

*Our Lady of Mercy School ~ Summer Math Packet*  
**For Students Entering Grades 6-8 Math**

Please note the following guidelines:

- This packet is required for all OLM students entering Grades 6-8 Math classes.
- In order to receive credit, **students must show ALL steps in their calculations.** If there is not enough space, use a separate piece of page. Number the work with the page and problem number. Be sure to staple it to your packet.
- Students entering 6<sup>th</sup> grade are not allowed to use calculators on any of the packet. Students entering grades 7 and 8 are allowed to use calculators where it is appropriate. Reminder---- calculators may not be used on long division problems or multi-step multiplication problems.
- This packet will count for 2 quiz grades. Students are **required to complete the entire packet.** Those not completed will receive a 0 for the grade. *There is no partial credit for this assignment.*
- Students must turn in their completed packets the **first day of school.**

It is recommended that you pace yourself through this assignment and not rush through it. The aim of the work is to keep the “mathematical cobwebs away” while you are on summer break. Students who work on math concepts over the summer are more prepared for the next grade.

**Addition**

Find the sum of the two numbers in each problem.  
Show all work.

Example:

$$\begin{array}{r} 1 \quad 1 \\ 4 \quad 4 \quad 8 \\ + 1 \quad 8 \quad 8 \\ \hline 6 \quad 3 \quad 6 \end{array}$$

1.  $\begin{array}{r} 652 \\ + 345 \\ \hline \end{array}$

2.  $\begin{array}{r} 203 \\ + 525 \\ \hline \end{array}$

3.  $\begin{array}{r} 726 \\ + 268 \\ \hline \end{array}$

**Decimal Addition:**

Remember to line up the decimals before adding. Bring the decimal straight down in your answer.

4.  $\begin{array}{r} 7.75 \\ + 1.46 \\ \hline \end{array}$

5.  $51.4 + 2.86$

6.  $.1274 + 8.25$

**Subtraction**

Find the difference between the two numbers in each problem. Show all work.

Example:

$$\begin{array}{r} 3 \quad 13 \\ 7 \quad 4 \quad 8 \\ - 2 \quad 1 \quad 8 \\ \hline 5 \quad 2 \quad 5 \end{array}$$

7.  $\begin{array}{r} 407 \\ - 198 \\ \hline \end{array}$

8.  $\begin{array}{r} 7,007 \\ - 2,426 \\ \hline \end{array}$

9.  $\begin{array}{r} 3,414 \\ - 1,218 \\ \hline \end{array}$

**Decimal Subtraction:**

Remember to line up the decimals before subtracting. Bring the decimal straight down in your answer.

10.  $\begin{array}{r} 338.38 \\ - 149.27 \\ \hline \end{array}$

11.  $80.401 - 44.23$

12.  $75.89 - 9.4$

**Multiplication**

Find the product of the two numbers in each problem. Show all work.

Example:

$$\begin{array}{r} 54 \\ \times 16 \\ \hline 324 \\ + 540 \\ \hline 864 \end{array}$$

13.

$$\begin{array}{r} 65 \\ \times 4 \\ \hline \end{array}$$

14.

$$\begin{array}{r} 42 \\ \times 8 \\ \hline \end{array}$$

15.

$$\begin{array}{r} 84 \\ \times 39 \\ \hline \end{array}$$

**Decimal Multiplication:**

Multiply as you would with whole numbers. Count the decimal places in each factor. The product (answer) has the same number of decimal places.

16.

$$\begin{array}{r} .13 \\ \times 70 \\ \hline \end{array}$$

17.

$$\begin{array}{r} 5.1 \\ \times 2 \\ \hline \end{array}$$

18.

$$\begin{array}{r} .108 \\ \times 2.5 \\ \hline \end{array}$$

**Division**

Find the quotient in each problem. If there is a remainder, state the remainders as R=\_\_\_\_. Show all work. Feel free to use a separate sheet of paper.

19.

$$7 \overline{)591}$$

20.

$$12 \overline{)264}$$

21.

$$43 \overline{)2815}$$

**Decimal Division:**

If the divisor (outside number) is a decimal, you must move the decimal point (using multiplication) to the right until it becomes a whole number. Then, move the decimal in the dividend (inside number) the same number of times. Divide to find your answer (quotient).

Then, move the decimal straight up from the dividend to the quotient.

Remember, no remainders.

$$\begin{array}{r} \text{quotient} \\ \text{divisor} \overline{) \text{dividend}} \end{array}$$

22.

23.

24.

$$3 \overline{) 31.8}$$

$$.5 \overline{) 7.45}$$

$$.12 \overline{) 12.24}$$

**Rounding**

Underline the given place value. Look to the right. If this digit is 5 or greater, increase the underlined digit by 1. If the digit to the right is less than 5, keep the underlined digit the same.

Round to the nearest...

hundredth

0.547      0.55

Round to the nearest....

25. tenth  
0.3479

26. hundredth  
0.7553

27. whole number  
3.268

28. ten  
162.21

29. thousandth  
0.0036

30. hundred  
990.54

Compare the decimals.

Compare using <, >, or =

1.2 ○ 1.20      1.2 = 1.20

31. 0.205 ○ 0.21

32. 1.03 ○ 0.03

33. 0.04 ○ 0.050

34. 0.1 ○ 0.1000

35. 0.52 ○ 0.500

36. 0.41 ○ 0.405

**Prime Number:** A whole number greater than 1 that has only two factors, 1 and itself.  
 Examples: 2, 3, 5, 7, 11, 13, 17, and 19 are all prime numbers.

**Composite Number:** A whole number greater than 1 that has more than two factors.  
 Example: 8 is a composite number since its factors are 1, 2, 4, 8.

Determine if the following numbers are prime or composite. If the numbers are composite, please list all of the factors.

37. 27: \_\_\_\_\_

38. 39: \_\_\_\_\_

39. 43: \_\_\_\_\_

40. 49: \_\_\_\_\_

### Exponents

A way to show repeated multiplication by the same factor is to use an exponent. In this example:  $2^3 = 2 \times 2 \times 2 = 8$ . The small raised three is the exponent. It tells how many times the number 2, called the base, is multiplied by itself.

Solve the following expressions by writing the expanded notation (repeated multiplication) and find the value.

41.  $6^2$

42.  $2^6$

43.  $3^4$

44. eight squared

45. five cubed

**Greatest Common Factor**

The greatest factor that two or more numbers have in common (GCF).

1. List all the factors of **four** in order
2. List all the factors of **twenty** in order
3. List the common factors
4. Write the greatest common factor

**Finding Common Factors:**

4: 1, 2, 4

20: 1, 2, 4, 5, 10, 20

Common Factors: 1, 2, 4    GCF= 4

List all the factors for each number. Circle the common factors.

46. 18 : \_\_\_\_\_

30 : \_\_\_\_\_

Common Factors: \_\_\_\_\_      Greatest Common Factor: \_\_\_\_\_

47. 60 : \_\_\_\_\_

45 : \_\_\_\_\_

Common Factors: \_\_\_\_\_      Greatest Common Factor: \_\_\_\_\_

48. 23: \_\_\_\_\_

29: \_\_\_\_\_

Common Factors: \_\_\_\_\_      Greatest Common Factor: \_\_\_\_\_

49. 56: \_\_\_\_\_

72: \_\_\_\_\_

Common Factors: \_\_\_\_\_      Greatest Common Factor: \_\_\_\_\_



**Least Common Multiple**

The smallest nonzero multiple that two or more numbers have in common.

1. List the first 6 multiples of 4
2. List the first 6 multiples of 6
3. List the common multiples
4. Write the least common multiple.

**Finding Common Multiples:**

4: 4, 8, 12, 16, 20, 24

6: 6, 12, 18, 24, 30, 36

Least Common Multiple= 12

50. 8 : \_\_\_\_\_

12 : \_\_\_\_\_

Common Multiples: \_\_\_\_\_ Least Common Multiple: \_\_\_\_\_

51. 7 : \_\_\_\_\_

11 : \_\_\_\_\_

Common Multiples: \_\_\_\_\_ Least Common Multiple: \_\_\_\_\_

52. 25 : \_\_\_\_\_

10 : \_\_\_\_\_

Common Multiples: \_\_\_\_\_ Least Common Multiple: \_\_\_\_\_

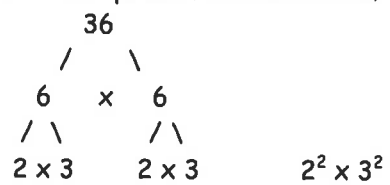
53. 24 : \_\_\_\_\_

36 : \_\_\_\_\_

Common Multiples: \_\_\_\_\_ Least Common Multiple: \_\_\_\_\_

**Prime Factorization** is a composite number renamed as a product of prime numbers. You may make a factor tree to find the answer. Put final answer in exponent form.

Find the prime factorization of 36.



54.

180
-----

55.

525
-----

56.

91
----

57.

48
----



**Comparing Fractions**

Compare each pair of numbers. Write the correct comparison symbol ( $<$ ,  $>$ ,  $=$ ) in each circle. Make sure you have common denominators before comparing numerators.

Example:

$$\begin{array}{ccc} \frac{1}{3} & \bigcirc & \frac{3}{4} \\ \downarrow & & \downarrow \\ \frac{4}{12} & & \frac{9}{12} \end{array}$$

58.

$$\frac{3}{8} \bigcirc \frac{5}{8}$$

59.

$$\frac{3}{4} \bigcirc \frac{3}{8}$$

60.

$$\frac{1}{2} \bigcirc \frac{4}{8}$$

61.

$$\frac{3}{7} \bigcirc \frac{1}{4}$$

62.

$$\frac{3}{5} \bigcirc \frac{5}{6}$$

63.

$$\frac{7}{8} \bigcirc \frac{3}{4}$$

**Ordering Fractions**

Order the following fractions from least to greatest.

64.

$$\frac{3}{8} \quad \frac{5}{8} \quad \frac{4}{8} \quad \frac{2}{8} \quad \frac{7}{8}$$

65.

$$\frac{1}{5} \quad \frac{4}{5} \quad \frac{1}{10} \quad \frac{6}{10} \quad \frac{7}{10}$$

66.

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

67.

$$\frac{1}{2} \quad \frac{5}{16} \quad \frac{30}{64} \quad \frac{3}{8} \quad \frac{9}{32}$$

**Order of Operations**

Solve the following problems. Show your work. Be sure to follow the order of operations.

Parenthesis

Exponents

Multiplication or Division: Which ever comes first from left to right.

Addition or Subtraction: Which ever comes first from left to right.

Example:  $8 - 4 \div 2 + 2 =$   
 $8 - 2 + 2 =$   
 $6 + 2 =$   
 $8$

68.  $15 \times 8 - 3 =$

69.  $36 \div 4 \times 3 =$

70.  $(30 + 8) \times 6 - 1 =$

71.  $(30 + 8) \times (6 - 1) =$

72.  $(29 - 18) + 14 \div 2 + 6 =$

73.  $64 \div 8 \times 2$

74.  $36 - 5(16 - 11) =$

75.  $25 + 18 \div 6 - 1 =$

76.  $24 + 6^2 - 1^4 =$

**Simply Fractions**

Simplify the following fractions. If the fractions are improper, change them to mixed numbers then simplify.

Example:  $\frac{10}{25} \div 5 = \frac{2}{5}$

83.

$$\frac{14}{28}$$

84.

$$\frac{15}{55}$$

85.

$$\frac{12}{51}$$

86.

$$\frac{34}{48}$$

87.

$$\frac{17}{4}$$

88.

$$\frac{80}{25}$$

**Adding Fractions and Mixed Numbers**

Add the following fractions. Make sure you have common denominators before adding. Remember, you only add the numerator (top number) and you keep the denominator (bottom number) the same! Simplify your final answers.

Example:

$$\begin{array}{r} \frac{1}{3} + \frac{1}{5} = \\ \downarrow \quad \downarrow \\ \frac{5}{15} + \frac{3}{15} = \frac{8}{15} \end{array}$$

89.

$$\frac{6}{10} + \frac{3}{10} =$$

90.

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

91.

$$\frac{1}{9} + \frac{5}{6} =$$

92.

$$\frac{1}{12} + 1\frac{2}{3} =$$

**Subtracting Fractions**

Subtract the following fractions. Make sure you have common denominators before subtracting. Remember, you only subtract the numerator (top number) and you keep the denominator (bottom number) the same! Simplify your final answers.

93.

$$\frac{5}{6} - \frac{3}{6} =$$

94.

$$2\frac{8}{12} - 1\frac{3}{12} =$$

Example:

$$\begin{array}{r} \frac{5}{6} - \frac{1}{3} = \\ \downarrow \quad \downarrow \\ \frac{5}{6} - \frac{2}{6} = \frac{3}{6} = \frac{1}{2} \end{array}$$

95.

$$\frac{7}{10} - \frac{2}{4} =$$

96.

$$3\frac{4}{5} - \frac{1}{4} =$$

**Multiplying Fractions**

Multiply the following fractions. Multiply the numerators; then multiply the denominators. Simplify, if necessary.

97.

$$\frac{3}{4} \times \frac{1}{3} =$$

98.

$$\frac{2}{3} \times \frac{5}{8} =$$

99.

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

100.

$$\frac{7}{8} \times 2 =$$

## Fractions Part II

Find the product or quotient. Write your answer in simplest form.

22.  $\frac{5}{6} \times \frac{1}{5}$

23.  $\frac{4}{9} \times \frac{9}{10}$

24.  $1\frac{1}{3} \times 2\frac{3}{4}$

Hint ....when you divide fractions you must find the **reciprocal (flip the 2<sup>nd</sup> fraction)**

25.  $\frac{7}{10} \div \frac{1}{5}$

26.  $\frac{11}{12} \div \frac{2}{9}$

27.  $3\frac{1}{2} \div 1\frac{1}{8}$

## Number Theory

1. List all factors of 48 \_\_\_\_\_

2. List the first five multiples of 6 \_\_\_\_\_

3. Find the GCF (greatest common factor) of 16 and 24 \_\_\_\_\_

4. Find the LCM (least common multiple) of 8 and 10 \_\_\_\_\_

5. Which of the following numbers is prime? 6, 10, 13, 18 \_\_\_\_\_

6. Write the rule for the pattern 6, 16, 26, 36, .....

\_\_\_\_\_

7. Write the rule for the pattern 5, 21, 85, 341,.....

\_\_\_\_\_