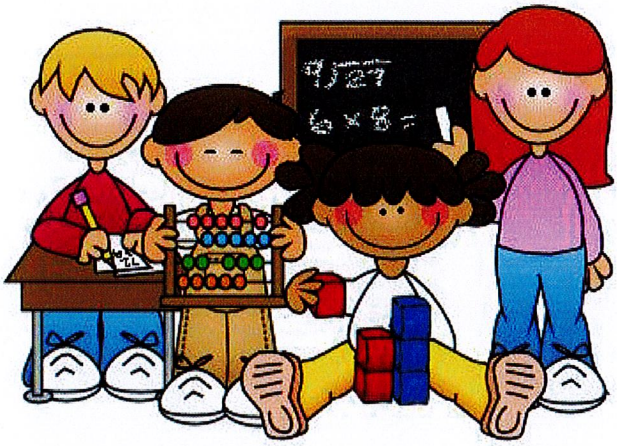
Rising 6th Grade Math Summer Packet



The completed packet is **due back** to your math teacher by Monday, **September 12, 2022**.

Dear Rising 6th Grade Mathematicians,

Welcome to Middle School!!

We are looking forward to working with you in the fall to build on your math learning.

This summer, we encourage you to continue to practice your math at home. Staying actively involved in math activities enhances your learning.

This packet is a review of concepts and skills that you covered in 5th grade math. If you forgot how to solve a specific type of problem, you can use your IXL or Zearn accounts to help refresh your memory and give you some practice.

Also, feel free to reach out to Ms. Girgis (sgirgis@w-e-s.org), Mrs. Kellerman (mkellerman@w-e-s.org), or Ms. Loutoo (sloutoo@w-e-s.org) to ask questions.

It is best for you to not try to rush through the packet, but complete a little each day over your summer break.

Attempt all problems and show all steps used to arrive at the final answer.

If you are not printing out the packet, make sure to work neatly on a separate sheet of paper, numbering each problem as it appears in the packet.

We wish you a wonderful summer break!!

-Ms. Girgis, Ms. Kellerman, and Ms. Loutoo

Summer Packet - 5th into 6th grade Name _____

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

Example:

$$\begin{array}{r} {\scriptstyle 1\ \ 1\ \ \ } \\ 448 \\ +\ 188 \\ \hline 636 \end{array}$$

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:

$$\begin{array}{r} {\scriptstyle 3\ 13\ \ } \\ 7\not{4}\ \not{3} \\ -\ 218 \\ \hline 525 \end{array}$$

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.

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

22. $3\overline{)31.8}$

23. $.5\overline{)7.45}$

24. $.12\overline{)12.24}$

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 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: _____

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: _____

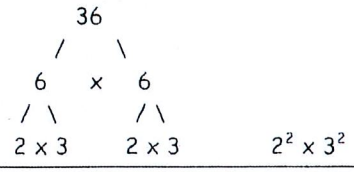
53. 24 : _____

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:

$\frac{1}{3}$ ◯ $\frac{3}{4}$

$\downarrow$ $\downarrow$

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

58. $\frac{3}{8}$ ◯ $\frac{5}{8}$

59. $\frac{3}{4}$ ◯ $\frac{3}{8}$

60. $\frac{1}{2}$ ◯ $\frac{4}{8}$

61. $\frac{3}{7}$ ◯ $\frac{1}{4}$

62. $\frac{3}{5}$ ◯ $\frac{5}{6}$

63. $\frac{7}{8}$ ◯ $\frac{3}{4}$

Ordering Fractions

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

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

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

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

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

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

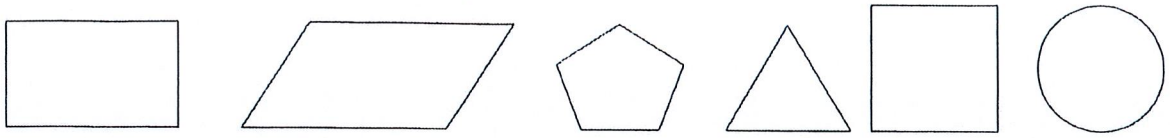
73. $64 \div 8 \times 2$

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

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

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

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



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?_____

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? _____

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? _____

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

Who am I? _____

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? _____

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

Who am I? _____

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

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

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:

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

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

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.

Example:

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

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

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

94. $2\frac{8}{12} - 1\frac{3}{12} =$

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.

Example:

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

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

Decimal Division

Complete the following division problems on notebook paper or grid paper. Use the standard division algorithm. Number the problems on your paper. Show all your work. Make sure to answer problem #11 as well.

1. Divide 9.84 by 8

2. Divide 16.52 by 7

3. Divide 0.0325 by 0.013

4. Divide 0.275 by 0.25

5. Divide 2.405 by 0.37

6. Divide 4.214 by 0.49

7. Divide 4.5 by 0.125

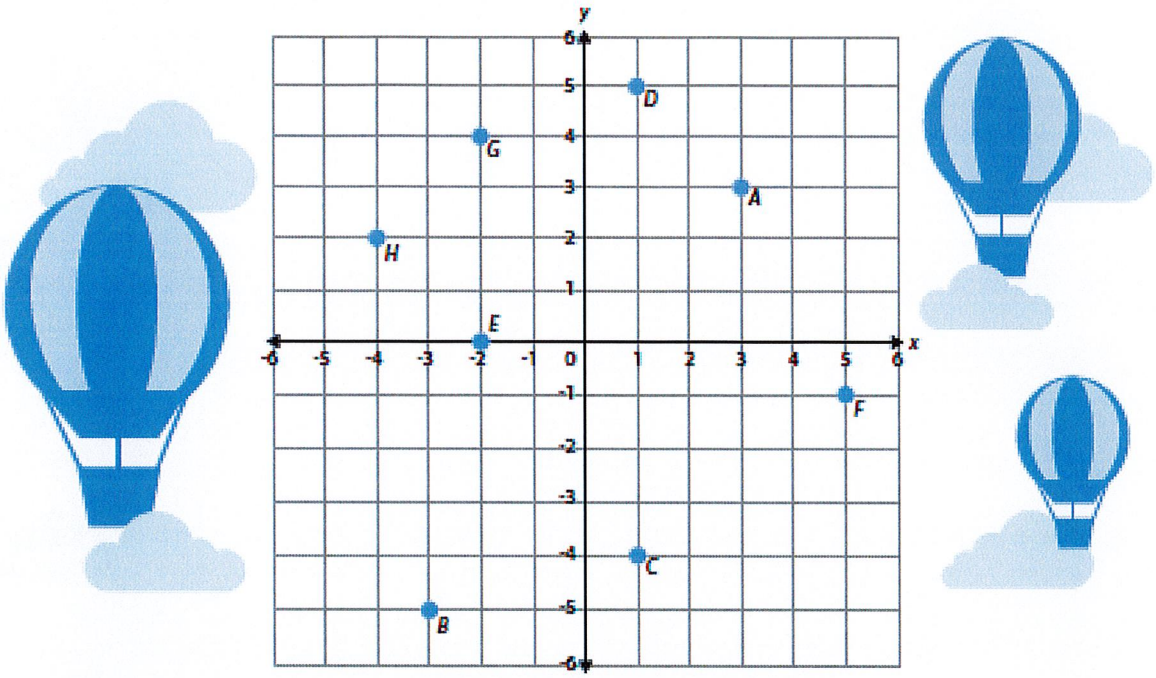
8. Divide 3.888 by 7.2

9. Divide 0.000405 by 0.00075

10. Divide 0.0098 by 0.28

11. Explain why **2.75 ÷ 0.25** has the same value as **27.5 ÷ 2.5.**

Coordinate Plane and Quadrants



Write the ordered pair for each point on the coordinate plane.

A (___, ___)	*B* (___, ___)	*C* (___, ___)	*D* (___, ___)
E (___, ___)	*F* (___, ___)	*G* (___, ___)	*H* (___, ___)

Plot and label the following points on the coordinate plane above.

Q (4, 1)	*R* (3, -3)	*S* (-5, -2)	*T* (0, 3)
U (-3, 5)	*V* (2, 0)	*W* (-1, -4)	*X* (4, -6)

Write the quadrant that each point is found in.

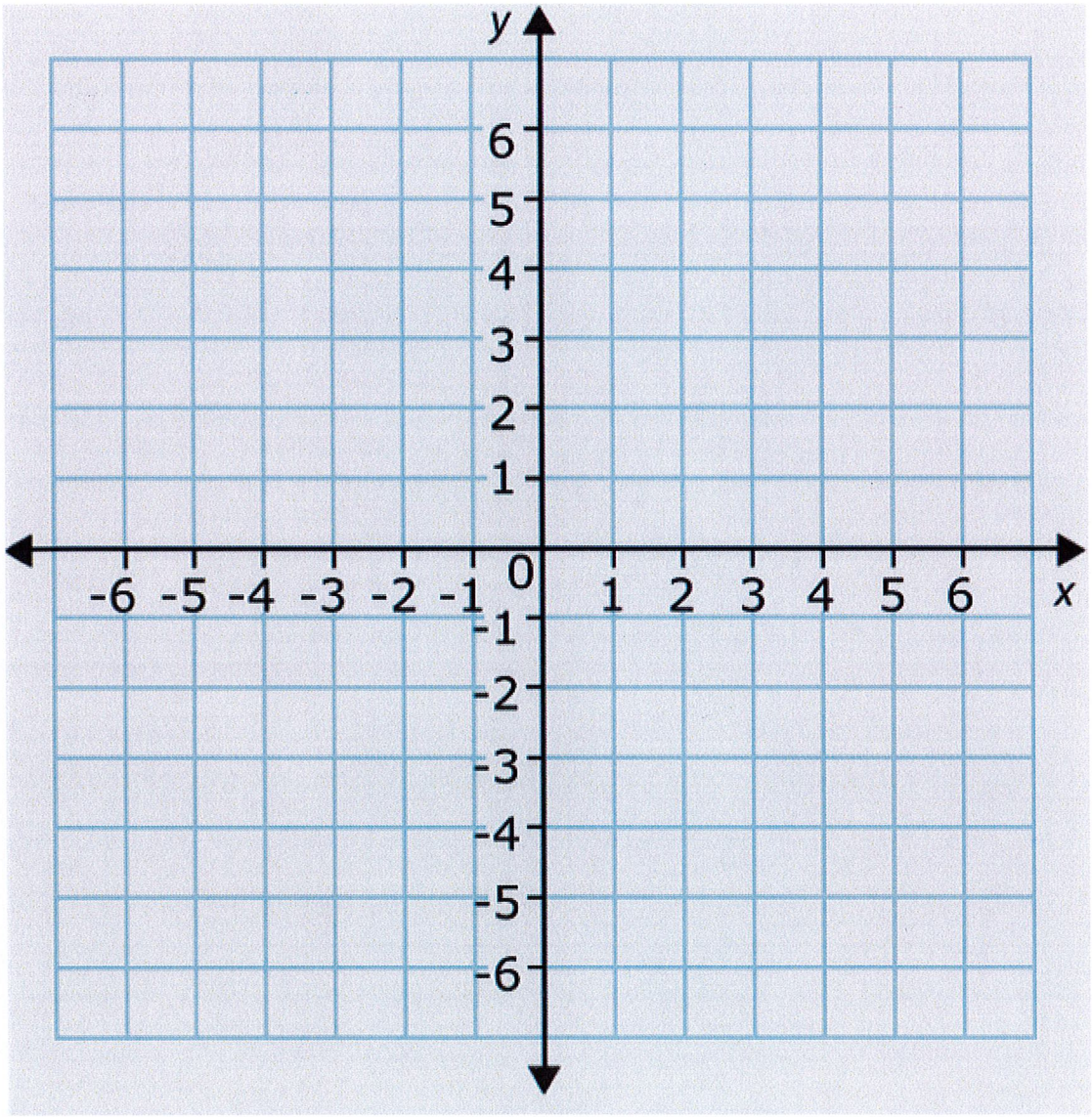
H _____	*D* _____	*B* _____	*S* _____
F _____	*Q* _____	*C* _____	*U* _____

Challenge!

Plot and label the point *Y* (-3.5, -1.5) on the coordinate plane.

What quadrant is point *Y* found in? _____

Complete the following problems using the grid below. Problems #1-4 can all be graphed on the same grid.



1. **Plot the following points:** (0,0), (0,2), (2,2), and (2,0).
   Connect each point to the next one with a straight line.

   - What shape have you drawn? _____
   - Calculate the area and perimeter of the shape.

     Perimeter: _____

     Area: _____

2. **Plot the following points: (0,3), (0,6), (4,3).**
Connect each point to the next one with a straight line.

- What shape have you drawn? _____
- Compute the area of the shape: _____

3. **Plot the following points: (-2,0), (-6,0), (-6,3) and (-3,3).**

- What shape have you drawn? _____
- Compute the area of the shape: _____

4. **Plot the point (-6,5). Label it Point A.**

- Reflect Point A in the x-axis and label that point, Point B.
- Then, reflect Point B in the y-axis, and label the new point, Point C.

What are the coordinates of Point C? _____

Dividing Fractions

The following example explains *why* we multiply by the reciprocal to divide fractions:

Example:

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

Think: $1 \div \frac{1}{3} = \frac{3}{1}$

So, $\frac{3}{4} \div \frac{1}{3} = \frac{3}{4} x \frac{3}{1} = \frac{9}{4} = 2\frac{1}{4}$

Check your answer for each problem using multiplication:

Does $\frac{9}{4} x \frac{1}{3}$ equal $\frac{3}{4}$?

If so, your answer to the division is correct!

To divide fractions, then, you **multiply by the reciprocal** of the divisor:

For the example above, $\frac{3}{4} \div \frac{1}{3}$,

you would ***multiply ¾ by the reciprocal of ⅓.***

So, $\frac{3}{4} \div \frac{1}{3} = \frac{3}{4} x \frac{3}{1} = \frac{9}{4} = 2\frac{1}{4}$

Please show all your work (including the multiplication check) for each problem!

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1. $\frac{7}{4} \div \frac{2}{5}$

Multiplication check:

2. $\frac{2}{9} \div \frac{2}{7}$

Multiplication check:

3. $\frac{2}{3} \div \frac{3}{5}$

Multiplication Check:

4. $4 \div \frac{2}{9}$

Multiplication Check:

5. $4\frac{1}{3} \div \frac{1}{5}$

Multiplication Check:

Ratios & Proportions

Set up a proportion to solve each problem. Show all work, and label all answers.

1. The ratio of boys to girls in a class room is 7 to 11. If there are a total of 49 boys in the classroom, then how many boys and girls are there altogether?

2. If two pounds of meat will serve 5 people, how many pounds will be needed to serve 13 people?

3. Mr. Johnson was paid $190 for a job that required 40 hours of work. At this rate, how much should he be paid for a job requiring 60 hours of work?

4. A certain shade of green paint is made from 5 parts yellow mixed with three parts blue. If 2 cans of yellow are used, how many cans of blue should be used?

5. If a four-pound roast takes 150 minutes to cook, how long should a five-pound roast take?

6. A recipe calls for 2 ½ cups of flour to make 2 dozen cookies. How many cups of flour would be required to bake 15 dozen cookies?

7. A crew of loggers cleared ½ acre of lumber in 4 days. How long will it take the same crew to clear 2 ¼ acres of lumber?