

Dear Honors Math Students and Parents,

This summer, I encourage you to continue to practice your math skills at home. The work I am providing will be a good review of the concepts learned this past school year and will also keep you connected to math.

The skills in your summer packet also serve as prerequisite skills for the math you will learn in the upcoming school year.

*Please make sure you follow the suggested directions for the best outcomes:*

1. Do NOT use a calculator. Take the time now to practice your math skills.
2. Show all work. If you get an answer incorrect, it helps to go back to your work and find the step that led to your error.
3. Be neat and organized. Part of success in math is being able to organize your work and keep track of your calculations and steps. Use additional paper if necessary.
4. Box your final answers (also an organizational strategy).
5. Do not rush. Spread your work out through the summer.
6. You must complete this math packet instead of the regular math summer packet for your grade!
7. This is due the first week of school when you come to Math class.

Blessings on a fun and safe summer,

***Mrs. DiBerardinis***

# NO CALCULATOR! SHOW ALL WORK!

## Whole Numbers – Adding and Subtracting

A)  $451 + 23 + 659$

$$\begin{array}{r} \phantom{0}1\phantom{0}1 \\ 451 \\ 23 \\ + 659 \\ \hline 1134 \end{array}$$

B)  $700 - 128$

$$\begin{array}{r} \phantom{0}6\phantom{0}9\phantom{0}10 \\ \cancel{7}\cancel{0}\cancel{0} \\ - 128 \\ \hline 572 \end{array}$$

### NO CALCULATOR! SHOW ALL WORK!

1.  $623 + 433 + 56$

2.  $893 - 395$

3.  $1987 + 432 + 543 + 28$

4.  $196 - 129 =$

5.  $98 + 45 - 32$

6.  $65 - 32 + 77$

7.  $439 + 53 - 488$

8.  $763 - 492 + 157$

## Whole Numbers – Multiplying and Dividing

|                                                                                                                                                                    |                                                                                                                                                                       |                                                                                  |                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <p>A) <math>653 \times 29</math></p> $  \begin{array}{r}  \phantom{0} \overline{) 653} \\  \times 29 \\  \hline  5877 \\  +13060 \\  \hline  18937  \end{array}  $ | <p><math>1820 \div 28</math></p> $  \begin{array}{r}  65 \\  28 \overline{) 1820} \\  \underline{-168} \phantom{0} \\  140 \\  \underline{-140} \\  0  \end{array}  $ | $  \begin{array}{r}  28 \phantom{0} \\  \times 6 \\  \hline  168  \end{array}  $ | $  \begin{array}{r}  28 \phantom{0} \\  \times 5 \\  \hline  140  \end{array}  $ |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|

**NO CALCULATOR! SHOW ALL WORK!**

|                    |                     |                    |
|--------------------|---------------------|--------------------|
| 1. $975 \times 8$  | 2. $109 \times 7$   | 3. $23 \times 15$  |
| 4. $73 \times 18$  | 5. $471 \times 16$  | 6. $981 \times 65$ |
| 7. $2970 \div 5$   | 8. $2124 \div 4$    | 9. $32751 \div 9$  |
| 10. $5472 \div 19$ | 11. $42800 \div 25$ | 12. $3348 \div 31$ |

## Order of Operations

|                                        |                          |
|----------------------------------------|--------------------------|
| Parentheses (Grouping Symbols)         | $[(7 - 4)^2 + 3] + 15$   |
| Exponents                              | $= [3^2 + 3] + 15$       |
| Multiply or Divide, from left to right | $= [3 \cdot 3 + 3] + 15$ |
| Add or Subtract, from left to right    | $= [9 + 3] + 15$         |
|                                        | $= 12 + 15$              |
|                                        | $= 27$                   |

**NO CALCULATOR!**

1.  $6 \div 3 + 2 \cdot 7$

2.  $5 + 8 \cdot 2 - 4$

3.  $16 \div 8 \cdot 2^2$

4.  $10 \div (3 + 2) + 9$

5.  $7 \cdot [(18 - 6) - 6]$

6.  $3 + (27 \div 9) - 5$

7.  $(5 - 3)^2 + 3$

8.  $[10 + (25 \cdot 2)] \div 6$

9.  $(9 \cdot 2) + 18 \div 6$

# Prime Factorization

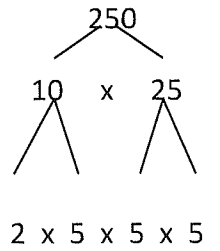
Use Euclid's Ladder (or a factor tree) to write the prime factorization.

$$\begin{array}{l} 2 \overline{)60} \\ 2 \overline{)30} \\ 3 \overline{)15} \\ 5 \end{array}$$

$$60 = 2 \times 2 \times 3 \times 5$$

$$\begin{array}{l} 2 \overline{)250} \\ 5 \overline{)125} \\ 5 \overline{)25} \\ 5 \end{array}$$

$$125 = 2 \times 5 \times 5 \times 5 \quad \text{OR}$$



|    |    |    |     |    |    |
|----|----|----|-----|----|----|
| 1. | 64 | 2. | 100 | 3. | 72 |
| 4. | 48 | 5. | 36  | 6. | 54 |

## Greatest Common Factor

Find the GCF of 24 and 36.

24: 1, 2, 3, 4, 6, 8, **12**, 24

36: 1, 2, 3, 4, 6, 9, **12**, 18, 36

GCF of 24 and 36 is **12**.

**No calculator! SHOW ALL WORK!**

1. 18 and 54

2. 36 and 54

3. 24 and 60

4. 32 and 56

5. 100 and 75

6. 28 and 49

7. 35 and 50

8. 64 and 88

## Least Common Multiple

Find the LCM of 8 and 12.

8: 8, 16, **24**, 32, 40, 48, 56, ...

12: 12, **24**, 36, 48, 60, 72, ...

LCM of 8 and 12 is **24**.

**No calculator! SHOW ALL WORK!**

1. 6 and 8

2. 4 and 6

3. 5 and 7

4. 12 and 18

5. 6 and 9

6. 12 and 9

7. 15 and 6

8. 14 and 4

## Decimals – Adding and Subtracting

Rules:

- 1) Line up decimal points, if a number does not have a decimal point it is a whole number with the decimal point at the end.
- 2) Annex zeros to hold place.
- 3) Add or subtract vertically.
- 4) Bring down the decimal point.

$$4.1 + 3 + 5.61 + 21$$

$$16 - 7.498$$

$$4.10$$

$$16.000$$

$$3.00$$

$$\begin{array}{r} 16.000 \\ - 7.498 \\ \hline \end{array}$$

$$5.61$$

$$8.502$$

**NO CALCULATOR! SHOW ALL WORK!**

1.  $42.78 + 19.56$

2.  $0.0997 + 1.4$

3.  $6.29 + 5$

4.  $0.663 + 1.58$

5.  $\$62.74 + \$1.75 + \$12$

6.  $0.0674 + 0.12 + 0.0098$

7.  $40.75 - 17.46$

8.  $0.95 - 0.68$

9.  $6 - 3.8$

10.  $\$60 - \$31.74$

11.  $\$12.36 - \$8.75$

12.  $21.007 - 4.678$

## Decimals – Multiplying and Dividing

Rules:

### Multiplying

- 1) Line up digits, starting on the right.
- 2) Multiply
- 3) Place the decimal point in the answer by starting at the right and moving a number of places equal to the sum of the decimal places in both numbers multiplied.

$$\begin{array}{r}
 (6.432)(4.15) \\
 6.432 \text{ (3 decimal places)} \\
 \times \underline{4.15} \text{ (2 decimal places)} \\
 32160 \\
 64320 \\
 \hline
 2572800 \\
 26.69280 \text{ (5 decimal places)}
 \end{array}$$

### Dividing

- 1) If the divisor is not a whole number, move the decimal point To the right to make it a whole number and move the decimal Point in the dividend the same number of places.
- 2) Divide.
- 3) Bring the decimal point up.

$$\begin{array}{r}
 27.216 \div 4.8 \\
 \hline
 5.67 \\
 48 \overline{)272.16} \\
 \underline{-240} \phantom{00} \\
 321 \phantom{00} \\
 \underline{-288} \phantom{00} \\
 336 \phantom{00} \\
 \underline{-336} \phantom{00} \\
 0
 \end{array}$$

**NO CALCULATOR! SHOW ALL WORK!**

|                       |                      |
|-----------------------|----------------------|
| 1. $5.4 \times 0.07$  | 2. $5.9 \times 1.2$  |
| 3. $69.3 \times 0.15$ | 4. $3.96 \times 3.3$ |

SHOW ALL WORK!

5.  $9.01 \times 0.48$

6.  $0.24 \div 0.8$

7.  $84.48 \div 0.88$

8.  $6.56 \div 4$

9.  $34.06 \div 0.13$

10.  $147 \div 0.49$

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## ROUNDING DECIMALS

| NUMBER               | WHOLE<br>NUMBER | TENTHS | HUNDREDTHS |
|----------------------|-----------------|--------|------------|
| <i>Example</i> 9.626 | 10              | 9.6    | 9.63       |
| 6.7431               |                 |        |            |
| 5.972                |                 |        |            |
| 0.7391               |                 |        |            |
| 3.229                |                 |        |            |
| 45.801               |                 |        |            |
| 302.210              |                 |        |            |
| 8.9021               |                 |        |            |
| 1.187                |                 |        |            |
| 32.092               |                 |        |            |
| 7.999                |                 |        |            |

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## ROUNDING DECIMALS

| NUMBER               | WHOLE<br>NUMBER | TENTHS | HUNDREDTHS |
|----------------------|-----------------|--------|------------|
| <i>Example</i> 5.628 | 6               | 5.6    | 5.63       |
| 0.962                |                 |        |            |
| 9.724                |                 |        |            |
| 2.4291               |                 |        |            |
| 4.777                |                 |        |            |
| 8.009                |                 |        |            |
| 101.872              |                 |        |            |
| 5.566                |                 |        |            |
| 3.907                |                 |        |            |
| 12.555               |                 |        |            |
| 3.999                |                 |        |            |

Name: \_\_\_\_\_

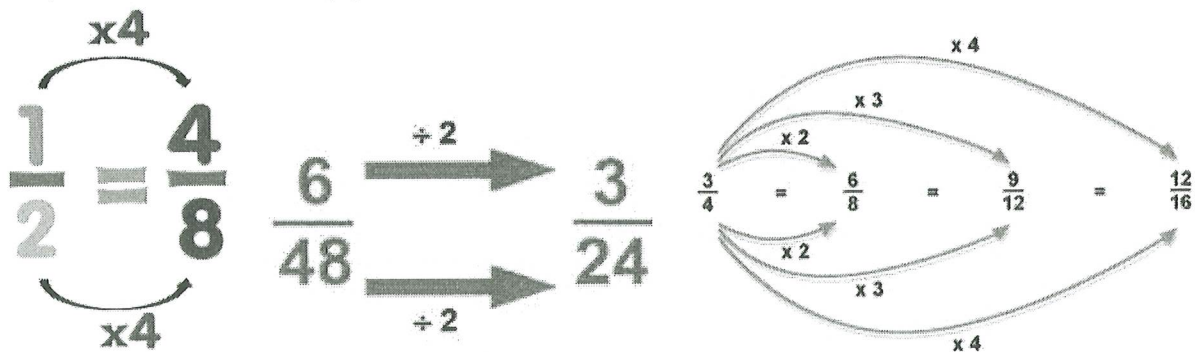
Date: \_\_\_\_\_

# ROUNDING DECIMALS

| NUMBER               | WHOLE<br>NUMBER | TENTHS | HUNDREDTHS |
|----------------------|-----------------|--------|------------|
| <i>Example</i> 4.285 | 4               | 4.3    | 4.29       |
| 0.44782              |                 |        |            |
| 9.931                |                 |        |            |
| 8.4271               |                 |        |            |
| 5.555                |                 |        |            |
| 16.905               |                 |        |            |
| 212.805              |                 |        |            |
| 7.7991               |                 |        |            |
| 3.082                |                 |        |            |
| 13.555               |                 |        |            |
| 9.999                |                 |        |            |

## Equivalent Fractions

To find an equivalent fraction multiply or divide the numerator and denominator by the same value.



Name three equivalent fractions to the one given:

|                    |                      |
|--------------------|----------------------|
| 1. $\frac{4}{5}$   | 2. $\frac{10}{15}$   |
| 3. $\frac{1}{7}$   | 4. $\frac{16}{40}$   |
| 5. $\frac{12}{30}$ | 6. $\frac{6}{8}$     |
| 7. $\frac{2}{9}$   | 8. $\frac{14}{35}$   |
| 9. $\frac{18}{28}$ | 10. $\frac{80}{120}$ |

## Converting Mixed Numbers to Improper Fractions

|                                                                                                              |                                                                 |                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Multiply the whole number by the denominator and add the numerator.</p> <p>Keep the same denominator.</p> | <p>Then add.</p> $4\frac{1}{3} = \frac{13}{3}$ <p>Multiply.</p> | <p>Convert <math>\frac{20}{3}</math> to a mixed number</p> <p>Divide the numerator by the denominator</p> $20 \div 3 = 6 \text{ plus } 2 \text{ remainder}$ $\frac{20}{3} = 6\frac{2}{3}$ <p>6 becomes the whole number<br/>2 is the numerator of the fraction as shown<br/>3 is the denominator</p> |
|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Convert to Mixed Number or Improper Fractions:

|                       |                        |
|-----------------------|------------------------|
| 1. $3\frac{1}{2} =$   | 2. $\frac{15}{2} =$    |
| 3. $7\frac{2}{3} =$   | 4. $\frac{31}{6} =$    |
| 5. $8\frac{3}{5} =$   | 6. $\frac{74}{9} =$    |
| 7. $2\frac{7}{9} =$   | 8. $\frac{49}{11} =$   |
| 9. $12\frac{5}{10} =$ | 10. $\frac{122}{13} =$ |

## Fractions – Adding and Subtracting

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

$$\frac{9}{12} + \frac{4}{12} =$$

$$\frac{13}{12} = 1 \frac{1}{12}$$

If the denominators are different, find the least common multiple of the two numbers and convert both fractions to the matching common denominator.

$$\frac{5}{6} - \frac{3}{9} =$$

$$\frac{15}{18} - \frac{6}{18} =$$

$$\frac{11}{18}$$

**NO CALCULATOR! SHOW ALL WORK!**

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

2.  $\frac{1}{7} + \frac{1}{3} =$

3.  $\frac{2}{10} + \frac{1}{2} =$

4.  $\frac{7}{8} - \frac{1}{2} =$

5.  $\frac{5}{6} - \frac{2}{3} =$

6.  $\frac{5}{9} - \frac{2}{4} =$

7.  $\frac{7}{12} + \frac{2}{9} =$

8.  $\frac{14}{15} + \frac{3}{5} =$

9.  $\frac{9}{16} + \frac{5}{24} =$

10.  $\frac{12}{16} - \frac{1}{4} =$

11.  $\frac{27}{33} - \frac{5}{11} =$

12.  $\frac{15}{18} - \frac{4}{9} =$

## Fractions – Multiplying

Multiply the  
numerators

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20}$$

Multiply the  
denominators

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20}$$

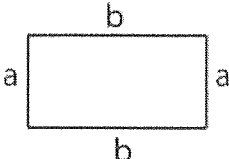
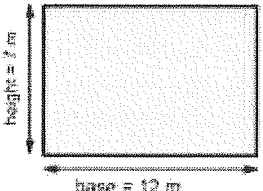
Reduce the fraction if  
necessary

$$\frac{6}{20} = \frac{3}{10}$$

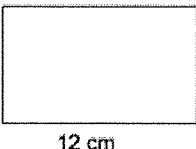
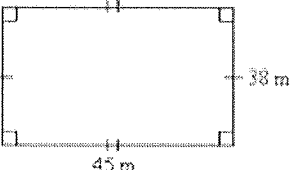
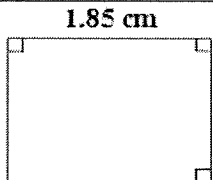
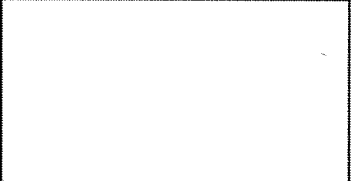
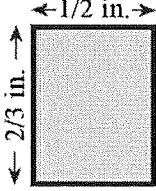
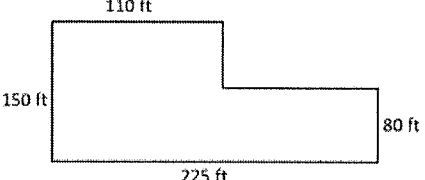
**NO CALCULATOR! SHOW ALL WORK!**

|                                         |                                           |                                         |
|-----------------------------------------|-------------------------------------------|-----------------------------------------|
| 1. $\frac{1}{3} \times \frac{1}{5} =$   | 2. $\frac{2}{7} \times \frac{2}{5} =$     | 3. $\frac{4}{9} \times \frac{1}{2} =$   |
| 4. $\frac{3}{8} \times \frac{3}{4} =$   | 5. $\frac{9}{10} \times \frac{1}{9} =$    | 6. $\frac{7}{12} \times \frac{2}{5} =$  |
| 7. $\frac{6}{11} \times \frac{2}{4} =$  | 8. $\frac{5}{6} \times \frac{2}{9} =$     | 9. $\frac{12}{20} \times \frac{3}{7} =$ |
| 10. $\frac{5}{13} \times \frac{4}{6} =$ | 11. $\frac{15}{25} \times \frac{5}{15} =$ | 12. $\frac{6}{10} \times \frac{3}{9} =$ |

# Geometry-Perimeter and Area

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Perimeter:</b></p><br><p><b>Perimeter of a rectangle</b></p> <p>The opposite sides of a rectangle are congruent.</p> <p><math>P = a + b + a + b</math></p> <p><math>P = a + b + a + b</math></p> <p><i>Example:</i><br/>If <math>a = 3</math> units and <math>b = 5</math> units then<br/>Perimeter (<math>P</math>) = <math>3 + 5 + 3 + 5 = 16</math> units</p> <div style="text-align: center;">  </div> | <p><b>Area:</b></p><br><p style="text-align: center;"><b>Area of Rectangle</b></p> <p>The area of a Rectangle equals the base times the height.</p> <div style="text-align: center; border: 1px solid black; padding: 5px; margin: 10px auto; width: fit-content;"> <math>A = b \times h</math> </div> <div style="display: flex; align-items: center; justify-content: center;">  <div style="margin-left: 20px;"> <math>A = b \times h</math><br/> <math>A = 12 \times 8</math><br/> <math>A = 96 \text{ m}^2</math> </div> </div> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Find the perimeter and area of each shape:

|                                                                                                                                                                  |                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <div style="text-align: center;">  </div> <p>Perimeter: _____ Area: _____</p>   | <div style="text-align: center;">  </div> <p>Perimeter: _____ Area: _____</p>   |
| <div style="text-align: center;">  </div> <p>Perimeter: _____ Area: _____</p> | <div style="text-align: center;">  </div> <p>Perimeter: _____ Area: _____</p> |
| <div style="text-align: center;">  </div> <p>Perimeter: _____ Area: _____</p> | <div style="text-align: center;">  </div> <p>Perimeter: _____ Area: _____</p>  |

## SUMMER MATH PACKET

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### **Find the Mean/Average, Median, Mode, and Range of a Set of Numbers**

Exercises: No Calculators! Use scratch paper and STAPLE TO THE BACK for credit, if needed. **No work = no credit.**

**Data Set: 5, 12, 6, 3, 8, 16, 8, 6**

Mean:

Median:

Mode:

Range:

**Data Set: 2, 7, 4, 11, 12, 4, 6**

Mean:

Median:

Mode:

Range: