HARRISBURG
CHRISTIAN SCHOOL

Summer Math

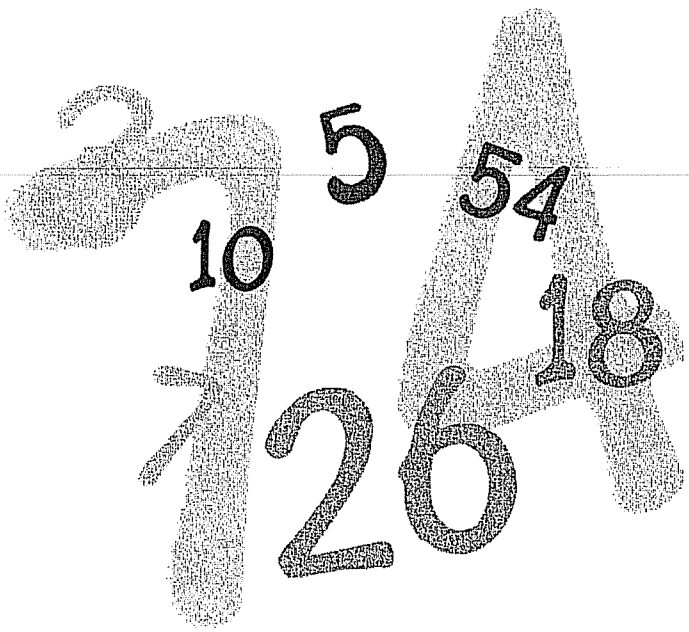
for students entering

Math 7

MATH INSTRUCTIONS

This year's math portion of the summer packet has several new features:

- ✓ There are fewer problems than in previous years.
- ✓ An answer key will be posted on the web by mid-July. An email will be sent home to remind students of its availability.
- ✓ Students will be asked to correct their own work, showing their corrections clearly by using a red writing utensil.
- ✓ The math work will be collected at the beginning of the new school year, and will be recorded as a homework grade.
- ✓ The students will take an assessment on the material reviewed during the summer, in order to determine their strengths and weaknesses in preparation for the new school year.
- ✓ We will still have tutoring opportunities over the summer, on July 28 and August 16, 9AM to 11AM.



Adding and Subtracting Decimals

To add or subtract decimal numbers, first line up the decimal points, then add or subtract.

$$5.25 + 1.7 \Rightarrow \begin{array}{r} 5.25 \\ 1.7 \\ \hline 6.95 \end{array}$$

In subtraction, be careful to add zeros as necessary so that you have the same number of decimal places. Then you can borrow.

$$6.4 - 3.271 \Rightarrow \begin{array}{r} 6.4\textit{00} \\ 3.271 \\ \hline 3.129 \end{array}$$

Put in column form and add:

1. $6.9 + 7.3 + 3.2 =$

2. $5.04 + 7.8 + 16.25 =$

3. $3.98 + 7.4 + 6.19 =$

4. $20.5 + 3.89 + 16.21 =$

5. $7.345 + 6.897 =$

6. $5.062 + 7.3 + 16.8 =$

Put in column form and subtract:

7. $45.097 - 7.895 =$

8. $5.6 - 4.2 =$

9. $6.09 - 3.896 =$

10. $3.21 - 1.068 =$

11. $7.54 - 6.3 =$

12. $2.5 - 1.612 =$

Multiplying Decimals

To multiply decimal numbers, first multiply the numbers, then count the number of decimal places in both numbers together. Put the decimal point in your answer so that you have that number of places after the decimal.

$$\begin{array}{r} 0.2 \\ \times\ 0.8 \\ \hline 1.6 \end{array} \quad \begin{array}{l} \Leftarrow \text{ 2 decimal places} \\ \\ \Leftarrow \text{ 2 decimal places} \end{array}$$

Find each product:

1. $1.89 \times .7$

2. $9.84 \times .5$

3. $6.95 \times .8$

4. $2.436 \times .7$

5. $.654 \times 3.2$

6. 9.05×8.9

7. 1.46×9.8

8. 35.98×6.5

9. $.106 \times .04$

10. $5.1 \times .002$

11. $.07 \times .09$

12. $.71 \times .09$

Dividing Decimals

To divide decimal numbers, first move any decimal point in the divisor to the right as many places as necessary to make it a whole number. Then move the decimal point in the dividend the same number of places to the right. If necessary, add zeros to the dividend. Line up the decimal point in the quotient above the decimal point in the dividend.

Example: $0.7\overline{)0.42}$

Step 1: $7\overline{)4.2}$

Step 2:
$$\begin{array}{r} .6 \\ 7\overline{)4.2} \end{array}$$

Example: $0.02\overline{)0.3}$

Step 1: $02\overline{)30}$

Step 2:
$$\begin{array}{r} 15 \\ 2\overline{)30} \end{array}$$

Find each quotient: *(remember to add zeros as necessary until you have no remainder)*

1. $0.08\overline{)0.4}$

2. $0.5\overline{)0.125}$

3. $0.4\overline{)0.08}$

4. $0.007\overline{)4.9}$

5. $9\overline{)60.3}$

6. $.9\overline{)4.716}$

7. $2.3\overline{)1329.4}$

8. $.54\overline{)48.276}$

9. $6.1\overline{)3.5441}$

10. $3.29\overline{)2.5333}$

11. $5\overline{)44}$

12. $8\overline{)14}$

Adding and Subtracting Mixed Numbers

$$\begin{array}{r} 2\frac{1}{2} = 2\frac{4}{8} \\ +3\frac{5}{8} = 3\frac{5}{8} \\ \hline \frac{9}{8} \end{array}$$

Write equal fractions with a common denominator of 8. Add the fractions to get $\frac{9}{8}$.

$$\begin{array}{r} 2\frac{1}{2} = 2\frac{4}{8} \\ +3\frac{5}{8} = 3\frac{5}{8} \\ \hline \end{array}$$

Add the whole numbers to get 5.

$5\frac{9}{8} = 5 + 1\frac{1}{8} = 6\frac{1}{8}$ Rename $5\frac{9}{8}$ as $6\frac{1}{8}$.

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

2. $5\frac{6}{10}$
$+8\frac{1}{5}$

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

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

5. $8\frac{1}{2}$
$-1\frac{1}{6}$

6. $6\frac{7}{8}$
$-3\frac{1}{2}$

7. $3\frac{2}{5}$
$+1\frac{7}{10}$

8. $5\frac{2}{4}$
$+1\frac{2}{3}$

9. $3\frac{2}{8}$
$+\frac{1}{3}$

10. $4\frac{13}{16}$
$-1\frac{1}{4}$

11. $10\frac{8}{10}$
$-4\frac{2}{5}$

12. $9\frac{1}{2}$
$-2\frac{1}{5}$

Subtracting Mixed Numbers with Renaming

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

You cannot subtract the fractions because $\frac{4}{5}$ is greater than $\frac{1}{5}$.
You need to rename $4\frac{1}{5}$ to get more fifths.

$$\begin{array}{r} 4\frac{1}{5} = 3\frac{6}{5} \\ -2\frac{4}{5} = 2\frac{4}{5} \\ \hline \end{array}$$

Rename $4\frac{1}{5}$:

$$\begin{aligned} 4\tfrac{1}{5} &= 3 + 1 + \tfrac{1}{5} \\ &\quad\downarrow \quad\downarrow \quad\downarrow \\ &= 3 + \tfrac{5}{5} + \tfrac{1}{5} \\ &= 3\tfrac{6}{5} \end{aligned}$$

$$\begin{array}{r} 4\frac{1}{5} = 3\frac{6}{5} \\ -2\frac{4}{5} = 2\frac{4}{5} \\ \hline 1\frac{2}{5} \end{array}$$

Subtract the fractions to get $\frac{2}{5}$.

Subtract the whole numbers to get 1.

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

2. $7\frac{1}{6} - 1\frac{4}{6}$

3. $4\frac{2}{9} - \frac{5}{9}$

4. $7\frac{1}{2} - 2\frac{3}{4}$

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

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

7. $4 = 3\frac{2}{2}$
$-1\frac{1}{2} = 1\frac{1}{2}$

8. $5 - 3\frac{2}{3}$

9. $8 - 3\frac{3}{8}$

10. $10\frac{1}{4} - 5\frac{1}{3}$

11. $9 - 2\frac{5}{6}$

12. $4\frac{1}{4} - \frac{3}{4}$

Name _____ Date _____ Class _____

LESSON 4-7

Reteach

Mixed Numbers and Improper Fractions

A proper fraction is a fraction whose numerator is less than its denominator.

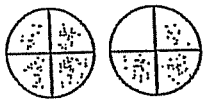
$\frac{2}{3}$, $\frac{1}{4}$, and $\frac{2}{7}$ are examples of proper fractions.

An improper fraction is a fraction whose numerator is greater than or equal to its denominator.

$\frac{3}{2}$, $\frac{8}{3}$, and $\frac{5}{5}$ are examples of improper fractions.

Some improper fractions can be written as mixed numbers.

To write $\frac{7}{4}$ as a mixed number, draw circles divided into $\frac{1}{4}$ sections. Then shade in 7 of the $\frac{1}{4}$ sections.



There is one circle and $\frac{3}{4}$ of a circle shaded.

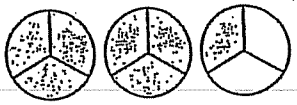
So, $\frac{7}{4} = 1\frac{3}{4}$.

Write each improper fraction as a mixed number.

1. $\frac{14}{3}$ _____
2. $\frac{11}{2}$ _____
3. $\frac{15}{4}$ _____
4. $\frac{19}{6}$ _____

Mixed numbers can be written as improper fractions.

To write $2\frac{1}{3}$ as an improper fraction, draw 3 circles. Divide each circle into $\frac{1}{3}$ sections. Next, shade in 2 whole circles and one $\frac{1}{3}$ section of the last circle.



Then find the total number of $\frac{1}{3}$ sections that are shaded.

Seven $\frac{1}{3}$ sections are shaded, so $2\frac{1}{3} = \frac{7}{3}$.

Write each mixed number as an improper fraction.

5. $3\frac{1}{4}$ _____
6. $5\frac{2}{3}$ _____
7. $4\frac{1}{2}$ _____
8. $1\frac{5}{6}$ _____

Name _____ Date _____ Class _____

LESSON 5-1

Reteach

Multiplying Fractions

To multiply fractions, multiply the numerators and multiply the denominators.

When multiplying fractions, you can sometimes divide by the GCF to make the problem simpler.

You can divide by the GCF even if the numerator and denominator of the same fraction have a common factor.

$\frac{1}{2} \cdot \frac{2}{3}$

$\frac{1}{\cancel{2}} \cdot \frac{\cancel{2}}{3}$

The problem is now $\frac{1}{1} \cdot \frac{1}{3}$.

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

So, $\frac{1}{2} \cdot \frac{2}{3} = \frac{1}{3}$

Is it possible to simplify before you multiply? If so, what is the GCF?

1. $\frac{1}{4} \cdot \frac{1}{2}$ _____
2. $\frac{1}{6} \cdot \frac{3}{4}$ _____
3. $\frac{1}{8} \cdot \frac{2}{3}$ _____
4. $\frac{1}{3} \cdot \frac{2}{5}$ _____

Multiply.

5. $\frac{1}{6} \cdot \frac{3}{5}$ _____
6. $\frac{1}{4} \cdot \frac{1}{3}$ _____
7. $\frac{7}{8} \cdot \frac{4}{5}$ _____
8. $\frac{1}{6} \cdot \frac{2}{3}$ _____
9. $\frac{1}{5} \cdot \frac{1}{2}$ _____
10. $\frac{3}{5} \cdot \frac{1}{4}$ _____
11. $\frac{3}{7} \cdot \frac{1}{9}$ _____
12. $\frac{3}{4} \cdot \frac{1}{2}$ _____

Name _____ Date _____ Class _____

LESSON 5-2

Reteach

Multiplying Mixed Numbers

To find $\frac{1}{3}$ of $2\frac{1}{2}$, first change $2\frac{1}{2}$ to an improper fraction.

$2\frac{1}{2} = \frac{5}{2}$

Then multiply as you would with two proper fractions.

Check to see if you can divide by the GCF to make the problem simpler. Then multiply the numerators and multiply the denominators.

The problem is now $\frac{1}{3} \cdot \frac{5}{2}$.

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

So, $\frac{1}{3} \cdot 2\frac{1}{2}$ is $\frac{5}{6}$.

Rewrite each mixed number as an improper fraction. Is it possible to simplify before you multiply? If so, what is the GCF?

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

$= \frac{1}{4} \cdot$ ____

_____

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

$= \frac{1}{6} \cdot$ ____

_____

3. $\frac{1}{8} \cdot 1\frac{1}{2}$

$= \frac{1}{8} \cdot$ ____

_____

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

$= \frac{1}{3} \cdot$ ____

_____

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

$\frac{\ }{3} \cdot \frac{\ }{3}$

_____

6. $1\frac{1}{2} \cdot 1\frac{1}{3}$

$\frac{\ }{2} \cdot \frac{\ }{3}$

_____

7. $1\frac{3}{4} \cdot 2\frac{1}{2}$

$\frac{\ }{4} \cdot \frac{\ }{2}$

_____

8. $1\frac{1}{6} \cdot 2\frac{2}{3}$

$\frac{\ }{6} \cdot \frac{\ }{3}$

_____

9. $3\frac{1}{3} \cdot \frac{2}{5}$

_____

10. $2\frac{1}{2} \cdot \frac{1}{5}$

_____

11. $1\frac{3}{4} \cdot 2\frac{1}{2}$

_____

12. $3\frac{1}{3} \cdot 1\frac{1}{5}$

_____

Name _____ Date _____ Class _____

LESSON 5-3

Reteach

Dividing Fractions and Mixed Numbers

Two numbers are reciprocals if their product is 1. $\frac{2}{3}$ and $\frac{3}{2}$ are reciprocals because $\frac{2}{3} \cdot \frac{3}{2} = \frac{6}{6} = 1$.

Dividing by a fraction is the same as multiplying by its reciprocal.

$\frac{1}{4} \div 2 = \frac{1}{8}$ $\qquad$ $\frac{1}{4} \cdot \frac{1}{2} = \frac{1}{8}$

So, you can use reciprocals to divide by fractions.

To find $\frac{2}{3} \div 4$, first rewrite the expression as a multiplication expression using the reciprocal of the divisor, 4.

$\frac{2}{3} \cdot \frac{1}{4}$

Then use canceling to find the product in simplest form.

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

To find $3\frac{1}{4} \div 1\frac{1}{2}$, first rewrite the expression using improper fractions.

$\frac{13}{4} \div \frac{3}{2}$

Next, write the expression as a multiplication expression.

$\frac{13}{4} \cdot \frac{2}{3}$

$3\frac{1}{4} \div 1\frac{1}{2} = \frac{13}{4} \div \frac{3}{2} = \frac{13}{4} \cdot \frac{2}{3} = \frac{13}{2} \cdot \frac{1}{3} = \frac{13}{6} = 2\frac{1}{6}$

Divide. Write each answer in simplest form.

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

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

$\frac{\quad}{\quad} \cdot \frac{\quad}{\quad}$

$\frac{\qquad}{\qquad}$

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

$\frac{3}{2} \div \frac{}{4}$

$\frac{\quad}{\quad} \cdot \frac{\quad}{\quad}$

$\frac{\qquad}{\qquad}$

3. $\frac{3}{8} \div 2$

$\frac{3}{8} \div \frac{}{1}$

$\frac{\quad}{\quad} \cdot \frac{\quad}{\quad}$

$\frac{\qquad}{\qquad}$

4. $2\frac{1}{3} \div 1\frac{3}{4}$

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

$\frac{\quad}{\quad} \cdot \frac{\quad}{\quad}$

$\frac{\qquad}{\qquad}$

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

$\frac{\qquad}{\qquad}$

6. $1\frac{1}{6} \div 2\frac{2}{3}$

$\frac{\qquad}{\qquad}$

7. $\frac{1}{8} \div 4$

$\frac{\qquad}{\qquad}$

8. $3\frac{1}{8} \div \frac{1}{2}$

$\frac{\qquad}{\qquad}$

Working with Integers

Addition:

1. **When the signs are the same, add and keep the same sign.**
2. **When the signs are different, find the difference between the two numbers, and use the sign of the "greater-looking" one.**

Subtraction:

Add the opposite (Change to addition instead of subtracting, and change the sign of the second number. Then follow the addition rules**)**

Multiplication and Division:

1. **If the signs are the same, the answer is positive.**
2. **If the signs are different, the answer is negative.**

Find the answers:

1. $-4 + 7 =$

2. $4 + (-8) =$

3. $-3 + (-6) =$

4. $-3 + 1 =$

5. $-3 - 5 =$

6. $5 - 8 =$

7. $-9 - (-7) =$

8. $2 - (-5) =$

9. $3 \times (-3) =$

10. $-5 \times (-1) =$

11. $2\overline{)-12}$

12. $-5\overline{)-20}$

Name _____ Date _____ Class _____

LESSON 8-8

Reteach

Percents, Decimals, and Fractions

You can write decimals as percents.

To write 0.5 as a percent, multiply the decimal by 100%.

$0.5 \cdot 100\% = 50\%$

To multiply a number by 100, move the decimal point two places to the right.

0.50

So, $0.5 = 50\%$.

Write each decimal as a percent.

1. 0.8 _____

2. 0.64 _____

3. 0.075 _____

4. 0.29 _____

You can solve a proportion to write a fraction as percent.

To write $\frac{3}{4}$ as a percent, first set up a proportion.

$$\frac{3}{4} = \frac{x}{100}$$

$3 \cdot 100 = 4 \cdot x$ The cross products are equal.

$300 = 4x$ x is multiplied by 4.

$\frac{4x}{4} = \frac{300}{4}$ Divide both sides by 4.

$x = 75$

So, $\frac{3}{4} = \frac{75}{100}$

$\frac{75}{100} = 75\%$, So, $\frac{3}{4} = 75\%$.

Write each fraction as a percent.

5. $\frac{4}{5}$ _____

6. $\frac{9}{10}$ _____

7. $\frac{1}{8}$ _____

8. $\frac{7}{25}$ _____

9. $\frac{1}{4}$ _____

10. $\frac{5}{6}$ _____

11. $\frac{3}{4}$ _____

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