Name: _____ **Elementary School:** _____

Math Summer Assignment

Dear Rising 6th Graders,

Our number one goal for you at DSA is your success in math class! This assignment includes foundational math skills that we have found to be necessary for success in middle school mathematics. We want you to take some time this summer to build your skills and fluency. Our hope is that this will strengthen your foundation in mathematics so that you are ready to learn a lot in 6th grade math next year! There are 8 parts to this assignment. You must complete all parts of the assignment and turn it in on the first day of school for a grade.

Your 6th Grade Math Teachers.☺

Part One: Multiplication and Division Facts

In order to be successful it is essential that you have mastered (with speed and accuracy) your multiplication and division facts for numbers 1-12. Please reference the strategies below to help you practice your multiplication and division facts over the next five months.

Strategy 1: Reference this chart to observe relationships between multiples and dividends.

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Strategy 2: Create flash cards with the problem on one side and the answer on the opposite side. You can use paper and pencil or you can create and use flash cards on one of the websites below. These sites also have sets of flashcards that were made by other users as well. Sets of flash cards can also be purchased from the dollar store, Walmart, or Target.

www.quizlet.com http://www.timeforkids.com/homework-helper/flashcards

Strategy 3: Play math games that help you to practice your multiplication and division facts.

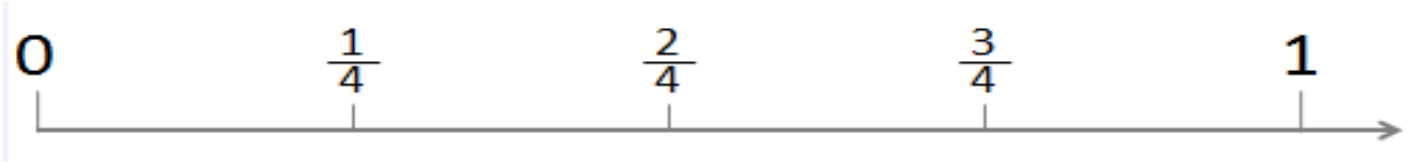
http://www.multiplication.com/games/all-games

http://www.maths-games.org/times-tables-games.html

There are many others that can easily be found with a Google search. Also, several apps are available.

Part Two: Representing Fractions on a Number Line

Remember that a fraction represents part of the whole when the whole is divided into sections of equal size. An example is represented below.

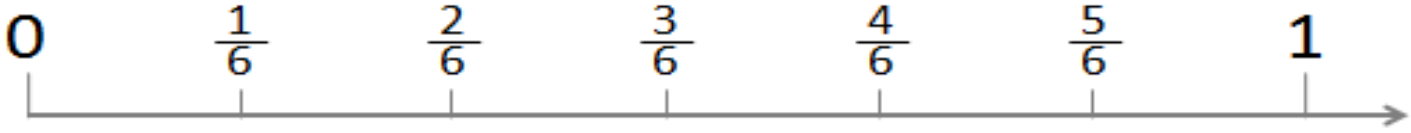


Please use your knowledge of fractions to answer the questions below.

#1) Show how you might represent sixths on the number line below. Plot $\frac{1}{6}$ on the number line.

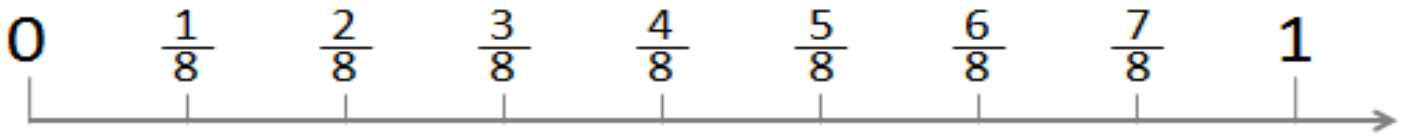
Explain how you knew where to plot $\frac{1}{6}$.

#2) Show how you might represent twelfths on the number line below. Plot $\frac{9}{12}$ on the number line.



Explain how your knew where to plot $\frac{9}{12}$.

#3) Show how you might represent sixteenths on the number line below. Plot $\frac{10}{16}$ on the number line.

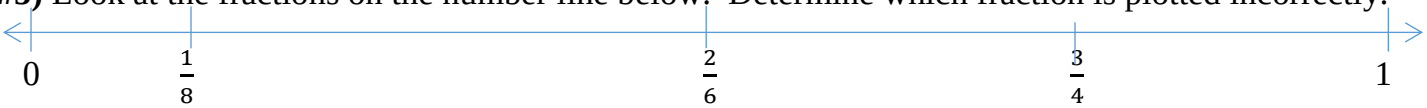


Explain how you knew where to plot $\frac{10}{16}$.

#4) Look at the fractions on the number line below. Determine which fraction is plotted incorrectly.

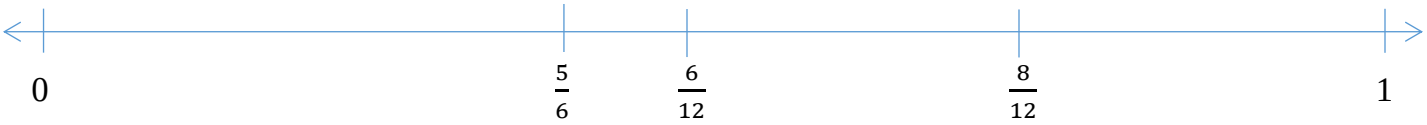
Explain how you know.

#5) Look at the fractions on the number line below. Determine which fraction is plotted incorrectly.



Explain how you know.

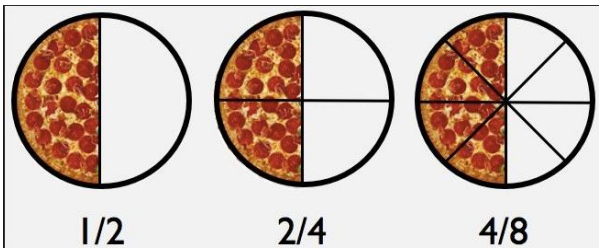
#6) Look at the fractions on the number line below. Determine which fraction is plotted incorrectly.

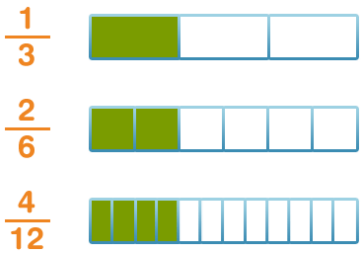


Explain how you know.

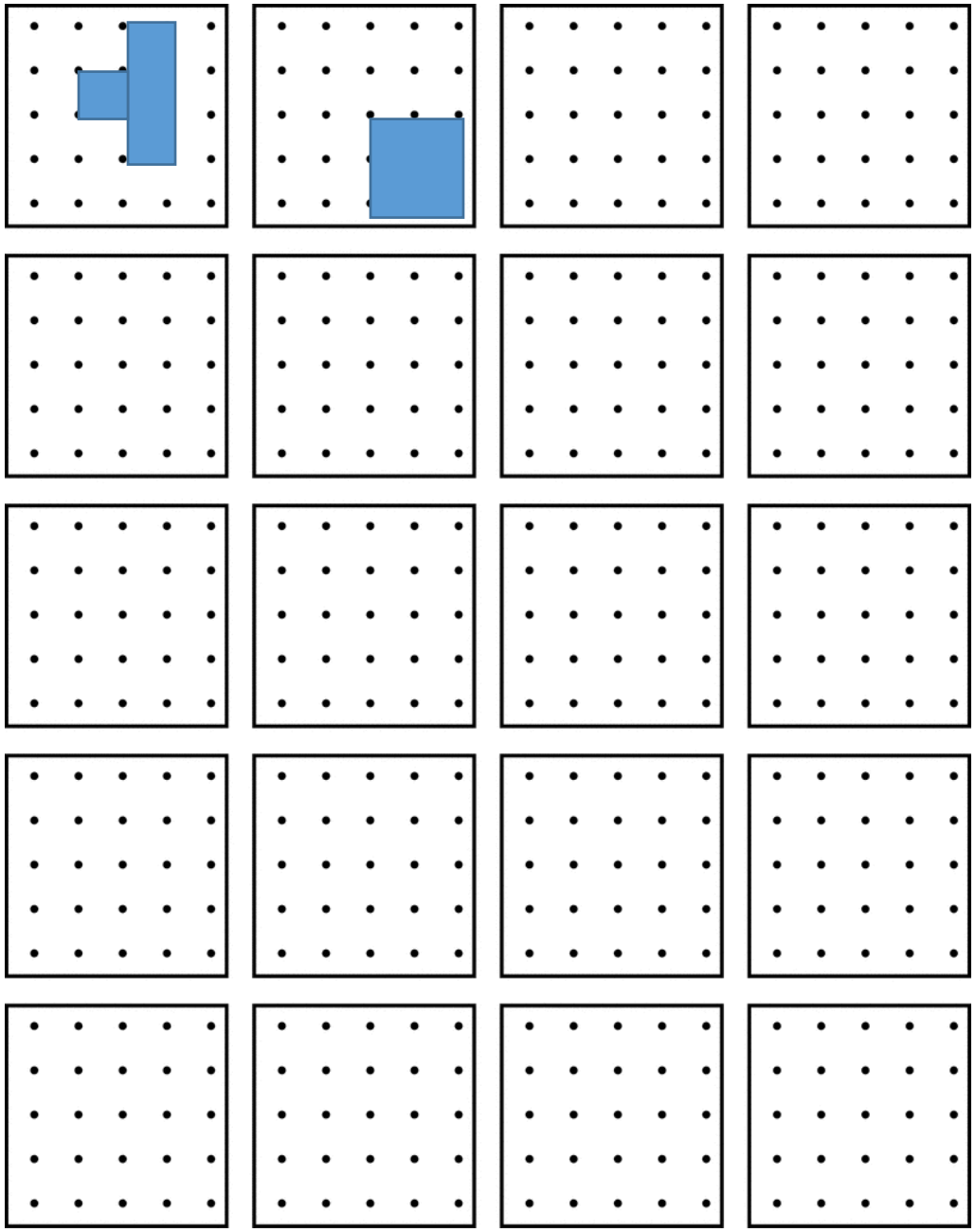
Part Three: Equivalent Fractions

Fractions are equivalent if they describe the same quantity or amount. For example, see the equivalent fractions represented in the two graphics below.





On the dot paper below represent $\frac{1}{4}$ on each board. Show $\frac{1}{4}$ in as many ways as possible. Be creative!



#7) Apply the method that you described in question #8 to find equivalent fractions below.

a.) $\frac{1}{3} = \frac{\quad}{6} = \frac{\quad}{9}$

b.) $\frac{9}{12} = \frac{\quad}{4} = \frac{\quad}{8}$

c.) $\frac{3}{5} = \frac{21}{\quad} = \frac{\quad}{15}$

d.) $\frac{7}{10} = \frac{35}{\quad} = \frac{\quad}{1000}$

e.) $\frac{6}{7} = \frac{\quad}{49} = \frac{18}{\quad}$

Early in the school year there will be fluency checks to make sure that you can find an equivalent fraction for any given fraction. If you need support with this concept you can go to www.khanacademy.org and search "Equivalent Fractions". There are tutorial videos and practice problems there to help you learn this skill.

Part Four: Ordering fractions from least to greatest.

In the questions below you will order the fractions from least to greatest. One effective strategy for ordering a set of fractions from least to greatest is to find **equivalent fractions with a common denominator.**

For example: Let's say that we wanted to order the following fractions from least to greatest: $\frac{3}{4}$, $\frac{1}{2}$, $\frac{2}{6}$ and $\frac{5}{12}$. It may seem difficult to order these fractions because they do not share a common denominator. So, we can think of a denominator that is a multiple of all of the denominators. 12 is a great choice! Then, we can find equivalent fractions with 12 as the denominator.

$\frac{3}{4} = \frac{9}{12}$ $\quad$ $\frac{1}{2} = \frac{6}{12}$ $\quad$ $\frac{2}{6} = \frac{4}{12}$ $\quad$ $\frac{5}{12} = \frac{5}{12}$

Then, we can put the fractions in the following order from least to greatest: $\frac{4}{12}, \frac{5}{12}, \frac{6}{12}, \frac{9}{12}$

$\frac{2}{6}, \frac{5}{12}, \frac{1}{2}, \frac{3}{4}$

If you need help with these concepts we encourage you to go to www.khanacademy.org and search "Comparing and ordering fractions".

Order the following fractions from least to greatest by using equivalent fractions with a common denominator.
Please show all of your work.

#8) $\frac{3}{4}, \frac{3}{8}, \frac{1}{2}, \frac{1}{4}$

#9) $\frac{2}{3}, \frac{1}{6}, \frac{5}{18}, \frac{7}{9}$

#10) $\frac{1}{2}, \frac{5}{6}, \frac{5}{8}, \frac{5}{12}$

#11) $\frac{3}{4}, \frac{2}{5}, \frac{5}{8}, \frac{1}{2}$

#12) $\frac{4}{5}, \frac{2}{3}, \frac{13}{15}, \frac{7}{9}$

#13) $\frac{7}{15}, \frac{3}{5}, \frac{5}{12}, \frac{1}{2}$

#14) a.)Explain why having $\frac{5}{9}$ of a pizza is less than having $\frac{5}{6}$ of a pizza. **Draw a picture** to help explain your thinking.

b.) Having $\frac{5}{6}$ of a pizza is (more than / less than) $\frac{8}{9}$ of a pizza because _____
Circle one

_____

Part Five: Fraction Addition and Subtraction
Find the sum or difference of each pair of fractions below. If they do not share a common denominator you will need to find equivalent fractions with a common denominator. **You must show your work to receive credit.**

For example: $\frac{5}{6} + \frac{1}{4}$ can be rewritten as $\frac{10}{12} + \frac{3}{12} = \frac{13}{12} = 1\frac{1}{12}$. For help on this concept go to www.khanacademy.org and search "Fraction Addition" or "Fraction Subtraction".

#15) $\frac{1}{9} + \frac{4}{9} =$ **#16)** $\frac{9}{10} + \frac{1}{2} =$ **#17)** $\frac{7}{8} + \frac{10}{16} =$

#18) $4\frac{6}{7} - 2\frac{4}{7} =$ **#19)** $1\frac{1}{7} + 3\frac{1}{2} =$ **#20)** $\frac{2}{3} - \frac{1}{2} =$

#21) $5\frac{1}{3} + \frac{7}{8} =$ **#22)** $2\frac{9}{10} - 1\frac{3}{5} =$ **#23)** $\frac{2}{7} + \frac{1}{2} =$

#24) $\frac{1}{4}$ and $\frac{2}{4}$ have a sum of $\frac{3}{4}$. Find 3 different pairs of fractions that have a sum of $\frac{3}{4}$. Each response must use a different denominator from the other responses and the example given. Please show your work below.

Part Six: Multiplying Fractions and Mixed Numbers

#25) Draw a picture that shows $\frac{1}{2}$ of $\frac{3}{4}$. This represents the computation $\frac{1}{2} \times \frac{3}{4}$. What is the solution to your computation? _____ Where is your solution represented on your drawing?

#26) Draw a picture that shows $\frac{1}{2}$ of $\frac{1}{3}$. This represents the computation $\frac{1}{2}$ x $\frac{1}{3}$. What is the solution to your computation? _____ Where is your solution represented on your drawing?

For the questions below multiply the fractions and mixed numbers. Multiply the numerators. Multiply the denominators. With a mixed number change the mixed number to an improper fraction before multiplying. For help with these concepts go to www.khanacademy.org search "Fraction Multiplication" **Please show all of your work to receive credit.**

For example: $\frac{2}{3}$ x $1\frac{1}{4}$ = $\frac{2}{3}$ x $\frac{5}{4}$ = $\frac{10}{12}$

#27) $\frac{3}{7}$ x $\frac{1}{2}$ =

#28) $\frac{1}{3}$ x $\frac{2}{5}$ =

#29) $\frac{1}{3}$ x 6 =

#30) 11 x $\frac{3}{4}$ =

#31) $\frac{5}{12}$ x $\frac{3}{8}$ =

#32) $\frac{1}{3}$ x $1\frac{1}{4}$ =

#33) $1\frac{3}{8}$ x $2\frac{2}{7}$ =

#34) $\frac{5}{7}$ x $4\frac{3}{8}$ =

#35) $3\frac{1}{3}$ x $2\frac{1}{4}$ =

Part Seven: Converting Fractions to Equivalent Decimals

In Part Three we represented $\frac{1}{4}$ various ways. We also found fractions that are equivalent to $\frac{1}{4}$. We can describe $\frac{1}{4}$ as "one quarter" such as a *quarter* pounder or a *quarter* til 9:00 o'clock. However, perhaps the most common usage of the word "quarter" represents \$0.25. This is because $\frac{1}{4}$ = 0.25. We can show that this is true by finding an equivalent fraction with 100 as the denominator which can then be represented as a decimal: $\frac{1}{4}$ $\frac{x25}{x25}$ = $\frac{25}{100}$ = 0.25

Find the decimal that is equivalent to each fraction below. We will assess your mastery of these equivalent forms. It might be helpful to create flashcards with the fraction on one side and the decimal on the other to help memorize them. If you need support with this skill go to www.khanacademy.org and search "Converting Fractions to Decimals"

$\frac{1}{4} = 0.25$ $\frac{2}{4} =$ $\frac{3}{4} =$

$\frac{1}{5} =$ $\frac{2}{5} =$ $\frac{3}{5} =$

$\frac{4}{5} =$ $\frac{1}{2} =$ $\frac{1}{10} =$

$\frac{2}{10} =$ $\frac{3}{10} =$ $\frac{4}{10} =$

$\frac{6}{10} =$ $\frac{7}{10} =$ $\frac{8}{10} =$

$\frac{1}{3} = 0.\overline{3}$ Use this decimal to find a decimal equivalent to $\frac{2}{3}$

$\frac{2}{3} =$

$\frac{1}{8} = 0.125$ Use this decimal to find the other decimal equivalents

$\frac{3}{8} =$ $\frac{5}{8} =$ $\frac{7}{8} =$

Part Eight: Rounding Decimals

Underline the digit that we are rounding to. Look at the digit to the right of this number. If it is 5 or above, the underlined number goes up by 1, if it is 4 or lower, the underlined number stays the same.

Examples: 1) Round to the hundredths place 3.92<u>4</u> → 3.92

2) Round to the tenths place 8.<u>6</u>9 → 8.7

If you need support with this skill go to www.khanacademy.org and search "rounding decimals".

Round each number to the nearest tenth:

#36) 2.31 =_____ **#37)** 6.811 = _____ **#38)** 2.09 = _____

#39) 4.45 = _____ **#40)** 8.994 = _____ **#41)** 17.23 = _____

#42) 5.58 = _____ **#43)** 11.543 = _____ **#44)** 0.2843 = _____

Round each number to the nearest hundredth:

#45) 5.436 = _____ **#46)** 128.3987 = _____ **#47)** 12.2654 = _____

#48) 2.824 = _____ **#49)** 7.5643 = _____ **#50)** 11.1983 = _____

#51) 16.777 = _____ **#52)** 14.8999 = _____ **#53)** 3.0711 = _____

Reflection Questions:

You had eight parts to complete on this assignment.

a.) Which two parts of the assignment were the easiest for you to complete?

b.) Which two parts of the assignment were the most challenging for you to complete?

Enjoy what remains of 5th grade. Have a great summer! We look forward to teaching you in August! ☺