Fraction Fun

Name _____

Class _____

Problem 1 – Addition Patterns

You will explore patterns when you add fractions. First, work with fractions that have consecutive denominators and then look at fractions that do not have consecutive fractions.

1. Use the $\boxed{b/c}$ key on the TI-73 to find answers to the following addition problems.

Describe all patterns you see in the results (starting with the ones shown at the right).

$$\frac{1}{2}+\frac{1}{3} \qquad \frac{1}{3}+\frac{1}{4} \qquad \frac{1}{4}+\frac{1}{5}$$

$$\frac{1}{5}+\frac{1}{6} \qquad \frac{1}{6}+\frac{1}{7} \qquad \frac{1}{7}+\frac{1}{8}$$

_____

_____

_____

2. Write a conjecture about the numerator and the denominator. _____

_____

_____

3. Test your conjecture on several new problems with numerator 1 and denominators of consecutive integers different from those above. Did the conjecture work? Express the fraction addition pattern algebraically. _____

_____

4. Will your pattern work for non-consecutive denominators? Investigate!

   ► Set up a table with three columns.

   ► In the column on the left, write an addition problem where the numerators are 1s and the denominators are any two nonconsecutive integers.

   ► In the middle column, first use your pattern to predict what you think the answer will be.

   ► Type the problem into the TI-73, and enter the result into column three.

   ► Compare columns two and three. Did your conjecture work? Did your pattern still work?
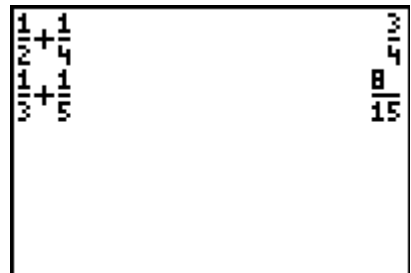
5. Circle those problems that gave answers you did not expect. What is the same?

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What is different about these problems compared to the others?

_____

What do the circled problems have in common?

_____

Can you think of what the calculator did to change the answer?

_____

Problem 2 – Subtraction Patterns

6. Change the first three addition problems that were
done in Question 1 to subtraction problems. Perform
the subtraction problems shown and describe the
pattern you see. _____

_____

7. Test the conjecture on the following problems. $\dfrac{1}{5}-\dfrac{1}{6}$ and $\dfrac{1}{6}-\dfrac{1}{7}$

Can you describe the pattern algebraically? _____

_____

8. Try these problem sets, they have patterns too!
Describe the pattern you see _____

_____

$$\frac{1}{10}-\frac{1}{9} \qquad \frac{1}{12}-\frac{1}{10} \qquad \frac{1}{10}-\frac{1}{8} \qquad \frac{1}{3}-\frac{1}{5} \qquad \frac{1}{5}-\frac{1}{8}$$

$$\frac{1}{3}-\frac{1}{10} \qquad \frac{1}{7}-\frac{1}{2} \qquad \frac{1}{7}-\frac{1}{4} \qquad \frac{1}{7}-\frac{1}{8}$$

9. Make up problems of your own and test your conjectures.

What if the numerators are not ones? _____

Make up some addition problems with numerator two, and look for a pattern. Write a
conjecture. Make up additional problems and test your conjecture.

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