math-drills.com/>

An excellent source for reinforcement and drills on various topics of middle school math; includes number sense and pre-algebra drills (Includes seasonal math, flash cards and graphing paper).

## Khan Academy

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

Khan Academy is a non-profit educational website created in 2006 by educator Salman Khan to provide "a free, world-class education for anyone, anywhere." The website features thousands of educational resources, including a personalized learning dashboard, over 100,000 exercise problems, and over 5,000 micro lectures via video tutorials stored on YouTube teaching mathematics, history, healthcare, medicine, finance, physics, general chemistry, biology, astronomy, economics, cosmology, organic chemistry, American civics, art history, macroeconomics, microeconomics, and computer science. All resources are available for free to anyone around the world. Khan Academy reaches about 10,000,000 students per month and has delivered over 300,000,000 lessons.

# Notes and Example Problems

## A). Rounding Decimals

Rounding has two steps:

Step 1: Find the place to which you want to round.

Step 2: look at the digit to the right of the place you want to round. If the value is less than 5, then you drop all digits to the right of the place to where you are rounding. If the value is 5 or more, then you add one to the place you are rounding to and drop all digits to the right of the place to where you are rounding.

## B) Decimal Operations

### *Adding and Subtracting Decimals*

Addition and subtraction of decimals is like adding and subtracting whole numbers. The only thing we must remember is to line up the place values correctly. The easiest way to do that is to line up the decimal points.

Example

- Here is an example of adding 12.35 and 5.287. Notice how the decimal points are lined up.

$$\begin{array}{r} 12.35 \\ +5.287 \\ \hline 17.637 \end{array}$$

- Here is an example of subtracting 2.28 from 12.993. Notice how the decimal points are lined up.

$$\begin{array}{r} 12.993 \\ -2.28 \\ \hline 10.713 \end{array}$$

- Continue to subtract down the columns, moving from right to left. Again, we need to borrow from the ones place to be able to subtract the tenths.

$$\begin{array}{r} 12.993 \\ -2.28 \\ \hline 10.713 \\ \hline 10.783 \end{array}$$

### *Multiplication of Decimals*

When multiplying numbers with decimals, we first multiply them as if they were whole numbers. Then, the placement of the number of decimal places in the result is equal to the sum of the number of decimal places of the numbers being multiplied.

For example, if we multiply 2.3 times 4.5, each number has one digit to the right of the decimal, so each has one decimal place. When they are multiplied, the result will have two digits to the right of the decimal, or two decimal places.

$$\begin{array}{r} 2.3 \\ \times 4.5 \\ \hline 10.35 \end{array}$$

*Division of Decimals:* Division with decimals is easier to understand if the divisor (the dividend is divided by the divisor) is a whole number.

- If the divisor has a decimal in it, we can make it a whole number by moving the decimal point the appropriate number of places to the right.

$$12.44 \div 0.4 = \frac{12.44}{0.4} \leftarrow \begin{array}{l} \text{Dividend} \\ \text{Divisor} \end{array}$$

- However, if you shift the decimal point to the right in the divisor, you must also do this for the dividend.

$$\frac{12.44}{0.4} = \frac{124.4}{4}$$

- Once you have moved the decimal point so the divisor is a whole number, you can do the division.

$$\begin{array}{r} 311 \\ 4 \overline{)1244} \end{array}$$

### C). Converting Between Fractions Decimals and Percents

#### *Converting Decimals to Fractions*

- 1.) Every number to the right of the decimal point becomes the numerator.
- 2.) For the denominator, write a 1. Then, count how many digits are in the problem. This is the number of zeros you should put after the 1.
- 3.) Count the digits in the numerator and denominator and that many zeros are after the 1 in the denominator.
- 4.) Then, reduce the fraction to simplest term.

#### *Converting Fractions to Decimals*

- 1.) You divide the numerator by the denominator.
- 2.) Round to the nearest hundredth.
- 3.) If it is a mixed number, you would do the same thing for the fraction and then add the whole number.

#### *Converting Decimals to Percents*

- 1.) Multiply the decimal by 100.
- 2.) Put the "%" sign so people know it is per 100.

#### *Converting Percents to Decimals*

- 1.) Divide the percent by 100.
- 2.) Remove the % sign.

### D). Operations with Fractions

#### *Adding and Subtracting Fractions*

To add or subtract fractions with common denominators, add or subtract the numerators and write the answer over the common denominator. If possible, simplify the answer.

Example 1: 
$$\frac{7}{8} + \frac{5}{8} = \frac{7+5}{8} = \frac{12}{8} = \frac{3}{2} = 1\frac{1}{2}$$

To add or subtract fractions with uncommon denominators you need to first rewrite the fractions with common denominators. Then you can add or subtract as explained above.

Example 2: 
$$\frac{7}{10} - \frac{2}{5} = \frac{7}{10} - \frac{4}{10} = \frac{3}{10}$$

#### *Multiplying Fractions*

To Multiply Fractions, multiply the numerators first and then multiply the denominators. Simplify if possible.

Example 1: Multiply  $\frac{7}{4}$  times  $\frac{5}{9}$

$$\frac{7}{4} \cdot \frac{5}{9} = \frac{7 \cdot 5}{4 \cdot 9} = \frac{35}{36}$$

#### *Dividing Fractions*

To divide by a fraction, multiply by its Reciprocal (inverse). Simplify if possible.

Example: 
$$\frac{3}{4} \div \frac{9}{10}$$

$$\frac{3}{4} \div \frac{9}{10} = \frac{3}{4} \cdot \frac{10}{9} = \frac{3 \cdot 10}{4 \cdot 9} = \frac{30}{36} = \frac{5}{6}$$

## E). Mixed Review

### Measures of Tendency

Measures of Central Tendency are numbers used to represent data. Three types of measures of central tendency are mean, median, and mode.

Example: Test Score data set 50, 60, 70, 80, 90, 90, 100

*Mean (average):* the sum of the numbers in a set of data divided by the numbers of items.

$$\frac{50 + 60 + 70 + 80 + 90 + 90 + 100}{7} = \frac{540}{7}$$

Mean = 77.14

*Median:* The middle number in the set of data arranged in ascending and descending order. If the data set contains an even amount of numbers they the average of the TWO middle numbers represents the median value.

50, 60, 70, 80, 90, 90, 100

Median=80

If the set contained an additional element (and therefore an even amount of numbers) with value of 85 then the solution would be as followed

50, 60, 70, 80, 85, 90, 90, 100

$$\text{Median} = \frac{80 + 85}{2} = 82.5$$

*Mode:* the number or numbers that appear most often in a data set. IF no item appears most often then the set does not contain a mode value.

50, 60, 70, 80, 90, 90, 100

Mode = 90

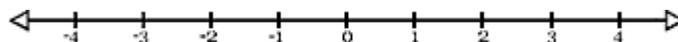
## F.) Integer Operations

Integers include **positive whole numbers, negative whole numbers, and zero.**

The “**set of all integers**” is often shown like this:

Integers = {... -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, ...}

The dots at each end of the set mean that you can keep counting in either direction. The set can also be shown as a **number line:**



The arrows on each end of the number line mean that you can keep counting in either direction.

## Adding and Subtracting Integers

Looking at a number line can help you when you need to add or subtract integers.

Whether you are adding or subtracting two integers, **start by using the number line to find the first number**. Put your finger on it. Let's say the first number is 3.

- Then, if you are **adding a positive number**, move your finger to the right as many places as the value of that number. For example, if you are adding 4, move your finger 4 places to the right.

$$3 + 4 = 7$$

- If you are **adding a negative number**, move your finger to the left as many places as the value of that number. For example, if you are adding -4, move your finger 4 places to the left.

$$3 + -4 = -1$$

- If you are **subtracting a positive number**, move your finger to the left as many places as the value of that number. For example, if you are subtracting 4, move your finger 4 places to the left.

$$3 - 4 = -1$$

- If you are **subtracting a negative number**, move your finger to the right as many places as the value of that number. For example, if you are subtracting -4, move your finger 4 places to the right.

$$3 - -4 = 7$$

Here are two **rules to remember**:

- Adding a negative number is just like subtracting a positive number.

$$3 + -4 = 3 - 4$$

- Subtracting a negative number is just like adding a positive number. The two negatives cancel out each other.

$$3 + 4 = 3 - -4$$

## Is It an Integer?

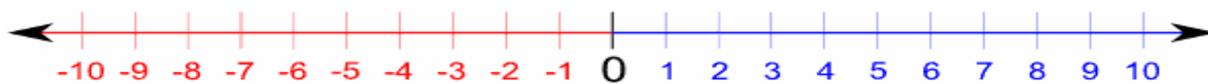
**Integers are whole numbers and their negative opposites.** Therefore, these numbers can never be integers:

- fractions
- decimals
- percents

## Integer Practice

For numbers 1-6, use the number lines to represent the addition or subtraction sentence and help you find the answer.

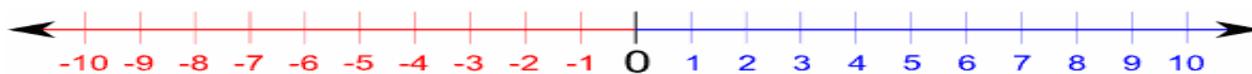
1.  $4 + -7 =$  \_\_\_\_\_



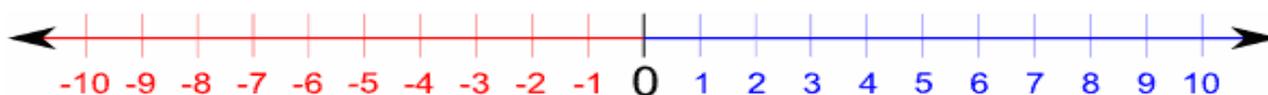
2.  $-9 + 10 =$  \_\_\_\_\_



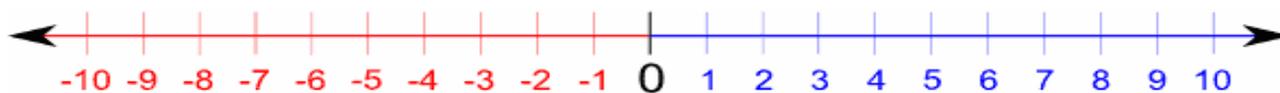
3.  $-6 + -1 =$  \_\_\_\_\_



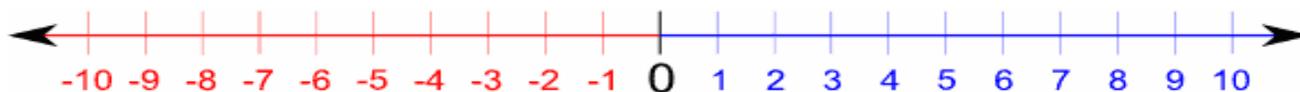
4.  $-4 - 2 =$  \_\_\_\_\_



5.  $2 - (-1) =$  \_\_\_\_\_



6.  $-1 - (-5) =$  \_\_\_\_\_



**Comparing and Ordering Integers: For (a-l), use  $>$ ,  $<$ , or  $=$  to compare the integers.**

- a.  $3 \underline{\quad} -5$       b.  $-10 \underline{\quad} 0$       c.  $-7 \underline{\quad} 7$       d.  $-1 \underline{\quad} -1$       e.  $-8 \underline{\quad} -2$   
f.  $14 \underline{\quad} -15$       g.  $-56 \underline{\quad} -58$       h.  $43 \underline{\quad} 34$       i.  $-16 \underline{\quad} 15$       j.  $-354 \underline{\quad} -345$   
k.  $789 \underline{\quad} -798$       l.  $-605 \underline{\quad} -655$

**Ordering Integers: For (m - r) put each set of numbers in order from smallest to largest.**

- m.  $-3, 1, -2 \underline{\hspace{2cm}}$       n.  $-5, -6, -1 \underline{\hspace{2cm}}$       o.  $3, -12, -4 \underline{\hspace{2cm}}$   
p.  $-8, -12, -3 \underline{\hspace{2cm}}$       q.  $-7, 0, 2 \underline{\hspace{2cm}}$       r.  $-3, 6, -6 \underline{\hspace{2cm}}$

**Absolute Value of Integers: For (s - z) find the absolute value of each integer.**

- s.  $|-9| = \underline{\hspace{2cm}}$       t.  $|22| = \underline{\hspace{2cm}}$       u.  $|-88| = \underline{\hspace{2cm}}$       v.  $|4| = \underline{\hspace{2cm}}$   
w.  $|-98| = \underline{\hspace{2cm}}$       x.  $-|101| = \underline{\hspace{2cm}}$       y.  $-|-6| = \underline{\hspace{2cm}}$       z.  $|34| = \underline{\hspace{2cm}}$

**Directions: For Questions 1 through 25 write an answer in the space provided. When appropriate, show all your work.** (2 points each)

Rounding Decimals

1) Write the value of the underlined digit in 523.6 <u>5</u> 4.	2) Write the number fifty-one and six thousandths.
3) Use $<$ or $>$ to compare the numbers. $4.2509 \underline{\hspace{1cm}} 4.2709$	4) Round 75,845 to the nearest thousand.
5) Round 546.256 to the nearest tenth.	

Decimal Operations

6) $25.36 + 123.6 =$	7) $658 - 91.258 =$
8) $49.85 + 44.54 =$	9) $76.55 - 70.88 =$
10) $0.421 \times 5.6 =$	11) $0.273 \div 0.42 =$
12) $54.46 \times 52.79 =$	13) $10.58 \div 1.2 =$

Converting Between Decimals, Fractions, and Percents

For questions 14 through 19, complete the chart below.

<b>Fraction</b>	<b>Decimal</b>	<b>Percent</b>
$\frac{3}{4}$	14)	15)
16)	17)	10%
18)	0.09	19)

### Operations with Fractions

20) $7\frac{3}{5} - 5\frac{1}{3} =$	21) $1\frac{1}{4} \times \frac{1}{5} =$
22) $4\frac{3}{4} - 2\frac{1}{5} =$	23) $\frac{2}{5} \times \frac{15}{16} =$
24) $8\frac{1}{3} \div 3\frac{3}{4} =$	25) $4\frac{1}{6} + 9\frac{2}{3} =$
26) $\frac{8}{9} \div \frac{48}{27}$	27) $\frac{14}{15} + 11\frac{3}{5}$

### Ratio Review

#### ***Writing ratios to compare objects***

- 1) For every 5 boys on a softball team there is 1 girl. What is the ratio of boys to girls?
- 2) In a bag of candy for every 3 chocolate pieces there are 7 sugar pieces. What is the ratio of chocolate pieces to sugar pieces?

#### ***Writing ratios in different forms***

- 1) 6 eggs were rotten and 5 eggs were broken, write the ratio of rotten eggs to broken eggs.
- 2) 8 marbles are red, 11 marbles are purple, write the ratio of purple marbles to red marbles.

#### ***Finding equivalent ratios and determining if two ratios are equivalent***

- 1) 4:9 and 12:27
- 2) 2:5 and 8:20

3) Ms. Wright's class and Mr. Gold's classes are going on a field trip. There are 20 children for every 10 adults in Ms. Wright's class. There are 10 children for every 5 adults in Mr. Gold's class. Are the ratios of children to adults the same for both classes? Explain.

4) Billy and Charlie both have fish tanks. Billy has 8 goldfish and 12 clown fish. Charlie has 12 goldfish and 18 clown fish. Are the ratios of goldfish to clown fish the same for both fish tanks? Explain.

**Use the real world context to complete the following tables.**

1. Linda is making a bracelet. She uses 5 blue beads for every 1 silver bead. Complete the table to show the ratio of blue beads to silver beads.

Blue	5	10		20	
Silver	1		3		5

2. There are 20 light bulbs in 5 packages. Complete the table to find the rate that gives the number of light bulbs in 3 packages. **Write this rate in three different ways.**

Light bulbs		8		16	20
Packages	1			4	

3. Joanne pays \$18 for 3 pens at staples. Complete the table to find the rate that gives the cost per pen.

Dollars			18		30
Pens	1	2			5

Mixed Review – Word Problems

1) Each week Richard studies for 12 hours. His friend Gary studies for 8 hours a week. How many weeks will it take Gary to study the same number of hours Richard will study in 4 weeks?

Answer\_\_\_\_\_

2) The table below shows the test scores for students in Mr. Mezzatesta’s 7th grade math class. What is the median score in the class?

<b>Student</b>	<b>Score</b>
Jim	88
Amy	91
Michelle	95
Marc	71
Jane	58
Tim	71
Rose	82
Carl	87

Answer\_\_\_\_\_

3) A bag contains 20 marbles. The probability of picking a yellow marble is  $\frac{3}{4}$ . How many marbles are yellow?

Answer\_\_\_\_\_

4) The Green family budgets \$2,000 each month.

Item	Amount budgeted
Food	\$400
Savings	\$200
Taxes	\$100
Mortgage	\$800
Other	\$500

What percent of the budget does the family put into savings?

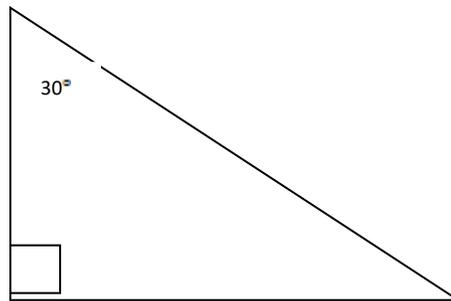
Answer \_\_\_\_\_

5.) Valerie's bedroom is a rectangle measuring 12 ft by 10 ft. Find the perimeter and area of Valerie's bedroom.

Perimeter \_\_\_\_\_

Area \_\_\_\_\_

6.) Find the measurement of the missing angle.



Answer \_\_\_\_\_

7) Place the following values on the number line below  $\frac{3}{5}$ , 0.65,  $\frac{1}{6}$ , 0.066



