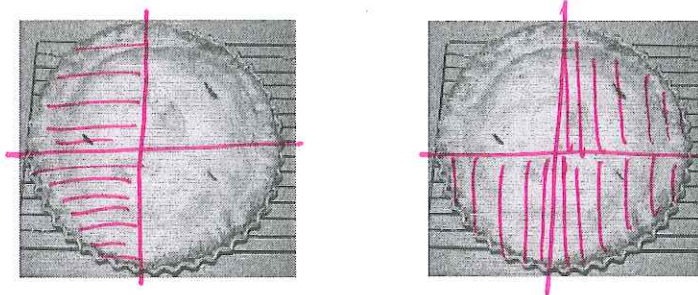Adding and Subtracting Fractions Activity
With Fraction Circle Manipulatives

Name _Solutions_

Like Denominators

1. Below are two apple pies. If you and 7 of your friends are going to eat these pies, you need 8 equal pieces. Draw lines on each pie so that each one has four equal parts.

2. Two of your friends each eat a piece from the left pie. Shade the two pieces of the pie that have been eaten.

3. Three of your friends eat pieces out of the right pie. Shade the three pieces of the pie that have been eaten.

4. You and the remaining friends decide you are not hungry and aren't going to eat the rest of the pie. They leave the remaining pie with you to take home to your kids.

   a. What fraction of the left pie is still remaining? (Don't reduce the fraction yet.)

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

   b. What fraction of the right pie is still remaining?

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

   c. Find the fraction circle pieces to represent the amount of pie that is remaining and put them together. Draw a picture of what it would look like if you put all the remaining pieces into one pie pan.

   d. Create an addition model that would represent adding the leftover pieces from the left and right pies together. (Do not use a reduced fraction for the left pie). How much pie is remaining?

   $$\frac{2}{4} + \frac{1}{4} = \frac{3}{4}$$

   Left Pie   Right Pie   Total Pie Remaining

e. What do you notice about the denominators of all the fractions? *(including the answer)*

The denominators are the same

f. What did you do with the numerators to get the final answer?

add the numerators

5. Now let's just look at only the pie on the right. You cut the pie into 4 equal parts. Before anyone ate any of the pie you had 4 parts. The fraction corresponding to the uneaten original pie is $\frac{4}{4}$.

a. Write a fraction for how much of the right pie was eaten by your friends.

$\frac{3}{4}$

b. Write a subtraction problem to model how much pie is left on the right pie.

$$\frac{4}{4} - \frac{3}{4} = \frac{1}{4}$$

Whole Pie   Right Pie Eaten   Fraction Remaining

c. What do you notice about the denominators of all the fractions? (including the answer)

They are the same

d. What did you do with the numerators to get the final answer?

subtract the numerators

6. Find the coordinating fraction circle pieces for each addition or subtraction problem below. Use them to compute your answer. Draw a picture to represent each problem and write the answer.

a. $\frac{1}{3} + \frac{1}{3}$ = **$\frac{2}{3}$**

b. $\frac{4}{6} - \frac{1}{6}$ = **$\frac{3}{6} = \frac{1}{2}$**

c. $\frac{2}{8} + \frac{3}{8}$ = **$\frac{5}{8}$**

Unlike Denominators

7. Now let's look at some pizza! You bought the pepperoni mini-pizza on the left and cut it into three equal pieces. Find the fraction circle pieces to model the left pizza and draw lines on the picture to make three equal parts.

8. Your friend bought the veggie mini-pizza on the right and cut it into two equal pieces. Find the fraction circle pieces to model the right pizza and draw a line on the picture to make two equal parts.
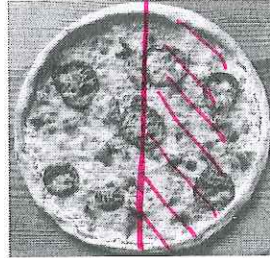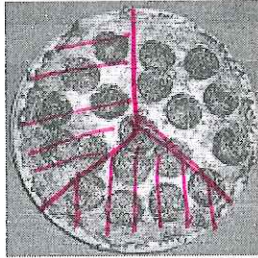
9. You ate (two pieces) of the pepperoni pizza. Shade the two of the pieces on the picture and remove the fraction circle pieces. What fraction of the pizza is remaining?

$$\frac{1}{3}$$

10. Your friend ate one piece of the veggie pizza. Shade the piece that was eaten and remove the fraction circle piece. What fraction of the pizza is remaining?

$$\frac{1}{2}$$

11. Put the remaining fraction circle pieces together to represent the total amount of pizza that is left. Draw a picture of what it would look like if you put all of the remaining pieces together in one pie pan.

$$\frac{1}{3} + \frac{1}{2} = \frac{5}{6}$$
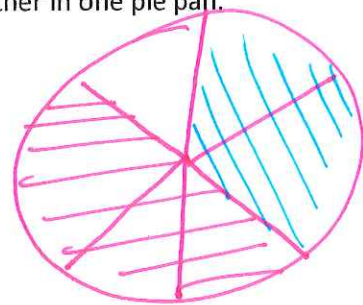
12. Is it easy to tell what fraction of the pizza is remaining? Why or why not? Discuss in your group what could be done to make it easier to see what fraction of the pizza is left.

It's not easy to tell unless the denominator is the same.

13. The problem is that halves and thirds are not the same size so we can't add them together. If you haven't already, find a smaller size fraction piece that you can use to replace both the third and the half? What is the denominator?

six

14. Now can you tell what fraction of a pizza is leftover? If so, you just found a common denominator.

$\frac{5}{6}$

15. On the pizzas below, draw lines on each pizza to represent the smaller size pieces that you found and shade the parts that have been eaten.
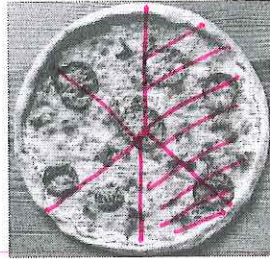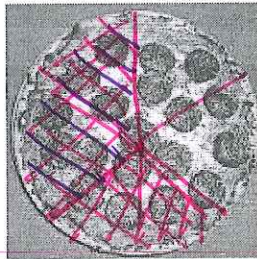
16. Write the equivalent fraction of each pizza that is now cut into smaller pieces. Then add them together.

$$\frac{2}{6} + \frac{3}{6} = \frac{5}{6}$$

Left Pizza Right Pizza   Total Fraction Remaining

17. What does the denominator of a fraction represent? What is needed to add or subtract fractions? (Discuss this in your group then write it down.)

The denominator represents the size of the piece.

18. Think about your answer in problem 16. How can you make it so the fractions have what is needed in order to add or subtract them? (Discuss this in your group then write it down.)

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

Find a common denominator
when you add or subtract the denominator stays the same