LOUDONVILLE
CHRISTIAN SCHOOL

Geometry Summer Math Packet

Please bring this completed packet with you on the first day of school!

Have a wonderful summer!



Name: _____

Geometry

In our journey to realizing that fractions are fabulous, we're going to do some back-to-basics review. Remember these steps for working with fractions? Take a good look at these examples before you begin your set of questions.

1. Addition

Problem: $\frac{2}{5} + \frac{1}{3}$

Step-by-step:

- Find a common denominator: The least common denominator (LCD) of 5 and 3 is **15**.
- Convert each fraction:

$$\frac{2}{5} = \frac{2 \times 3}{5 \times 3} = \frac{6}{15}$$

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

- Add:

$$\frac{6}{15} + \frac{5}{15} = \frac{11}{15}$$

2. Subtraction

Problem: $\frac{4}{7} - \frac{2}{3}$

Step-by-step:

- Find a common denominator: The LCD of 7 and 3 is **21**.
- Convert each fraction:

$$\frac{4}{7} = \frac{4 \times 3}{7 \times 3} = \frac{12}{21}$$

$$\frac{2}{3} = \frac{2 \times 7}{3 \times 7} = \frac{14}{21}$$

- Subtract:

$$\frac{12}{21} - \frac{14}{21} = \frac{-2}{21}$$

3. Multiplication

Problem: $\frac{2}{3} \times \frac{5}{8}$

Step-by-step:

- Multiply numerators: $2 \times 5 = 10$
- Multiply denominators: $3 \times 8 = 24$
- Simplify:

$$\frac{10}{24} = \frac{5}{12}$$

4. Division

Problem: $\frac{3}{4} \div \frac{2}{5}$

Step-by-step:

- Keep the first fraction: $\frac{3}{4}$
- Flip the second fraction (take the reciprocal): $\frac{5}{2}$
- Multiply:

$$\frac{3}{4} \times \frac{5}{2} = \frac{15}{8}$$

Now it's your turn! Be sure to show your conversion to a common denominator for addition and subtraction, even if you can do it in your head…show me! I'm quite fond of improper fractions, but I do like them to be simplified (divide out any common factors in your answers as seen in the multiplication example). Let's do these ***without*** a calculator.

Don’t forget to show ALL of your work!

Addition:		
$\frac{3}{4} + \frac{2}{5} =$	$\frac{1}{6} + \frac{5}{8} =$	$\frac{7}{10} + \frac{3}{4} =$
Subtraction:		
$\frac{5}{6} - \frac{1}{4} =$	$\frac{7}{8} - \frac{3}{5} =$	$\frac{9}{10} - \frac{2}{3} =$
Multiplication:		
$\frac{4}{9} \times \frac{3}{8} =$	$\frac{7}{10} \cdot \frac{5}{14} =$	$\frac{2}{3}\left(\frac{9}{11}\right) =$
Division:		
$\frac{5}{6} \div \frac{2}{3} =$	$\frac{\frac{7}{8}}{\frac{1}{4}} =$	$\frac{\frac{3}{5}}{\frac{9}{10}} =$

Here are the answers:

1. $\frac{23}{20}$ 2. $\frac{19}{24}$ 3. $\frac{29}{20}$ 4. $\frac{7}{12}$ 5. $\frac{11}{40}$ 6. $\frac{7}{30}$ 7. $\frac{1}{6}$ 8. $\frac{1}{4}$ 9. $\frac{6}{11}$ 10. $\frac{5}{4}$ 11. $\frac{7}{2}$ 12. $\frac{2}{3}$

How did you do? If any of your answers were incorrect, please go back and find your mistake and fix it, but *make your corrections in a different color than you first used*. Using a different color helps us to be able to quickly identify what you may be having trouble with or that you need to be more careful with your arithmetic (I know, we've all been there.)

Now that you have these functions with fractions down pat, let's move onto some challenges. Remember, *all the same rules apply* even if the fractions look different. Make sure to use the same steps. No need to solve for x, especially since I don't give you enough information to do so. You're really just simplifying.

$\frac{x^2}{4} + \frac{x^2}{10} =$	$\frac{5}{x^2} - \frac{2}{x}$
$\frac{\frac{x^3y^5}{z^2}}{\frac{z^4}{xy^3}} =$	$\frac{3\sqrt{2}}{5} - \frac{\sqrt{2}}{3} =$
$\frac{\sin x}{\cos x} \cdot \frac{\cos x}{\sin x} =$	$\frac{\frac{\cos x}{1}}{\frac{\cos x}{\sin x}} =$

1. $\frac{7x^2}{20}$ 2. $\frac{5-2x}{x^2}$ 3. $\frac{x^4y^8}{z^6}$ 4. $\frac{4\sqrt{2}}{15}$ 5. 1 6. $\sin x$