Summer Packet – 5th into 6th grade   Name __ANSWER Key__

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

Example:

```
      1   1
      4  4  8
  +   1  8  8
  _____
      6  3  6
```

1. 652
   + 345
    997

2. 203
   + 525
    728

3. 726
   + 268
    994

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

4. 7.75
   + 1.46
    9.21

5. 51.4 + 2.86

```
    51.40
  + 02.86
  _____
    54.26
```

6.   .1274 + 8.25

```
   0.1274
  +8.2500
  _____
   8.3774
```

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

Example:

```
      7  4  3
      2  1  8
  -  _____
      5  2  5
```

7.
```
    3 9 1
    407
  - 198
  _____
    209
```

8.
```
    6 9
    7,007
  - 2,426
  _____
    4,581
```

9.
```
    3 0 1
    3,414
  - 1,218
  _____
    2,196
```

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

10.
```
    2 2 1
    338.38
  - 149.27
  _____
    189.11
```

11.
```
    80.401 – 44.23
    80.401
  - 44.230
  _____
    36.171
```

12.
```
    75.89 – 9.4
```

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

Example:

$$
\begin{array}{r}
5\,4 \\
\times\,1\,6 \\
\hline
3\,2\,4 \\
+\,5\,4\,0 \\
\hline
8\,6\,4
\end{array}
$$

13.
$$
\begin{array}{r}
{}^{2}6\,5 \\
\times\quad 4 \\
\hline
2\,6\,0
\end{array}
$$

14.
$$
\begin{array}{r}
{}^{1}4\,2 \\
\times\quad 8 \\
\hline
3\,3\,6
\end{array}
$$

15.
$$
\begin{array}{r}
8\,4 \\
\times\,3\,9 \\
\hline
1\,7\,5\,6 \\
+\,2\,5\,2\,0 \\
\hline
3\,2\,7\,6
\end{array}
$$

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.
$$
\begin{array}{r}
.1\,3 \\
\times\quad 7\,0 \\
\hline
0\,0\,0 \\
+\,9\,1\,0 \\
\hline
9.1\,0
\end{array}
$$

17.
$$
\begin{array}{r}
5.1 \\
\times\quad 2 \\
\hline
1\,0.2
\end{array}
$$

18.
$$
\begin{array}{r}
.1\,0\,8 \\
\times\quad 2.5 \\
\hline
0\,5\,4\,0 \\
+\,2\,1\,6\,0 \\
\hline
.2\,7\,0\,0
\end{array}
$$

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.
$$
\begin{array}{r}
8\,4 \quad R=3 \\
7\,\overline{)5\,9\,1} \\
-5\,6\,\downarrow \\
\hline
3\,1 \\
-2\,8 \\
\hline
3
\end{array}
$$

20.
$$
\begin{array}{r}
2\,2 \\
1\,2\,\overline{)2\,6\,4} \\
-2\,4\,\downarrow \\
\hline
2\,4 \\
-2\,4 \\
\hline
0
\end{array}
$$

21.
$$
\begin{array}{r}
6\,5 \quad R=20 \\
4\,3\,\overline{)2\,8\,1\,5} \\
-2\,5\,8\,\downarrow \\
\hline
2\,3\,5 \\
-2\,1\,5 \\
\hline
2\,0
\end{array}
$$

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.

$$\frac{quotient}{divisor)\overline{dividend}}$$

22.

$$\begin{array}{r} 10.6 \\ 3\overline{)31.8} \end{array}$$

$$\begin{array}{r} -3\downarrow \\ \hline 01 \\ -00\downarrow \\ \hline 18 \end{array}$$

23.

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

$$\begin{array}{r} 14.9 \\ 5\overline{)74.5} \\ -5\downarrow \\ \hline 24 \\ -20\downarrow \\ \hline 45 \end{array}$$

24.

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

$$\begin{array}{r} 102. \\ 12\overline{)1224.} \\ -12\downarrow \\ \hline 02 \\ -00\downarrow \\ \hline 24 \\ -24 \\ \hline 0 \end{array}$$

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

0.3

26. hundredth
0.7553

0.76

27. whole number
3.268

3

28. ten
162.21

160

29. thousandth
0.0036

0.004

30. hundred
990.54

1000

Compare using <, >, or =
1.2 ◯ 1.20   1.2 = 1.20

Compare the decimals.

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: _1,3,9,27_   composite

38. 39: _1,3,13,39_   composite

39. 43: _prime_

40. 49: _1,7,49_   composite

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 $6 \times 6 = 36$

42. 2^6 $2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$

43. 3^4 $3 \times 3 \times 3 \times 3 = 81$

44. eight squared 8^2 $8 \times 8 = 64$

45. five cubed 5^3 $5 \times 5 \times 5 = 125$

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 : 1,2,3,6,9,18

30 : 1,2,3,5,6,10,15,30

Common Factors: 1,2,3,6   Greatest Common Factor: 6

47.   60 : 1,2,3,4,5,6,10,12,15,20,30,60

45 : 1,3,5,9,15,45

Common Factors: 1,3,5,15   Greatest Common Factor: 15

48.   23: 1,23

29: 1,29

Common Factors: 1   Greatest Common Factor: 1

49.   56: 1,2,4,7,8,14,28,56

72: 1,2,3,4,6,8,9,12,18,24,36,72

Common Factors: 1,2,4,8   Greatest Common Factor: 8

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 : 8, 16, 24, 32, 40, 48

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

Common Multiples: 24, 48   Least Common Multiple: 24

51. 7 : 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77

11 : 11, 22, 33, 44, 55, 66, 77

Common Multiples: 77   Least Common Multiple: 77

52. 25 : 25, 50, 75, 100, 125

10 : 10, 20, 30, 40, 50

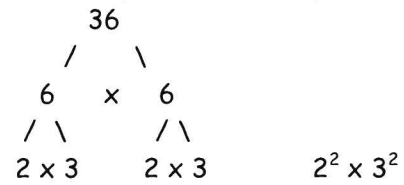Common Multiples: 50   Least Common Multiple: 50
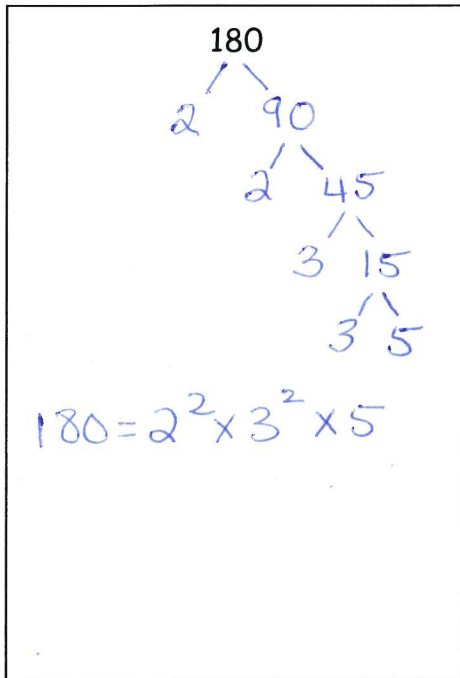
53. 24 : 24, 48, 72

36: 36, 72

Common Multiples: 72   Least Common Multiple: 72

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.
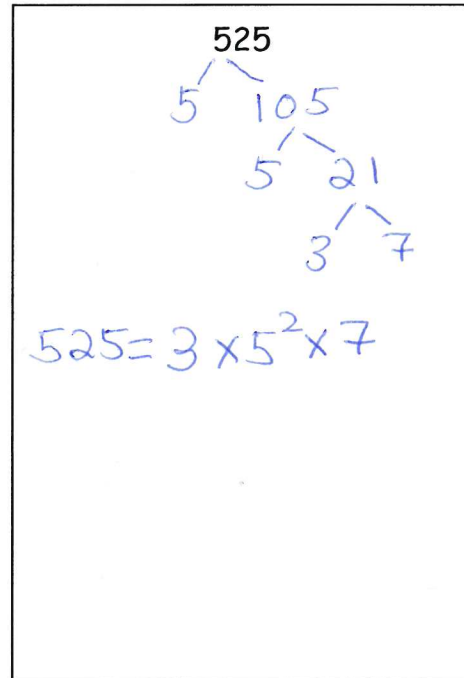
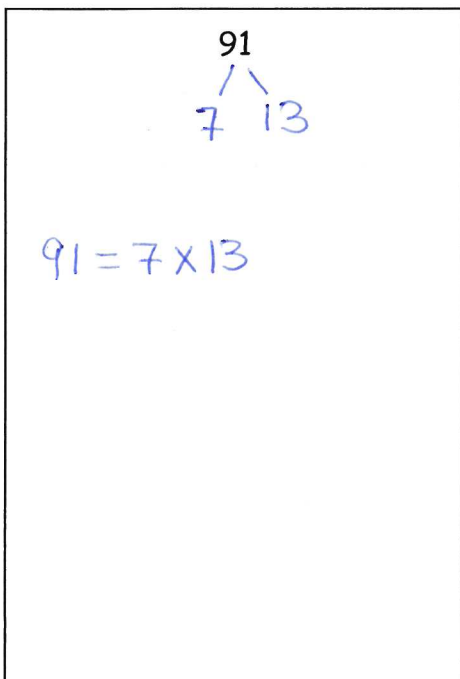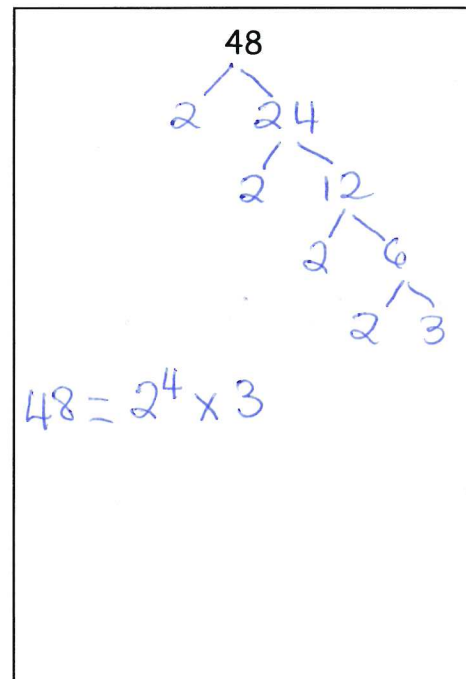Find the prime factorization of 36.

$$36$$
$$6 \quad \times \quad 6$$
$$2 \times 3 \quad\quad 2 \times 3 \quad\quad 2^2 \times 3^2$$

54.

$$180$$
$$2 \quad 90$$
$$\quad 2 \quad 45$$
$$\quad\quad 3 \quad 15$$
$$\quad\quad\quad 3 \quad 5$$

$$180 = 2^2 \times 3^2 \times 5$$

55.

$$525$$
$$5 \quad 105$$
$$\quad 5 \quad 21$$
$$\quad\quad 3 \quad 7$$

$$525 = 3 \times 5^2 \times 7$$

56.

$$91$$
$$7 \quad 13$$

$$91 = 7 \times 13$$

57.

$$48$$
$$2 \quad 24$$
$$\quad 2 \quad 12$$
$$\quad\quad 2 \quad 6$$
$$\quad\quad\quad 2 \quad 3$$

$$48 = 2^4 \times 3$$

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:

$\frac{1}{3}$ ⬤< $\frac{3}{4}$

↓   ↓

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

58.

$\frac{3}{8}$ ⬤< $\frac{5}{8}$

59.

$\frac{3}{4}$ ⬤> $\frac{3}{8}$

$\frac{6}{8}$ $\frac{3}{8}$

60.

$\frac{1}{2}$ ⬤= $\frac{4}{8}$

$\frac{4}{8}$ $\frac{4}{8}$

61.

$\frac{3}{7}$ ⬤> $\frac{1}{4}$

$\frac{12}{28}$ $\frac{7}{28}$

62.

$\frac{3}{5}$ ⬤< $\frac{5}{6}$

$\frac{18}{30}$ $\frac{25}{30}$

63.

$\frac{7}{8}$ ⬤> $\frac{3}{4}$

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

Ordering Fractions

Order the following fractions from **least to greatest**.

64.

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

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

65.

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

$\frac{2}{10}$ $\frac{8}{10}$ $\frac{1}{10}$ $\frac{6}{10}$ $\frac{7}{10}$

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

66.

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

$\frac{30}{60}$ $\frac{15}{60}$ $\frac{10}{60}$ $\frac{20}{60}$ $\frac{12}{60}$

$\frac{1}{}$ $\frac{1}{}$ $\frac{1}{}$ $\frac{1}{}$ $\frac{1}{}$

67.

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

$\frac{32}{64}$ $\frac{20}{64}$ $\frac{30}{64}$ $\frac{24}{64}$ $\frac{18}{64}$

$\frac{9}{}$ $\frac{5}{}$ $\frac{3}{}$ $\frac{30}{}$ $\frac{1}{2}$

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

<u>P</u>arenthesis
<u>E</u>xponents
<u>M</u>ultiplication or <u>D</u>ivision: Which ever comes first
      from left to right.
<u>A</u>ddition or <u>S</u>ubtraction: Which ever comes first
      from left to right.

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

68. $15 \times 8 - 3 =$
$120 - 3 =$
117

69. $36 \div 4 \times 3 =$
$9 \times 3 =$
27

70. $(30 + 8) \times 6 - 1 =$
$38 \times 6 - 1 =$
$228 - 1 =$
227

71. $(30 + 8) \times (6-1) =$
$38 \times 5 =$
190

72. $(29 - 18) + 14 \div 2 + 6 =$
$11 + 14 \div 2 + 6 =$
$11 + 7 + 6 =$
$18 + 6 =$
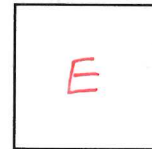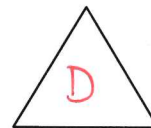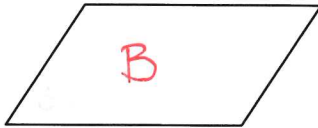24

73. $64 \div 8 \times 2 =$
$8 \times 2 =$
16

74. $36 - 5 (16 - 11) =$
$36 - 5 (5) =$
~~$36 - 25$~~
$36 - 25 =$
11

75. $25 + 18 \div 6 - 1 =$
$25 + 6 - 1 =$
$31 - 1 =$
30

76. $24 + 6^2 - 1^4 =$
$24 + 36 - 1 =$
$60 - 1 =$
59

Geometry-Who am I?
Use the following shapes to answer the questions below.

A   B   C   D   E   F

77. I am a 2 dimensional shape that has four sides. I have four 90 degree angles. I have two sets of parallel lines. I also have two sides that are one length, and my other two sides are a different length.

Who am I? __rectangle (A)__

78. I am a 2 dimensional shape that has three acute angles. All of my sides are the same length. I have no parallel sides.

Who am I? __Equilateral triangle (D)__

79. I am a 2 dimensional shape that has four sides. I have two obtuse angles and two acute angles. I have two different sets of parallel sides. I also have two sides that are one length, and my other two sides are a different length.

Who am I? __parrallelogram (B)__

80. I am a 2 dimensional shape that has 5 obtuse angles. I do not have any sides that are parallel.

Who am I? __pentagon (c)__

81. I am a 2 dimensional shape that has four 90 degree angles. I have four sides that are all the same length. I have two different sets of parallel lines.

Who am I? __Square (E)__

82. I am a 2 dimensional shape. My perimeter is also known as a circumference.

Who am I? __Circle (F)__

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

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

83.

$$\dfrac{14 \div 7}{28 \div 7} = \dfrac{2 \div 2}{4 \div 2} = \dfrac{1}{2}$$

OR $\dfrac{14 \div 14}{28 \div 14} = \dfrac{1}{2}$

84.

$$\dfrac{15 \div 5}{55 \div 5} = \dfrac{3}{11}$$

85.

$$\dfrac{12 \div 3}{51 \div 3} = \dfrac{4}{17}$$

86.

$$\dfrac{34 \div 2}{48 \div 2} = \dfrac{17}{24}$$

87.

$$\dfrac{17}{4} = 4\dfrac{1}{4}$$

88.

$$\dfrac{80}{25} = 3\dfrac{5}{25}$$
$$= 3\dfrac{1}{5}$$

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:

$$\dfrac{1}{3} + \dfrac{1}{5} =$$
$$\downarrow \qquad \downarrow$$
$$\dfrac{5}{15} + \dfrac{3}{15} = \dfrac{8}{15}$$

89.

$$\dfrac{6}{10} + \dfrac{3}{10} = \dfrac{9}{10}$$

90.

$$2\dfrac{3}{8} + 1\dfrac{2}{8} = 3\dfrac{5}{8}$$

91.

$$\dfrac{1}{9} + \dfrac{5}{6} =$$
$$\dfrac{2}{18} + \dfrac{15}{18} =$$
$$\dfrac{17}{18}$$

92.

$$\dfrac{1}{12} + 1\dfrac{2}{3} =$$
$$\dfrac{1}{12} + 1\dfrac{8}{12} =$$
$$1\dfrac{9}{12} =$$
$$1\dfrac{3}{11}$$

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.

Example:

$$\frac{5}{6} - \frac{1}{3} =$$

$$\downarrow \qquad \downarrow$$

$$\frac{5}{6} - \frac{2}{6} = \frac{3}{6} = \frac{1}{2}$$

93.

$$\frac{5}{6} - \frac{3}{6} = \frac{2}{6} = \frac{1}{3}$$

94.

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

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

95.

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

$$\frac{14}{20} - \frac{10}{20} =$$

$$\frac{4}{20} = \frac{1}{5}$$

96.

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

$$3\frac{16}{20} - \frac{5}{20} =$$

$$3\frac{11}{20}$$

Multiplying Fractions

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

Example:

$$\frac{3}{5} \times \frac{5}{9} = \frac{15}{45} = \frac{1}{3}$$

97.

$$\frac{3}{4} \times \frac{1}{3} = \frac{3}{12} = \frac{1}{4}$$

98.

$$\frac{2}{3} \times \frac{5}{8} = \frac{10}{24} = \frac{5}{12}$$

99.

$$\frac{1}{3} \times \frac{2}{5} = \frac{2}{15}$$

100.

$$\frac{7}{8} \times 2 = \frac{14}{8}$$

$$= 1\frac{6}{8}$$

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