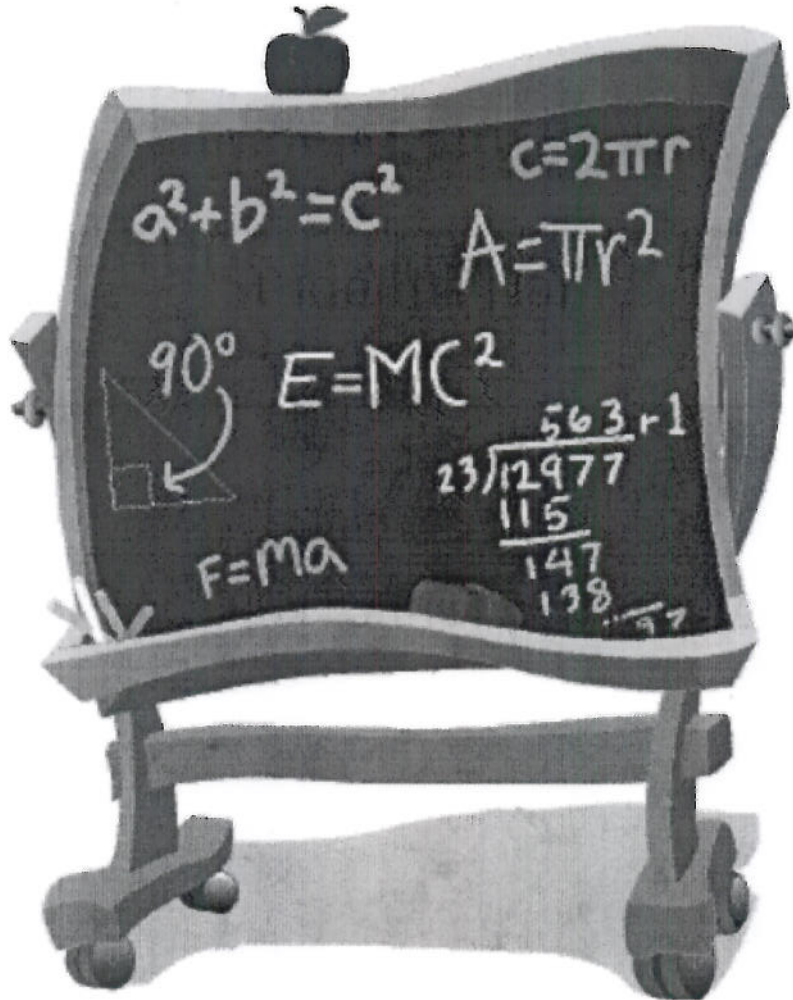# Student's Name

_____

Summer Math Packet

FOR STUDENTS ENTERING MATH 7

Dear Students,

Summer vacation is almost here and the start of the new school year is just around the corner. We want you to be prepared for the upcoming school year. It is important that you have a smooth transition to your new math class at the beginning of the school year. With this in mind, we are providing a practice workbook of previously taught skills for you to complete over the summer.

It is your responsibility to complete the workbook before the start of the school year. Please follow the directions for calculator use on each page. You should show all necessary work so that you and your teacher can both understand how you resolved the problems. If you have trouble on some of the information, seek assistance from a parent/guardian or other adult who may be able to assist you. We have also included some websites which may assist you in completing the workbook. Remember the goal is to work consistently throughout the summer and not to rush to finish the workbook quickly.

You will receive an answer key for the workbook upon your return from summer vacation. You will be expected to seek help from your teacher on any topics that you found challenging. You will be able to demonstrate your knowledge of these concepts on a pre-assessment which will be graded for accuracy.

We look forward to seeing you in the fall.

Sincerely,

LPMS Mathematics Department

Websites for additional support and practice:

Kahn Academy	https://www.khanacademy.org/
Xtra math	http://xtramath.org/
Learn Zillion	http://learnzillion.com/
Purple math	http://www.purplemath.com/
IXL	http://www.ixl.com/
Math is fun	http://www.mathisfun.com/

Rename Fractions, Percents, and Decimals

Hints/Guide:

To convert between fractions and percents, we must first convert fractions into decimals: We start with the fraction, such as $\frac{3}{5}$, and divide the numerator (the top number of a fraction) by the denominator (the bottom number of a fraction). So:

$$\begin{array}{r} 6 \\ \hline 5 \mid 3.0 \\ \underline{-\ 30} \\ 0 \end{array} \qquad \frac{3}{5} \text{ is equivalent to } 0.6 \quad \text{OR}$$

$$\begin{array}{r} 0.22 \ldots \\ \hline 9 \mid 2.00 \end{array} \qquad \frac{2}{9} \text{ is equivalent to } 0.\overline{2}$$

To convert a decimal to a percent, we multiply the decimal by 100 (percent means a ratio of a number compared to 100). A short-cut is sometimes used of moving the decimal point two places to the right (which is equivalent to multiplying a decimal by 100, so

$$0.6 \times 100 = 60 \text{ and} \qquad \frac{3}{5} = 0.6 = 60\%$$

To convert a percent to a decimal, we divide the percent by 100,
$$60\% \div 100 = 0.6 \qquad \text{so} \qquad 60\% = 0.6$$

Exercises: **SHOW ALL WORK**   **No Calculators!**

Rename each fraction as a decimal:

1. $\frac{1}{5} =$ 2. $\frac{3}{4} =$ 3. $\frac{1}{2} =$

4. $\frac{1}{3} =$ 5. $\frac{8}{10} =$ 6. $\frac{2}{3} =$

Rename each fraction as a percent:

7. $\frac{1}{5} =$ 8. $\frac{3}{4} =$ 9. $\frac{1}{2} =$

10. $\frac{1}{3} =$ 11. $\frac{8}{10} =$ 12. $\frac{2}{3} =$

Rename each percent as a decimal:

13. $8\% =$ 14. $60\% =$ 15. $11\% =$

16. $12\% =$ 17. $40\% =$ 18. $95\% =$

Add Mixed Numbers

Hints/Guide:

When adding mixed numbers, we add the whole numbers and the fractions separately, then simplify the answer. For example:

$$4\frac{1}{3} = 4\frac{8}{24}$$
$$+2\frac{6}{8} = 2\frac{18}{24}$$
$$6\frac{26}{24} = 6 + 1\frac{2}{24} = 7\frac{2}{24} = 7\frac{1}{12}$$

First, we convert the fractions to have the same denominator, then add the fractions and add the whole numbers. If needed, we then simplify the answer.

Exercises: Solve in lowest terms: **No Calculators!**
SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1.
$$2\frac{1}{4}$$
$$+8\frac{1}{2}$$

2.
$$3\frac{8}{15}$$
$$+7\frac{1}{3}$$

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

4.
$$5\frac{5}{8}$$
$$+4\frac{1}{4}$$

5.
$$7\frac{3}{7}$$
$$+6\frac{1}{2}$$

6.
$$5\frac{5}{9}$$
$$+1\frac{1}{3}$$

7.
$$4\frac{2}{3}$$
$$+6\frac{3}{4}$$

8.
$$1\frac{2}{3}$$
$$+6\frac{1}{4}$$

9.
$$1\frac{6}{9}$$
$$+5\frac{2}{3}$$

Subtract Mixed Numbers

Hints/Guide:

When subtracting mixed numbers, we subtract the whole numbers and the fractions separately, then simplify the answer. For example:

$$7\frac{3}{4} = 7\frac{18}{24}$$
$$-2\frac{15}{24} = 2\frac{15}{24}$$
$$5\frac{3}{24} = 5\frac{1}{8}$$

First, we convert the fractions to have the same denominator, then subtract the fractions and subtract the whole numbers. If needed, we then simplify the answer.

Exercises: Solve in lowest terms: **No Calculators!**
SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1.
$$\begin{array}{r} 4\frac{1}{3} \\ -2\frac{1}{4} \\ \hline \end{array}$$

2.
$$\begin{array}{r} 6\frac{1}{4} \\ -\frac{2}{3} \\ \hline \end{array}$$

3.
$$\begin{array}{r} 9\frac{2}{3} \\ -6\frac{1}{4} \\ \hline \end{array}$$

4.
$$\begin{array}{r} 6\frac{3}{4} \\ -5\frac{1}{5} \\ \hline \end{array}$$

5.
$$\begin{array}{r} 7\frac{1}{2} \\ -3\frac{1}{4} \\ \hline \end{array}$$

6.
$$\begin{array}{r} 3\frac{1}{2} \\ -2\frac{7}{10} \\ \hline \end{array}$$

7.
$$\begin{array}{r} 9\frac{7}{10} \\ -4\frac{3}{4} \\ \hline \end{array}$$

8.
$$\begin{array}{r} 8\frac{5}{6} \\ -5\frac{1}{3} \\ \hline \end{array}$$

9.
$$\begin{array}{r} 6\frac{1}{6} \\ -4\frac{5}{8} \\ \hline \end{array}$$

Multiply Fractions and Solve Proportions

Hints/Guide:

To multiply mixed numbers, first we convert the mixed numbers into improper fractions. Then simplify before you multiply or just multiply the numerators and then the denominators. Then we simplify the answer:

$$4\frac{1}{5} \cdot 1\frac{1}{14} = \frac{21}{5} \cdot \frac{15}{14} = then \; \frac{21}{5} \cdot \frac{15}{14} = \frac{3}{1} \cdot \frac{3}{2} = \frac{9}{2} = 4\frac{1}{2}$$

To solve proportions, one method is to determine the multiplying factor of the two equal ratios. For example:

$$\frac{4}{9} = \frac{24}{x}$$ since 4 is multiplied by 6 to get 24, we multiply 9 by 6, so $\frac{4}{9} = \frac{24}{54}$.

Since the numerator of the fraction on the right must be multiplied by 6 to get the numerator on the left, then we must multiply the denominator of 9 by 6 to get the missing denominator, which must be 54.

Exercises: Solve (For problems 8 - 15, solve for N): **No Calculators!**
SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

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

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

3. $7\frac{1}{8} \cdot 6 =$

4. $4\frac{3}{4} \cdot 1\frac{1}{5} =$

5. $3\frac{3}{4} \cdot 2\frac{2}{10} =$

6. $4\frac{1}{2} \cdot 1\frac{1}{6} =$

7. $7 \cdot \frac{1}{4} =$

8. $\frac{1}{5} = \frac{n}{20}$

9. $\frac{3}{n} = \frac{12}{28}$

10. $\frac{1}{n} = \frac{5}{25}$

11. $\frac{n}{4} = \frac{3}{12}$

12. $\frac{3}{7} = \frac{12}{n}$

13. $\frac{n}{9} = \frac{12}{27}$

14. $\frac{2}{3} = \frac{18}{n}$

15. $\frac{2}{7} = \frac{n}{21}$

Divide Mixed Numbers

Hints/Guide:

To divide mixed numbers, we must first convert to improper fractions using the technique shown in multiplying mixed numbers. Once we have converted to improper fractions, the process is the same as dividing regular fractions. For example:

$$2\frac{1}{2} \div 3\frac{1}{3} = \frac{5}{2} \div \frac{10}{3} = \frac{5}{2} \bullet \frac{3}{10} = \frac{15}{20} = \frac{3}{4} \qquad 3\frac{1}{2} \div 8\frac{2}{3} = \frac{7}{2} \div \frac{26}{3} = \frac{7}{2} \bullet \frac{3}{26} = \frac{21}{52}$$

Exercises: Solve and place your answer in lowest terms: **No Calculators!**
SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

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

2. $4\frac{4}{7} \div \frac{4}{9} =$

3. $\frac{8}{9} \div 2\frac{3}{5} =$

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

5. $3\frac{2}{3} \div 4\frac{3}{7} =$

6. $\frac{3}{4} \div 2\frac{3}{11} =$

7. $6\frac{1}{5} \div 8\frac{2}{5} =$

8. $8\frac{2}{7} \div 7\frac{8}{9} =$

9. $6\frac{4}{7} \div 3\frac{3}{5} =$

Add and Subtract Decimals

Hints/Guide:

When adding and subtracting decimals, the key is to line up the decimals above each other, add zeros to have all of the numbers have the same place value length, then use the same rules as adding and subtracting whole numbers, with the answer having a decimal point in line with the problem. For example:

$$34.5 + 6.72 + 9.045 = \begin{array}{r} 34.5 \\ 6.72 \\ + 9.045 \end{array} = \begin{array}{r} 34.500 \\ 6.720 \\ + 9.045 \\ \hline 50.265 \end{array} \qquad \text{AND} \qquad 5 - 3.25 = \begin{array}{r} 5.00 \\ - 3.25 \\ \hline 1.75 \end{array}$$

Exercises: Solve: **No Calculators!**

SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. $15.7 + 2.34 + 5.06 =$

2. $64.038 + 164.8 + 15.7 =$

3. $2.6 + 64.89 + 4.007 =$

4. $12.9 + 2.008 + 75.9 =$

5. $\begin{array}{r} 543.8 \\ 27.64 \\ + 6.9 \end{array}$

6. $2.6 + 4.75 =$

7. $43.31 + 7.406 =$

8. $\begin{array}{r} 64.9 \\ 343.6 \\ + \quad 6.007 \end{array}$

9. $6.45 + 54.9 =$

10. $3.8 + .76 + .008 =$

11. $87.4 - 56.09 =$

12. $5.908 - 4.72 =$

Multiply and Divide Decimals

Hints/Guide:

To multiply decimals, the rules are the same as with multiplying whole numbers, until the product is determined and the decimal point must be located. The decimal point is placed the same number of digits in from the right of the product as the number of decimal place values in the numbers being multiplied. For example:

8.54 x 17.2, since 854 x 172 = 146888, then we count the number of decimal places in the numbers being multiplied, which is three, so the final product is 146.888 (the decimal point comes three places in from the right).

To divide decimals by a whole number, the process of division is the same, but the decimal point is brought straight up from the dividend into the quotient. For example:

$$\frac{17.02}{3 \mid 51.06}$$ The decimal point moves straight up from the dividend to the quotient.

Exercises: Solve: **No Calculators!**
SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. 63	2. .87	3. 8.94	4. 4.2
x .14	x 2.3	x 2.1	x .62

5. 34.5	6. 32.1	7. 91.4	8. 3.9
x 4.7	x .45	x 47	x 11

9. $35\overline{)70.35}$ 10. $.7\overline{)25.83}$ 11. $.14\overline{)45.584}$

Find Percent of a Number

Hints/Guide:

To determine the percent of a number, we must first convert the percent into a decimal by dividing by 100 (which can be short-cut as moving the decimal point in the percentage two places to the left), then multiplying the decimal by the number. For example:

$$45\% \text{ of } 240 = 45\% \times 240 = 0.45 \times 240 = 108$$

Exercises: Solve for n: **No Calculators!**

SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. 30% of 450 = n

2. 7% of 42 = n

3. 10% of 321 = n

4. 15% of 54 = n

5. 65% of 320 = n

6. 80% of 64 = n

7. 9% of 568 = n

8. 15% of 38 = n

9. 25% of 348 = n

10. 85% of 488 = n

11. 90% of 750 = n

12. 6% of 42 = n

13. 60% of 78 = n

14. 4% of 480 = n

15. 10% of 435 = n

16. 24% of 54 = n

Find the Average of a Set of Numbers

Hints/Guide:

To find the average of a set of numbers, we add together all of the numbers and then divide by how many numbers are in the data set. For example:

If the tests scores are 73, 87, 94, 84, 92, and 95, then we add the scores together: 73 + 87 + 94 + 84 + 92 + 95 = 525, and since there are 6 numbers in the data set, we divide 527 by 6 and get the quotient of 87.5.

Exercises: **No Calculators!**
SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

For problem 1, use the following chart

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	65	68	72	74	68
2	68	75	80	68	75
3	75	74	69	79	80
4	80	82	76	67	79

1. Find the average (mean) temperature for:

    Monday _____   Tuesday _____   Wednesday _____

            Thursday _____   Friday _____

2. If George has test scores of 85, 88, 92, and 87, what is his average (mean) score?

    Challenge: Using the same test scores for George, what would his fifth test score need to be to have an average (mean) grade of 90?

3. If Tina's bowling scores were 120, 155, 145, 162, and 138, what was her average (mean) score?

    Challenge: What would Tina's score need to be in the sixth game if she wanted an average over those six games of 145?

Solve Problems using Percent

Hints/Guide:

When solving percent problems, we apply the rules for finding percent of a number in realistic situations. For example, to find the amount of sales tax on a $450.00 item if the tax rate is 5%, we find 5% of 450 (.05 x 450 = 22.5), and then label our answer in dollars, getting $22.50.

Exercises: **No Calculators!**
SHOW ALL WORK. Use a separate sheet of paper (if necessary) and staple to this page.

1. Susie has just bought a pair of jeans for $45.00, a sweater for $24.00, and a jacket for $85.00. The sales tax is 5%. What is her total bill?

2. Jack bought a set of golf clubs for $250.00 and received a rebate of 20%. How much was the rebate?

3. A construction manager calculates it will cost $2,890 for materials for her next project. She must add in 10% for scrap and extras. What will be the total cost?

4. The regular price for a video game system is $164.50 but is on sale for 30% off. What is the amount of the discount?

   What is the sale price?

5. Cindy earns a 15% commission on all sales. On Saturday, she sold $980 worth of merchandise. What was the amount of commission she earned on Saturday?

6. The band had a fundraiser and sold $25,000 worth of candy. They received 40% of this amount for themselves. How much did they receive?