

6th Grade

Math Summer Packet

Name: _____

Greetings 6th Grade students,

Welcome to 6th Grade! I am looking forward to learning with you next school year.

In order to be prepared for math class, it is important to review topics from previous mathematics grade levels. The problems in this packet are designed to help you review and maintain the necessary skills to be a successful 6th Grade math student.

Make sure to follow the directions below for the best outcomes:

- 1) Do NOT use a calculator.
- 2) Show all work! An important aspect of mathematics is being able to communicate the process you use to arrive at your answer.
- 3) Be neat and organized! Part of success in math is being able to organize your work.
- 4) Box your final answers.
- 5) Do not rush! Take advantage of the summer pace.

This will be collected within the first week of school.

Have a wonderful summer!
6th Grade Math Teachers

***If you are struggling with any of the skills in this packet, please search for the skill topic on Khan Academy website: <https://www.khanacademy.org/> or the Virtual Nerd website: <http://virtualnerd.com/pre-algebra/all/>. You can also get extra practice on each skill from the IXL website. Ixl.com. You can complete 10 questions a day without a membership.



Finding Multiples	Finding Factors
A multiple is the result of multiplying a number by an integer (not a fraction). Multiples are infinite.	To find all the factors of a number, find all the pairs of numbers that, when multiplied, give the given number as a product
Example 1 The first five multiples of 6 are 6, 12, 18, 24, and 30	Example 2 The factors of 18 are 1, 2, 3, 6, 9, and 18

Find the first five multiples.	Find all the factors.
7	12
12	24

Finding LCM	Finding GCF
1) Find several multiples of both numbers 2) Stop when you find the smallest one they have in common	1) Find all factors of both numbers 2) Then find the ones that are common to both 3) Choose the greatest.
Example 1 LCM of 4 and 10 4: 4, 8, 12, 16, 20 LCM = 20 10: 10, 20	Example 2 GCF of 6 and 18 6: <u>1</u>, <u>2</u>, <u>3</u>, <u>6</u> GCF = 6 18: <u>1</u>, <u>2</u>, <u>3</u>, <u>6</u>, 9, 18

Find the LCM.	Find the GCF.
12 and 15	8 and 30

Multiplying Multi-Digit Numbers

Helpful hints: when multiplying multi digit numbers:

Example: 6×73

To be able to solve this problem first you **SHOULD REWRITE IT** so that..

- The problem is **VERTICAL** and **NOT** horizontal.
- Always place the value with more digits on top!

Now->

$$\begin{array}{r} 73 \\ \times 6 \\ \hline \end{array}$$

**** In middle school and beyond a multiplication sign is **NOW**

WRITTEN as $\rightarrow 3 \bullet 5 = 15$

Example 1

$$\begin{array}{r} 67 \\ \times 23 \\ \hline 201 \end{array}$$

1. Multiply
by the
one's place

$$\begin{array}{r} 67 \\ \times 23 \\ \hline 201 \\ 0 \end{array}$$

2. Put a zero
to hold the
one's place

$$\begin{array}{r} 67 \\ \times 23 \\ \hline 201 \\ 1340 \end{array}$$

3. Multiply
by the
ten's place

$$\begin{array}{r} 67 \\ \times 23 \\ \hline 201 \\ 1340 \\ \hline 1541 \end{array}$$

4. Add
the
numbers

Example 2

$$\begin{array}{r} 362 \\ \times 28 \\ \hline 2896 \\ 7240 \\ \hline 10,136 \end{array}$$

$\leftarrow 8 \times 362$

$\leftarrow 20 \times 362$

*** Remember sometimes you will need to use the Order of Operations!!

Find the Product of the problems below.

$$\begin{array}{r} 548 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 982 \\ \times 47 \\ \hline \end{array}$$

$$\begin{array}{r} 71 \\ \times 65 \\ \hline \end{array}$$

$$413 - 35 \bullet 7$$

$$84 \div 14 + 16 \bullet 5$$

$$137 \bullet 4 - (75 + 75 + 75)$$

Decimal Place Value

Ten Thousands	Thousands	Hundreds	Tens	Ones	Decimal Point	Tenths	Hundredths	Thousandths	Ten Thousandths
10000	1000	100	10	1	.	0.1	0.01	0.001	0.0001
$\frac{1}{10000}$	$\frac{1}{1000}$	$\frac{1}{100}$	$\frac{1}{10}$	1	.	$\frac{1}{10}$	$\frac{1}{100}$	$\frac{1}{1000}$	$\frac{1}{10000}$

Name the place value position of the **UNDERLINED** digit

2.725

47.329

235.402

Decimal Operations

- To add or subtract decimals, just line up the decimal points and then add or subtract in the same manner you would add or subtract whole numbers.
- To multiply decimals, just multiply as usual. Then count the total number of digits above the line that are to the right of all decimal points. Place your decimal point in your answer so there are the same number of digits to the right of it as there are above the line.

Example 1

$$\begin{array}{r} 7.100 \\ +3.456 \\ \hline 10.556 \end{array}$$

Example 2

$$\begin{array}{r} 54.26 \\ - 1.10 \\ \hline 53.16 \end{array}$$

Example 3

$$\begin{array}{r} 40.012 \leftarrow 3 \text{ digits} \\ \times 3.1 \leftarrow 1 \text{ digit} \\ \hline 40012 \\ 120036 \\ \hline 124.0372 \leftarrow 4 \text{ digits} \end{array}$$

total of 4 digits above the line that are to the right of the decimal point

decimal point placed so there are the same number of digits to the right of the decimal point

Add.

$$\begin{array}{r} 12 \\ + 9.8 \\ \hline \end{array}$$

$$\begin{array}{r} 12.32 \\ + 11.501 \\ \hline \end{array}$$

$$\begin{array}{r} 25.78 \\ + 14.006 \\ \hline \end{array}$$

Subtract.

$$\begin{array}{r} 63.7 \\ - 62.04 \\ \hline \end{array}$$

$$\begin{array}{r} 74 \\ - 27.205 \\ \hline \end{array}$$

$$\begin{array}{r} 59 \\ - 4.822 \\ \hline \end{array}$$

Multiply.

$$\begin{array}{r} 48.5 \\ \times 1.1 \\ \hline \end{array}$$

$$\begin{array}{r} 474.2 \\ \times 5.1 \\ \hline \end{array}$$

$$\begin{array}{r} 6.90 \\ \times 3.2 \\ \hline \end{array}$$

Fraction Operations

- Coming into 6th grade you should be able to
 - Turn improper fractions into mixed numbers and vice versa
 - Add, Subtract and Multiply fractions
 - Add, Subtract and Multiply Mixed Numbers
 - **Simplify all your fractions!**

**** In middle school and beyond a multiplication sign is NOW WRITTEN as $\rightarrow$ •

Example: $3 \bullet 5 = 15$

Example 1

- An improper fraction is when the numerator is larger than the denominator.
- Fractions can not be left improper so you need DIVIDE THE NUMERATOR by the denominator

Ex: $\frac{30}{7} = 4\frac{2}{7}$ 7 can fit into 30 4 times with 2 left over or remaining

Example 2

- A mixed number can be turned into an improper fraction by taking the denominator multiplying the whole and adding the numerator. This is your new numerator and it goes over the original denominator.

Ex: $6\frac{1}{2}$ so $6 \bullet 2 = 12 + 1 = 13$ and now $\rightarrow \frac{13}{2}$

Example 3

** To add or subtract fractions you need to have common denominators (the same denominators at the bottom of your fractions!)

** You are finding the LCM of the denominators!

Ex: $\frac{13}{15} - \frac{2}{6} =$ The LCM of 15 and 6 is 30! so..

$\frac{26}{30} - \frac{10}{30} = \frac{16}{30}$ Remember to simplify your

answers! $\frac{16}{30} = \frac{8}{15}$

Example 4

** To multiply fractions you just multiply across, so the numerator by the numerator or denominator by the denominator.

Ex: $\frac{3}{4} \bullet \frac{2}{3} = \frac{6}{12}$ *simplify!* $\rightarrow \frac{1}{2}$

Ex: $2\frac{1}{5} \bullet 6$ ** In these kinds of problems you need to turn the mixed number into an improper fraction first and the whole number turns into a fraction by JUST PLACING THEM OVER 1! so..

$\frac{11}{5} \bullet \frac{6}{1} = \frac{66}{5} = 13\frac{1}{5}$

Add, Subtract or Multiply. Be sure they are simplified - no improper fractions!

Turn the improper fraction into a mixed number

$$\frac{24}{7}$$

Turn this mixed number into an improper fraction

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

Add or subtract the fraction values below. Make sure to simplify your final answer! Make sure to show your work!

$$\frac{7}{9} - \frac{3}{4}$$

$$\frac{3}{8} + \frac{1}{2}$$

$$3\frac{2}{5} + 1\frac{1}{6}$$

$$4\frac{1}{5} - 2\frac{7}{10}$$

Multiply the fractions below. Make sure to show your work and simplify your products!

$$\frac{7}{15} \cdot \frac{2}{3}$$

$$18 \cdot \frac{3}{4}$$

$$2\frac{1}{5} \cdot \frac{5}{12}$$

$$4\frac{1}{3} \cdot 1\frac{6}{8}$$

