

# **FOR STUDENTS WHO HAVE COMPLETED 5<sup>TH</sup> GRADE MATH**

## **(Entering Math 6 or Pre-Algebra)**

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

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

Dear Parent/Guardian & 6<sup>th</sup> Grade Math Student,

Next school year, your child will be in a 6<sup>th</sup> grade math course and will need core prerequisite skills from 5<sup>th</sup> grade upon the start of school. You will find a review packet of skills which each child is expected to know upon the start of the year. Teachers will go over the answers from the packet during the first week of school and minimal direct instruction will occur on these concepts, as they are a review from 5<sup>th</sup> grade. Students may seek additional help during recap to ask questions.

### **The following are the topics that students should know coming into 6<sup>th</sup> grade.**

- Whole Numbers
- Number Theory
- Order of Operations
- Decimals

You may also access the following websites to assist your child.

[www.purplemath.com](http://www.purplemath.com)

[www.math.com](http://www.math.com)

[www.khanacademy.com](http://www.khanacademy.com)

It is recommended that students who score below an 80 review the packet, as it is imperative for future successes in math to have essential, baseline skills.

Have a great summer.

Math Department

**PLEASE SHOW ALL WORK. STUDENTS SHOULD NOT USE A  
CALCULATOR FOR THIS PACKET.**





## Order of Operations

Parentheses (Grouping Symbols) Exponents Multiply or Divide, from left to right Add or Subtract, from left to right	$  \begin{aligned}  & [(7 - 4)^2 + 3] + 15 \\  &= [3^2 + 3] + 15 \\  &= [3 \cdot 3 + 3] + 15 \\  &= [9 + 3] + 15 \\  &= 12 + 15 \\  &= 27  \end{aligned}  $
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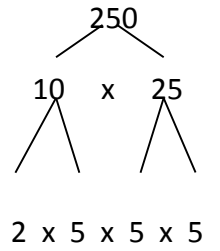
**NO CALCULATOR!**

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

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

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

$$\begin{array}{l} 2 \overline{)250} \\ 5 \overline{)125} \\ 5 \overline{)25} \\ 5 \end{array} \quad 125 = 5 \times 5 \times 5 \quad \text{OR}$$



1. 64

2. 100

3. 72

4. 48

5. 36

6. 54

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

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

**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.

$$4.1 + 3 + 5.61 + 21$$

$$16 - 7.498$$

$$4.10$$

$$16.000$$

$$3.00$$

$$\underline{- 7.498}$$

$$5.61$$

$$8.502$$

**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. $21.007 - 4.678$



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.

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

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.

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

**NO CALCULATOR! SHOW ALL WORK!**

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

5.  $9.01 \times 0.48$

6.  $0.24 \div 0.8$

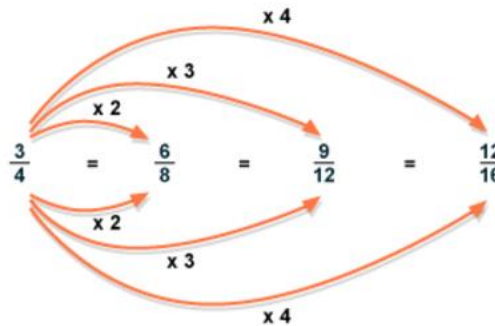
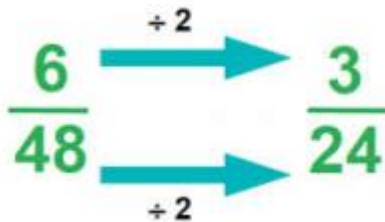
7.  $84.48 \div 0.88$

8.  $6.56 \div 4$

9.  $34.06 \div 0.13$

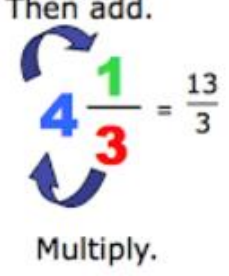
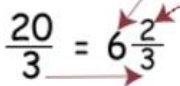
10.  $147 \div 0.49$

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. $\frac{80}{120}$

<p style="color: blue;"><i>Multiply the whole number by the denominator and add the numerator.</i></p> <p style="color: blue;"><i>Keep the same denominator.</i></p> <div style="text-align: center;"> <p>Then add.</p>  <p>Multiply.</p> </div>	<p>Convert <math>\frac{20}{3}</math> to a mixed number</p> <p style="color: red;"><i>Divide the numerator by the denominator</i></p> <p><math>20 \div 3 = 6</math> plus <math>2</math> remainder</p> <div style="text-align: center;">  </div> <p style="color: red;"><i>6 becomes the whole number 2 is the numerator of the fraction as shown 3 is the denominator</i></p>
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**Convert to Mixed Number or Improper Fractions:**

<p>1. <math>3\frac{1}{2} =</math></p>	<p>2. <math>\frac{15}{2} =</math></p>
<p>3. <math>7\frac{2}{3} =</math></p>	<p>4. <math>\frac{31}{6} =</math></p>
<p>5. <math>8\frac{3}{5} =</math></p>	<p>6. <math>\frac{74}{9} =</math></p>
<p>7. <math>2\frac{7}{9} =</math></p>	<p>8. <math>\frac{49}{11} =</math></p>
<p>9. <math>12\frac{5}{10} =</math></p>	<p>10. <math>\frac{122}{13} =</math></p>

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

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

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

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

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. $\frac{6}{10} \times \frac{3}{9} =$

**Perimeter:**

**Perimeter of a rectangle**

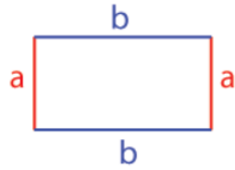
The opposite sides of a rectangle are congruent.

$$P = a + b + a + b$$

$$P = a + b + a + b$$

Example:

If  $a = 3$  units and  $b = 5$  units then  
Perimeter ( $P$ ) =  $3 + 5 + 3 + 5 = 16$  units

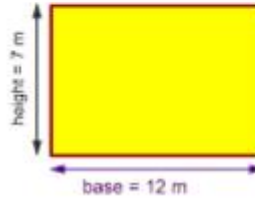


**Area:**

**Area of Rectangle**

The area of a Rectangle equals the base times the height.

$$A = b \times h$$

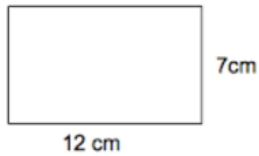


$$A = b \times h$$

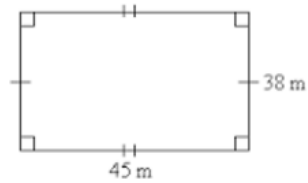
$$A = 12 \times 7$$

$$A = 84 \text{ m}^2$$

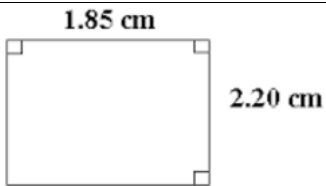
Find the perimeter and area of each shape:



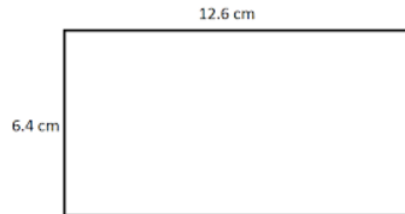
Perimeter: \_\_\_\_\_ Area: \_\_\_\_\_



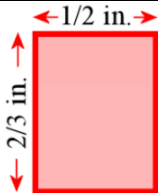
Perimeter: \_\_\_\_\_ Area: \_\_\_\_\_



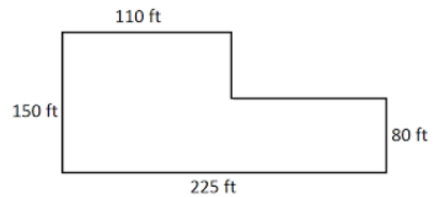
Perimeter: \_\_\_\_\_ Area: \_\_\_\_\_



Perimeter: \_\_\_\_\_ Area: \_\_\_\_\_



Perimeter: \_\_\_\_\_ Area: \_\_\_\_\_



Perimeter: \_\_\_\_\_ Area: \_\_\_\_\_

**ANSWER KEY**

<p><b>Page 2</b></p> <ol style="list-style-type: none"> <li>1. 1112</li> <li>2. 498</li> <li>3. 2990</li> <li>4. 67</li> <li>5. 111</li> <li>6. 110</li> <li>7. 4</li> <li>8. 428</li> </ol>	<p><b>Page 3</b></p> <ol style="list-style-type: none"> <li>1. 7800</li> <li>2. 763</li> <li>3. 345</li> <li>4. 1314</li> <li>5. 7536</li> <li>6. 63675</li> <li>7. 594</li> <li>8. 531</li> <li>9. 3639</li> <li>10. 288</li> <li>11. 1712</li> <li>12. 108</li> </ol>	<p><b>Page 4</b></p> <ol style="list-style-type: none"> <li>1. 16</li> <li>2. 17</li> <li>3. 8</li> <li>4. 11</li> <li>5. 42</li> <li>6. 1</li> <li>7. 7</li> <li>8. 10</li> <li>9. 21</li> </ol>
<p><b>Page 5</b></p> <ol style="list-style-type: none"> <li>1. <math>2 \times 2 \times 2 \times 2 \times 2</math></li> <li>2. <math>2 \times 2 \times 5 \times 5</math></li> <li>3. <math>2 \times 2 \times 2 \times 3 \times 3</math></li> <li>4. <math>2 \times 2 \times 2 \times 2 \times 3</math></li> <li>5. <math>2 \times 2 \times 3 \times 3</math></li> <li>6. <math>2 \times 3 \times 3 \times 3</math></li> </ol>	<p><b>Page 6</b></p> <ol style="list-style-type: none"> <li>1. 18</li> <li>2. 18</li> <li>3. 12</li> <li>4. 8</li> <li>5. 25</li> <li>6. 7</li> <li>7. 5</li> <li>8. 8</li> </ol>	<p><b>Page 7</b></p> <ol style="list-style-type: none"> <li>1. 24</li> <li>2. 12</li> <li>3. 35</li> <li>4. 36</li> <li>5. 18</li> <li>6. 36</li> <li>7. 30</li> <li>8. 28</li> </ol>
<p><b>Page 8</b></p> <ol style="list-style-type: none"> <li>1. 62.34</li> <li>2. 1.4997</li> <li>3. 11.29</li> <li>4. 2.243</li> <li>5. 76.49</li> <li>6. .1972</li> <li>7. 23.29</li> <li>8. 0.27</li> <li>9. 2.2</li> <li>10. 28.26</li> <li>11. 3.61</li> <li>12. 16.329</li> </ol>	<p><b>Page 9-10</b></p> <ol style="list-style-type: none"> <li>1. 0.378</li> <li>2. 7.08</li> <li>3. 10.395</li> <li>4. 13.068</li> <li>5. 4.3248</li> <li>6. 0.3</li> <li>7. 96</li> <li>8. 1.64</li> <li>9. 262</li> <li>10. 300</li> </ol>	<p><b>Page 11 (these are some possible answers)</b></p> <ol style="list-style-type: none"> <li>1. <math>8/10, 16/20, 12/15</math></li> <li>2. <math>2/3, 20/30, 40/60</math></li> <li>3. <math>2/14, 3/21, 4/28</math></li> <li>4. <math>8/20, 4/10, 2/5</math></li> <li>5. <math>6/15, 2/5, 24/60</math></li> <li>6. <math>3/4, 12/16, 24/32</math></li> <li>7. <math>4/18, 6/27, 8/36</math></li> <li>8. <math>2/5, 28/70, 140/350</math></li> <li>9. <math>9/14, 36/56, 180/280</math></li> <li>10. <math>2/3, 40/60, 8/12</math></li> </ol>
<p><b>Page 12</b></p> <ol style="list-style-type: none"> <li>1. <math>7/2</math></li> <li>2. <math>3 \frac{1}{2}</math></li> <li>3. <math>23/3</math></li> <li>4. <math>5 \frac{1}{6}</math></li> <li>5. <math>43/5</math></li> <li>6. <math>8 \frac{2}{9}</math></li> <li>7. <math>25/9</math></li> <li>8. <math>4 \frac{5}{11}</math></li> <li>9. <math>125/10</math></li> <li>10. <math>9 \frac{5}{13}</math></li> </ol>	<p><b>Page 13</b></p> <ol style="list-style-type: none"> <li>1. <math>13/15</math></li> <li>2. <math>10/21</math></li> <li>3. <math>7/10</math></li> <li>4. <math>3/8</math></li> <li>5. <math>1/6</math></li> <li>6. <math>1/18</math></li> <li>7. <math>29/36</math></li> <li>8. <math>1 \frac{8}{15}</math></li> <li>9. <math>37/48</math></li> <li>10. <math>1/2</math></li> <li>11. <math>12/33</math></li> <li>12. <math>7/18</math></li> </ol>	<p><b>Page 14</b></p> <ol style="list-style-type: none"> <li>1. <math>1/15</math></li> <li>2. <math>4/35</math></li> <li>3. <math>2/9</math></li> <li>4. <math>9/32</math></li> <li>5. <math>1/10</math></li> <li>6. <math>7/30</math></li> <li>7. <math>3/11</math></li> <li>8. <math>5/27</math></li> <li>9. <math>9/35</math></li> <li>10. <math>10/39</math></li> <li>11. <math>1/5</math></li> <li>12. <math>1/5</math></li> </ol>
<p><b>Page 15</b></p> <ol style="list-style-type: none"> <li>1. <math>p=38\text{cm}, a=84 \text{ sq cm}</math></li> <li>2. <math>p=166\text{m}, a=1710 \text{ sq m}</math></li> <li>3. <math>p=8.1 \text{ cm}, a=4.07 \text{ sq cm}</math></li> <li>4. <math>p=38\text{cm}, a=80.64 \text{ sq cm}</math></li> <li>5. <math>p= 2 \frac{1}{3}\text{in}, a=1/3 \text{ sq in}</math></li> <li>6. <math>p=750 \text{ ft}, a=25,700 \text{ sq ft}</math></li> </ol>		



