



Helping With Math

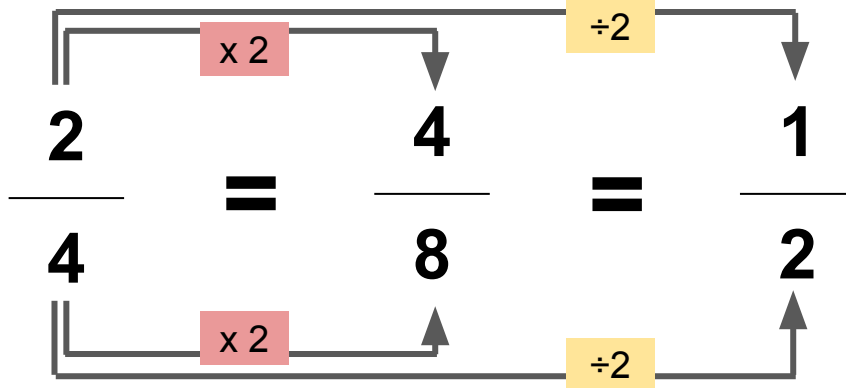
Illustrating Equivalent Fractions Using Fraction Models



GRADE 4



Equivalent fractions are fractions with different numbers representing the same part of a whole. They have different numerators and denominators, but their fractional values are the same.



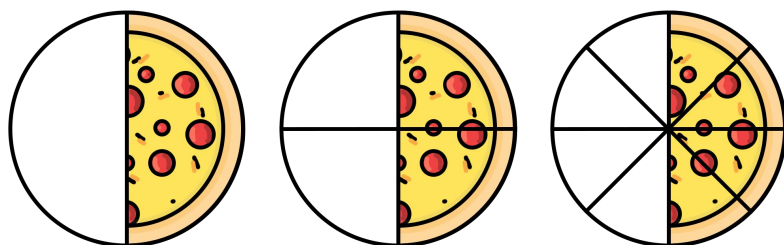
To get equivalent fractions, multiply both the numerator and denominator of a fraction by the same whole number.

Remember, whatever you do to the numerator (top number), you also do to the denominator (bottom number).



FRACTION MODELS

Take these portions of pizza for example. By looking at their fraction models, you can see that they are actually equivalent to each other.



$$\frac{1}{2} = \frac{2}{4} = \frac{4}{8}$$



In constructing fraction models, follow these simple steps:

1. Draw a shape that best represents what you are trying to model.
2. Split the shape into equal parts. The total number of portions is determined by the denominator.
3. Shade the portions indicated by the numerator.

Fraction models also work for improper fractions or mixed numbers!

$$\frac{5}{2} =$$
Three pizzas are shown. The first two pizzas are each divided into two equal halves and both are completely shaded yellow with red pepperoni. The third pizza is divided into two equal halves, with only the right half shaded yellow and topped with red pepperoni.

$$1 \frac{1}{4} =$$
Two pizzas are shown. The first pizza is divided into four equal quadrants and is completely shaded yellow with red pepperoni. The second pizza is divided into four equal quadrants, with only the top-right quadrant shaded yellow and topped with red pepperoni.

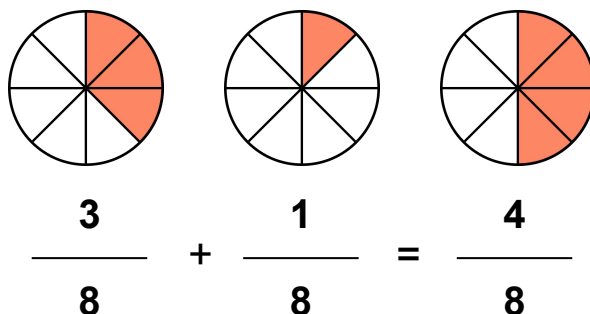
Fraction models help us visualize fraction numbers.

This makes problem solving easier!

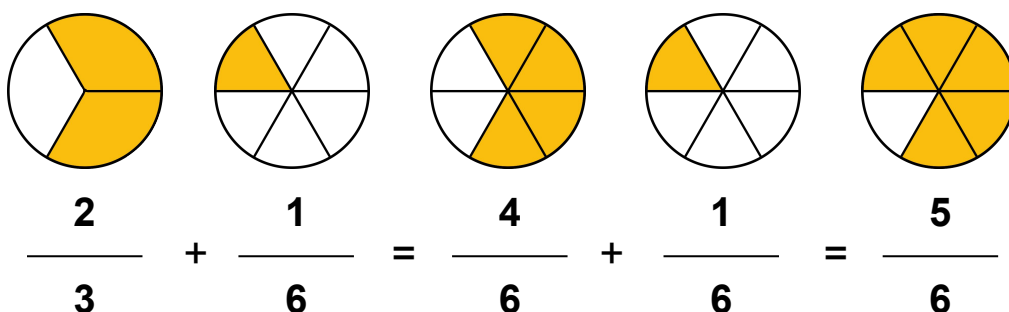


BASIC OPERATIONS

In adding or subtracting fractions with similar denominator, just add the numerators and retain the denominator.



But for two fractions with different denominators, get their equivalent fractions first so that they will have the same denominators. Then proceed to the usual addition/subtraction of fractions.



To multiply fractions, just multiply the numerators with each other. Do the same for the denominators. By using the fraction models, overlap the two models and the intersection would be the product.

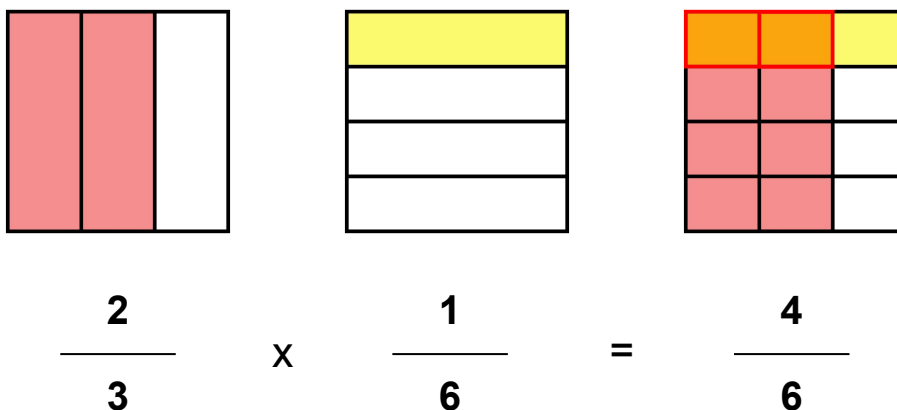


TABLE OF ACTIVITIES

1. Pour the OJ
2. Dozen of cupcakes
3. Pizza Party
4. Slice It!
5. Sandwich Portions I
6. Sandwich Portions II
7. Pie Eating Contest
8. Match It!
9. Chandler's Lemonade
10. Phoebe's Cake

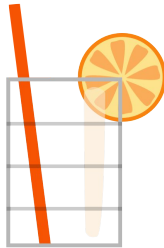


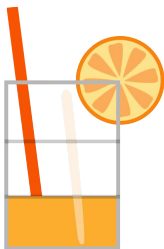
POUR THE OJ

Write in the blanks the fraction indicated by the fraction models. Pour the juice up to the level of the corresponding equivalent fraction. Do this by coloring the glasses.

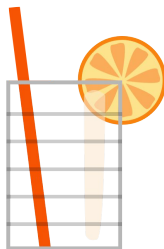


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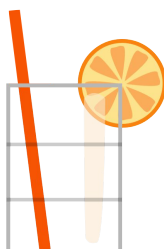


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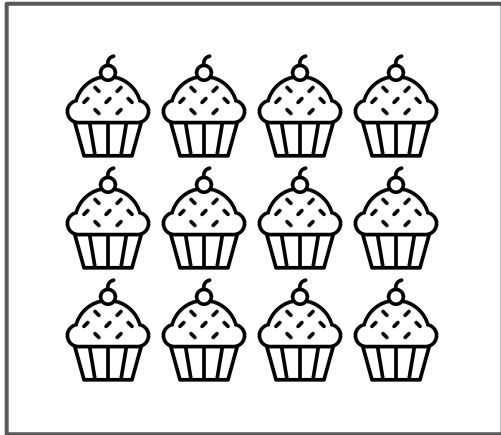


**A very warm day!
A quenching
orange juice
would be perfect!**

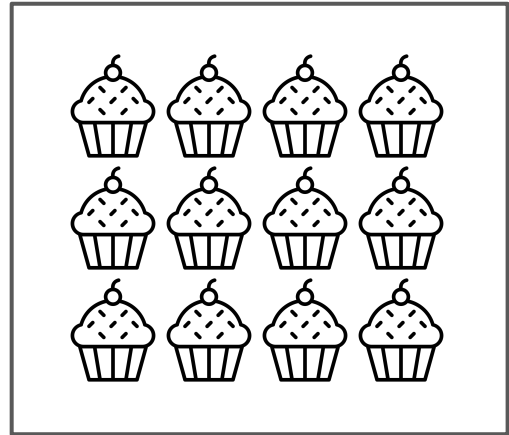


DOZEN OF CUPCAKES

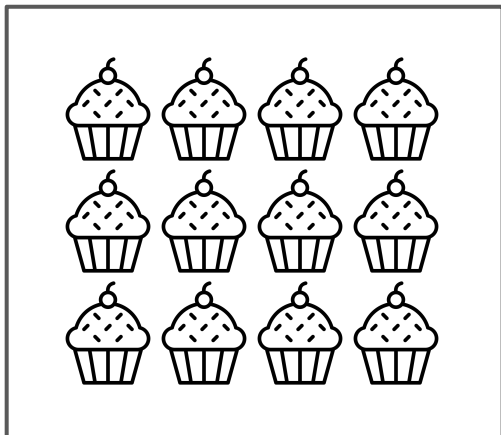
Color the cupcakes below to represent the given fractions through fraction models.



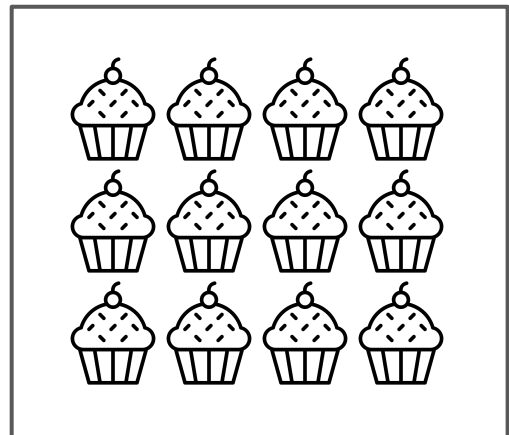
$$\frac{8}{12}$$



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



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



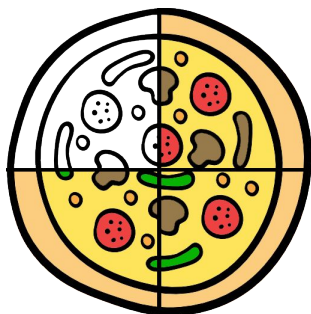
$$\frac{5}{6}$$



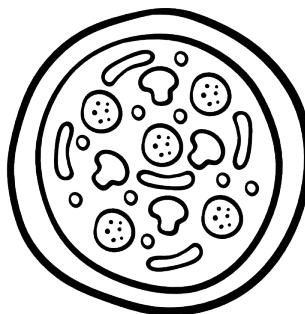
PIZZA PARTY

In the left side of the equation, write the fraction indicated by the colored portion of pizza. Then provide and illustrate an equivalent fraction for each in the right hand side.

1.a _____



=



1.b _____

2.a _____



=

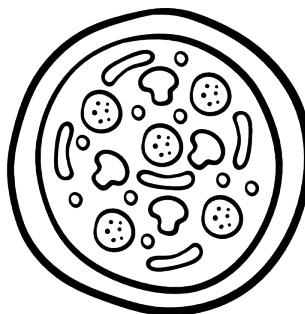


2.b _____

3.a _____



=






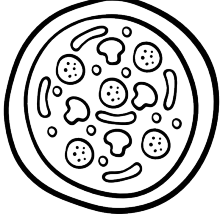
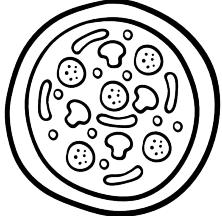

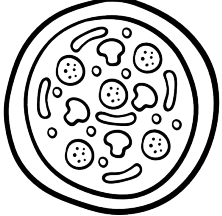

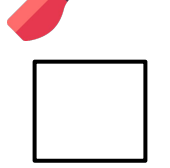



3.b _____



PIZZA SLICER

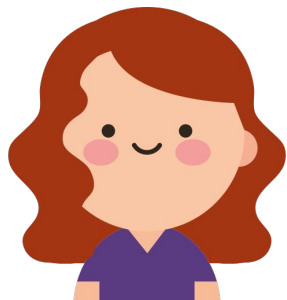
Illustrate the following in fraction models, then compare. Determine whether greater than (>), less than (<), or equal(=)

$\frac{3}{8}$				$\frac{5}{6}$
	1.a		1.b	
$\frac{1}{4}$				$\frac{2}{6}$
	2.a		2.b	
$\frac{4}{8}$				$\frac{1}{2}$
	3.a		3.b	
$\frac{1}{2}$				$\frac{3}{8}$
	4.a		4.b	

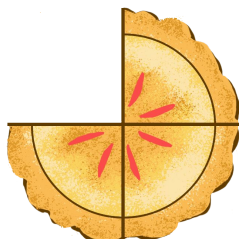


PIE EATING CONTEST

Answer the following questions. Note that the fraction models represent the pie left from each of their whole pie after eating.



Monica



How much of their pie were they able to eat?

1. Monica: _____

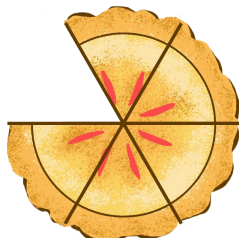
2. Ross: _____

3. Joey: _____

4. Rachel: _____



Ross



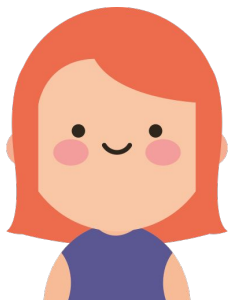
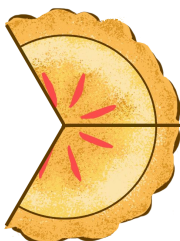
Determine who is being described.

5. Who ate the most pie?

6. Who ate the second least amount of pie?



Joey

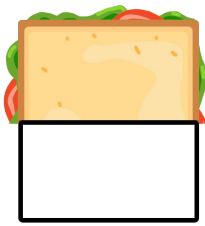


Rachel

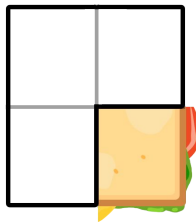


SANDWICH PORTIONS I

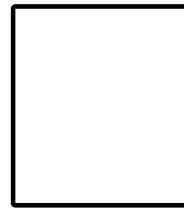
Identify the fractions represented by the fraction models, then proceed to addition. Don't forget to model the sum too.



+



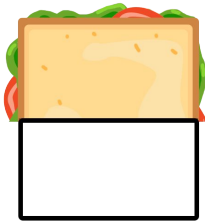
=



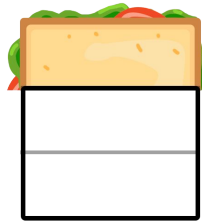
1.a _____

1.b _____

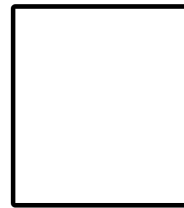
1.c _____



+



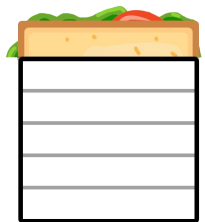
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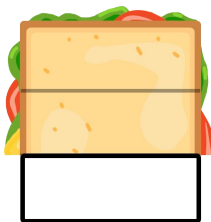
2.a _____

2.b _____

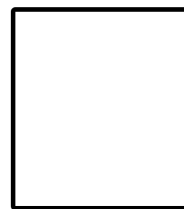
2.c _____



+



=



3.a _____

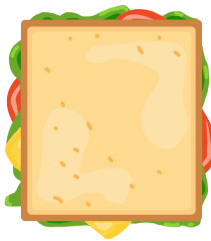
3.b _____

3.c _____



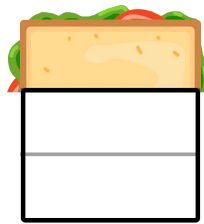
SANDWICH PORTIONS II

Identify the fractions represented by the fraction models, then proceed to subtraction. Don't forget to model the difference too.



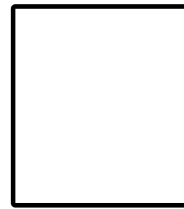
1.a _____

-

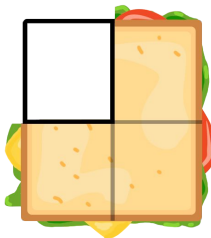


1.b _____

=

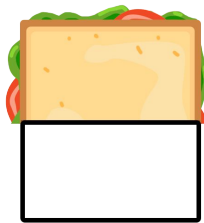


1.c _____



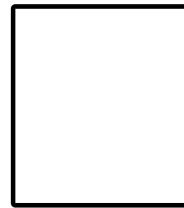
2.a _____

-

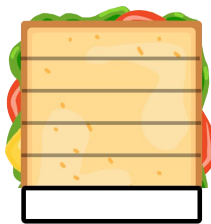


2.b _____

=

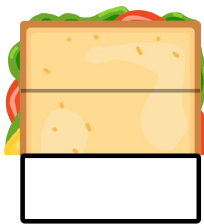


2.c _____



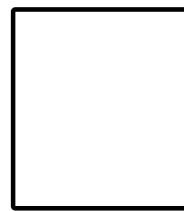
3.a _____

-



3.b _____

=



3.c _____



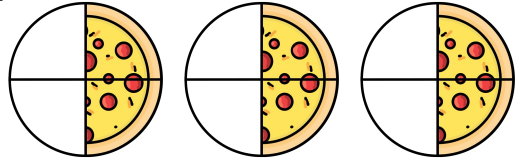
Match it!

Match the expressions to their corresponding fraction models

A

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

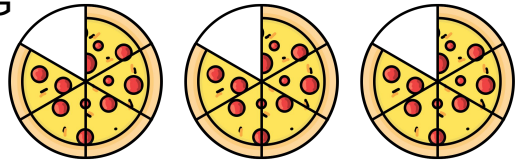
F



B

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

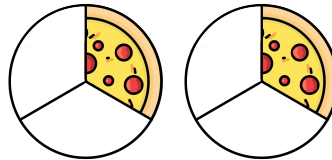
G



C

$$3 \times \frac{2}{3}$$

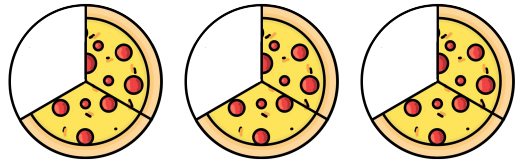
H



D

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

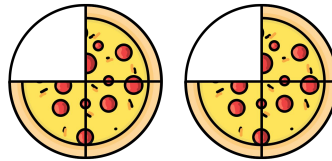
I



E

$$3 \times \frac{5}{6}$$

J



CHANDLER'S LEMONADE

Chandler would like to make lemonade to share among his friends. One serving of lemonade requires $\frac{1}{2}$ cup water, $\frac{1}{3}$ cup syrup, and $\frac{4}{6}$ cup of fresh lemon juice. Help Chandler by solving the problem. Please illustrate by using fraction models.



1. How much water does Chandler need in order to make 4 servings of lemonade?

2. How much lemon juice does Chandler need in order to make 3 servings of lemonade?

3. How much syrup does Chandler need in order to make 4 servings of lemonade?



PHOEBE'S CAKE

Phoebe bought a cake to share with Mike. They split it in half in which both of them get equal parts. Answer the problem by multiplication using fraction models.



1. Phoebe was able to finish $\frac{2}{3}$ of her share. How much portion of the cake did Phoebe eat?

2. Mike was only able to finish $\frac{1}{4}$ of his share. How much portion of the cake did Mike eat?

3. In total, how much portion of the cake did Phoebe and Mike eat?



ANSWER GUIDE

Activity 1

1.a. $\frac{1}{2}$

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

1.



2.



3.



2.a. $\frac{1}{3}$

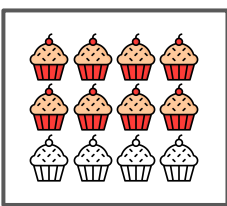
2.b. $\frac{2}{6}$

3.a. $\frac{4}{6}$

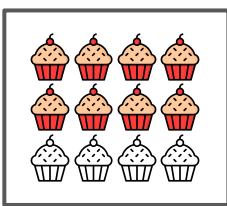
3.b. $\frac{2}{3}$

Activity 2

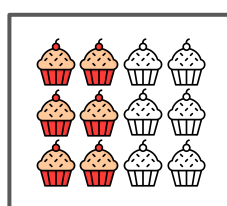
1.



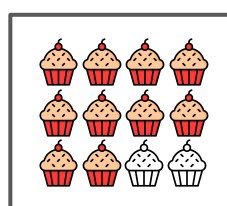
2.



3.



4.



Activity 3

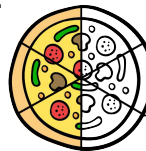
1.a. $\frac{3}{4}$

1.b. $\frac{6}{8}$

1.



2.



3.



2.a. $\frac{1}{2}$

2.b. $\frac{3}{6}$

3.a. $\frac{2}{3}$

3.b. $\frac{4}{6}$

Activity 4

1. <

1.a



2. <

2.a



3. =

3.a



4. >

4.a



1.b



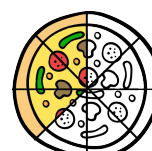
2.b



3.b



4.b

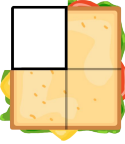




ANSWER GUIDE

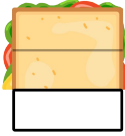
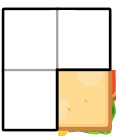

Activity 5

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

Activity 6

- | | | | | | |
|--------------------|---|--------------------|---|--------------------|---|
| 1.a. $\frac{1}{2}$ |  | 2.a. $\frac{1}{2}$ |  | 3.a. $\frac{1}{6}$ |  |
| 1.b. $\frac{1}{4}$ | | 2.b. $\frac{1}{3}$ | | 3.b. $\frac{2}{3}$ | |
| 1.c. $\frac{3}{4}$ | | 2.c. $\frac{5}{6}$ | | 3.c. $\frac{5}{6}$ | |

Activity 7

- | | | | | | |
|--------------------|--|--------------------|--|--------------------|--|
| 1.a. 1 |  | 2.a. $\frac{3}{4}$ |  | 3.a. $\frac{5}{6}$ |  |
| 1.b. $\frac{1}{3}$ | | 2.b. $\frac{1}{2}$ | | 3.b. $\frac{2}{3}$ | |
| 1.c. $\frac{2}{3}$ | | 2.c. $\frac{1}{4}$ | | 3.c. $\frac{1}{6}$ | |

Activity 8

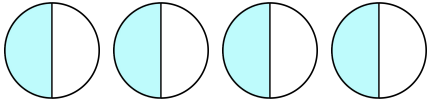
- | | |
|-------------|-------------|
| 1. A ---- H | 4. D ---- F |
| 2. B ---- J | 5. E ---- G |
| 3. C ---- I | |



ANSWER GUIDE

Activity 9

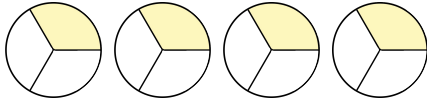
1. $4 \times \frac{1}{2} = \frac{4}{2} = 2$



2. $3 \times \frac{4}{6} = \frac{12}{6} = 2$

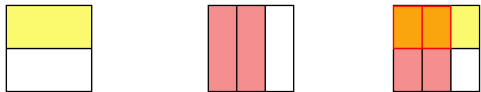


3. $4 \times \frac{1}{3} = \frac{4}{3} = 1 \frac{1}{3}$

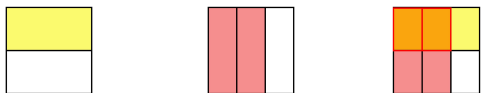


Activity 10

1. $\frac{1}{2} \times \frac{2}{3} = \frac{2}{6}$



2. $\frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$



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



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