Handout #1

FRAC-PW: Fractions -- Pieces of a Whole

Into: Pieces of a Whole

LESSON OBJECTIVE

When you complete this lesson, you will be able:

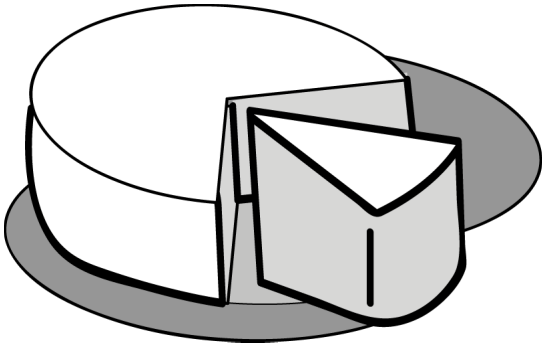
- To verbally compare and contrast the concept of whole numbers and fractions.

- To define numerator and denominator.

- To say and write out fractions in English.

- To represent fractions using manipulatables and simple drawings.

Talk About . . .



• **Whole Numbers.** For example: *We already know about **whole numbers**, right? They are the regular numbers we use to **count things** like 2 pizzas, 3 birds, 5 bedrooms, 101 dollars, 1,203 people or 150,023 stars. They are used to describe **whole things**.*

• **Fractions versus Whole Numbers.** For example: *Why do we need fractions? To describe things that **are not whole** like a **part of pizza** or **part of a room**. But fractions are numbers just like whole numbers, they are used to describe how much or how little you have of something.*

In your own words, and with your tutor's help, define:

Whole:

Piece:

TUTOR PROMPT

Don't worry if your students can't solve the second 'apple' question exactly.

Use it as a motivator and just very much highlight that whole numbers cannot be used to solve the problem.

Answer the question: 'Tom, Ping, and Rocio share 6 apples. How many apples did each person get?'

Now take the question: 'Tom, Ping, and Rocio share 1 apple. How many apples did each person get?'

Can you answer the question above using whole numbers? Why or why not?

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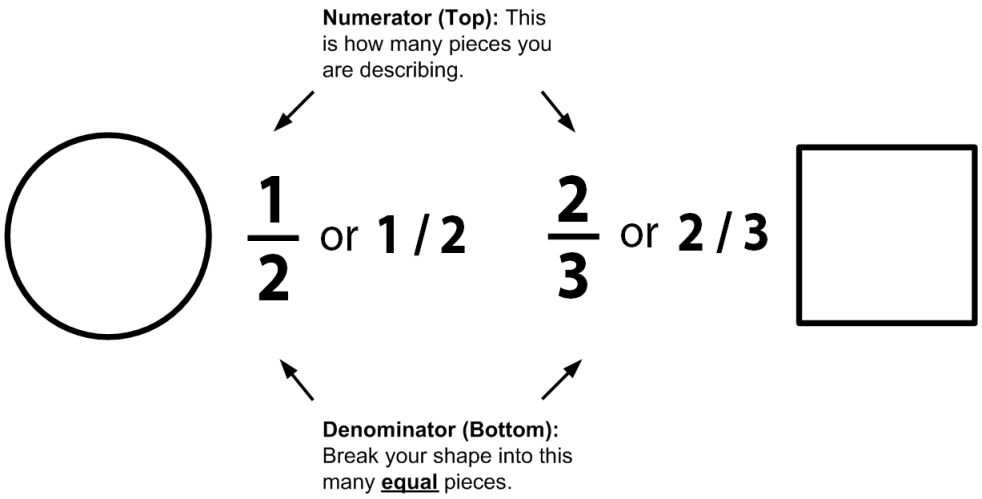
Definitions: Numerator -- Big Word for 'Top'

A fraction let's you break a **whole** into **pieces**. Finish drawing in this picture with your tutor for the two fractions given:



DEFINITION: FRACTION

A mathematical **convention** that allows you to describe objects or concepts **that do not have to be whole**.

It is written as:

$$\frac{\textbf{described pieces}}{\textbf{total number of pieces}}$$

DEFINITION: DENOMINATOR

The **bottom number** of a fractions. It represents how many **equal** size pieces you broke the whole into. It represents how many **pieces you have total**.

DEFINITION: NUMERATOR

The **top number** of a fraction. It represents how many pieces you are **describing** with your fraction.

Answer true or false. If false, tell your tutor why correct it.

When working with fractions, the sizes of the pieces can be different:	**true** | **false**
The numerator in a fraction represents how many pieces you broke your whole into:	**true** | **false**
The denominator in a fraction represents how many pieces you are describing (are talking about):	**true** | **false**
There is only **one way** to write a fraction:	**true** | **false**
The numerator is on the top:	**true** | **false**
The denominator is on the top:	**true** | **false**

TUTOR PROMPT

Before answering the questions, be sure to point out that a fraction is just a conventional notation; that is, just the way we write something just as the letter 'a' or a '+' sign is just the way we write something.

Be sure to stress that there are several way to write the same fraction, from the fraction bar being completely horizontal to a much more slanted bar.

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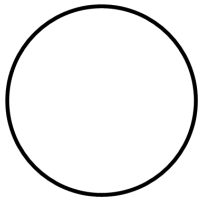
Draw It: Breaking Up Shapes

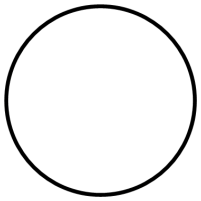
REMEMBER!

The top number in a fraction is called the **numerator**.

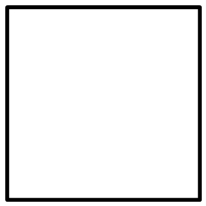
The bottom number in a fraction is called the **denominator**.

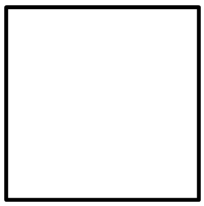
Q1 Use the circles to represent the fraction. Add the labels 'numerator' and 'denominator' and write out the fraction **in English**.

$\frac{3}{4}$ 

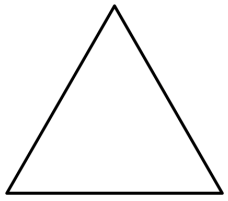
$\frac{2}{3}$ 

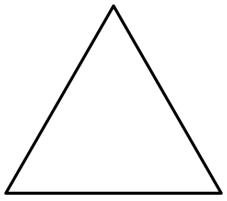
Q2 Use the squares to represent the fraction. Add the labels 'numerator' and 'denominator' and write out the fraction **in English**.

$\frac{3}{8}$ 

$\frac{5}{6}$ 

Q3 Use the triangles to represent the fraction. Add the labels 'numerator' and 'denominator' and write out the fraction **in English**.

$\frac{1}{2}$ 

$\frac{1}{3}$ 

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Cut It

DIRECTIONS

Get the pizza cutouts. Use the **pans** to represent the whole.

Then, cut up the **pizzas** to solve the following problems.

Get your pizza cutouts. Use them to express 1/2 as a fraction:

Use them to express $\frac{\mathbf{2}}{\mathbf{2}}$ as a fraction.

TUTOR PROMPT

Stress 'how many pieces' versus 'how much of pizza'. That is, you ate '3' pieces but you ate '3/4' of a pizza, etc.

Also, continue to make up examples past the presented ones in this exercise.

Also, continue to reinforce the different ways to write fractions.

Use them to express 0/2 as a fraction:

You get a pizza and cut it into 4 equal pieces. You then eat 3 pieces. Show **how much of the pizza you ate** using the cutouts. Then, write the fraction numerically and in English:

Show **how many pieces** you ate. Write that numerically.

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Say It

You and a group of your friends order five pizzas. How many pizzas did you order?

Did you need **whole numbers** or **fractions** to solve this problem?

Susan, Musha, and Satish order a pizza. If they share **equally**, how much **of a pizza** do they each get?

Did you need **whole numbers** or **fractions** to solve this problem?

In your own words, why do we need fractions and how are they different than whole numbers?

What does the word 'fracture' mean. How do you think that relates to the word **fraction**?

Closure

In this lesson, we learned:

- The difference between **whole numbers** and **fractions**.

- That fractions can be used to denote **non-whole** amounts like **three-fifths** of a whole pizza.

In your own words, what does it mean for something to be 'whole':

Why do we need fractions:

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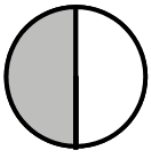
Scaffold: Fractions in English

NOTE TO TUTOR

Point out the use of hyphen.

half ↔ $\frac{\#}{2}$ | $\frac{1}{2}$ =  one-half

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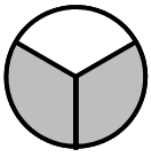
third ↔ $\frac{\#}{3}$ | $\frac{2}{3}$ =  two-thirds

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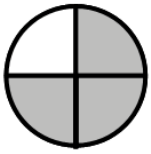
fourth ↔ $\frac{\#}{4}$ | $\frac{3}{4}$ =  three-fourths

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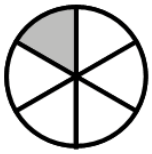
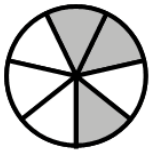
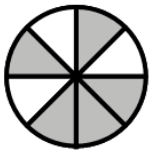
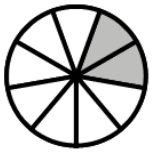
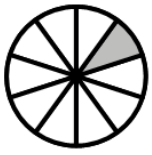
fifth ↔ $\frac{\#}{5}$ | $\frac{1}{5}$ =  one-fifth

Scaffold: Fractions in English

sixth ↔ $\frac{\#}{6}$	$\frac{1}{6}$ = 	one-sixth
seventh ↔ $\frac{\#}{7}$	$\frac{3}{7}$ = 	three-sevenths
eighth ↔ $\frac{\#}{8}$	$\frac{5}{8}$ = 	five-eighths
ninth ↔ $\frac{\#}{9}$	$\frac{2}{9}$ = 	two-ninths
tenth ↔ $\frac{\#}{10}$	$\frac{1}{10}$ = 	one-tenth

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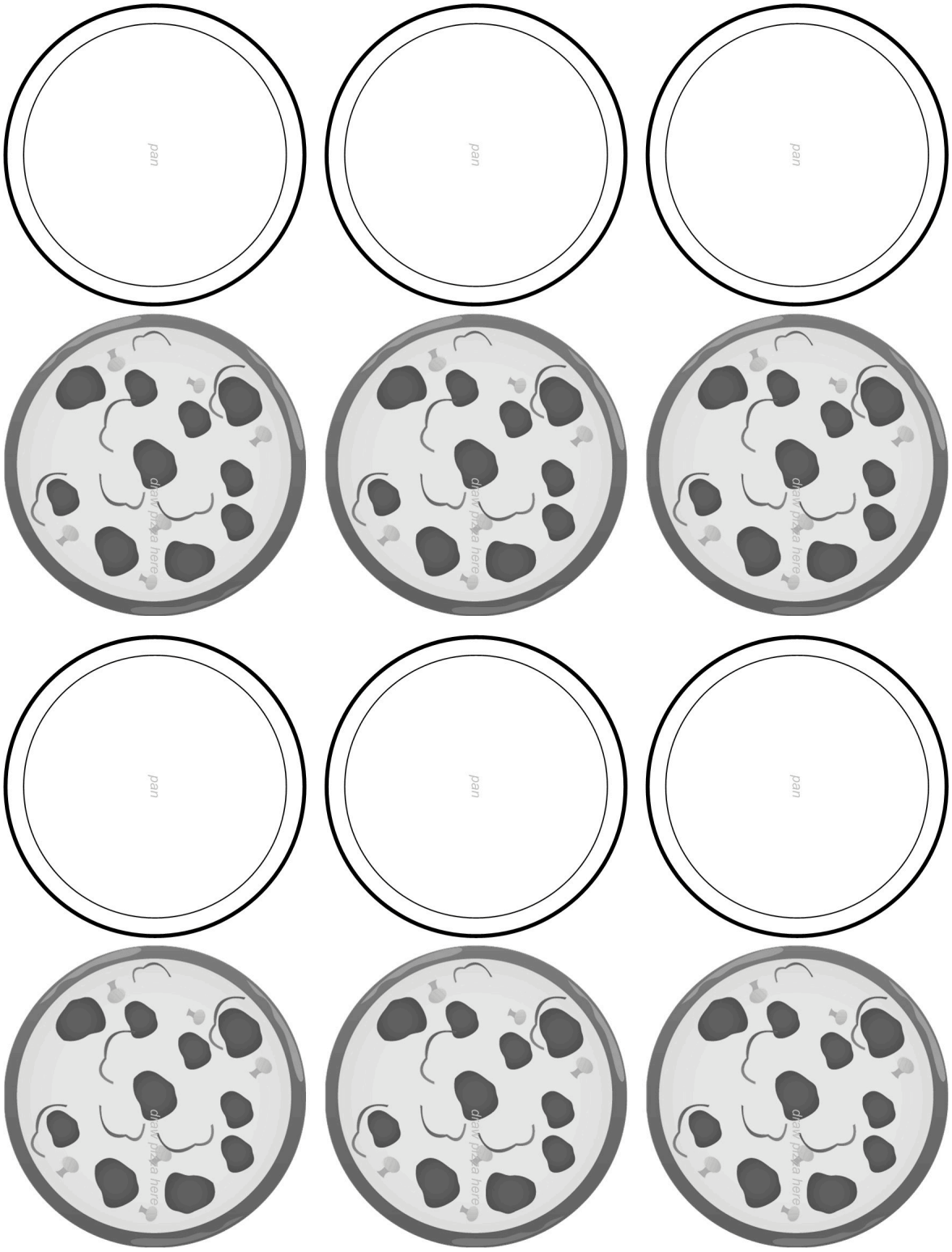
-- cutouts --



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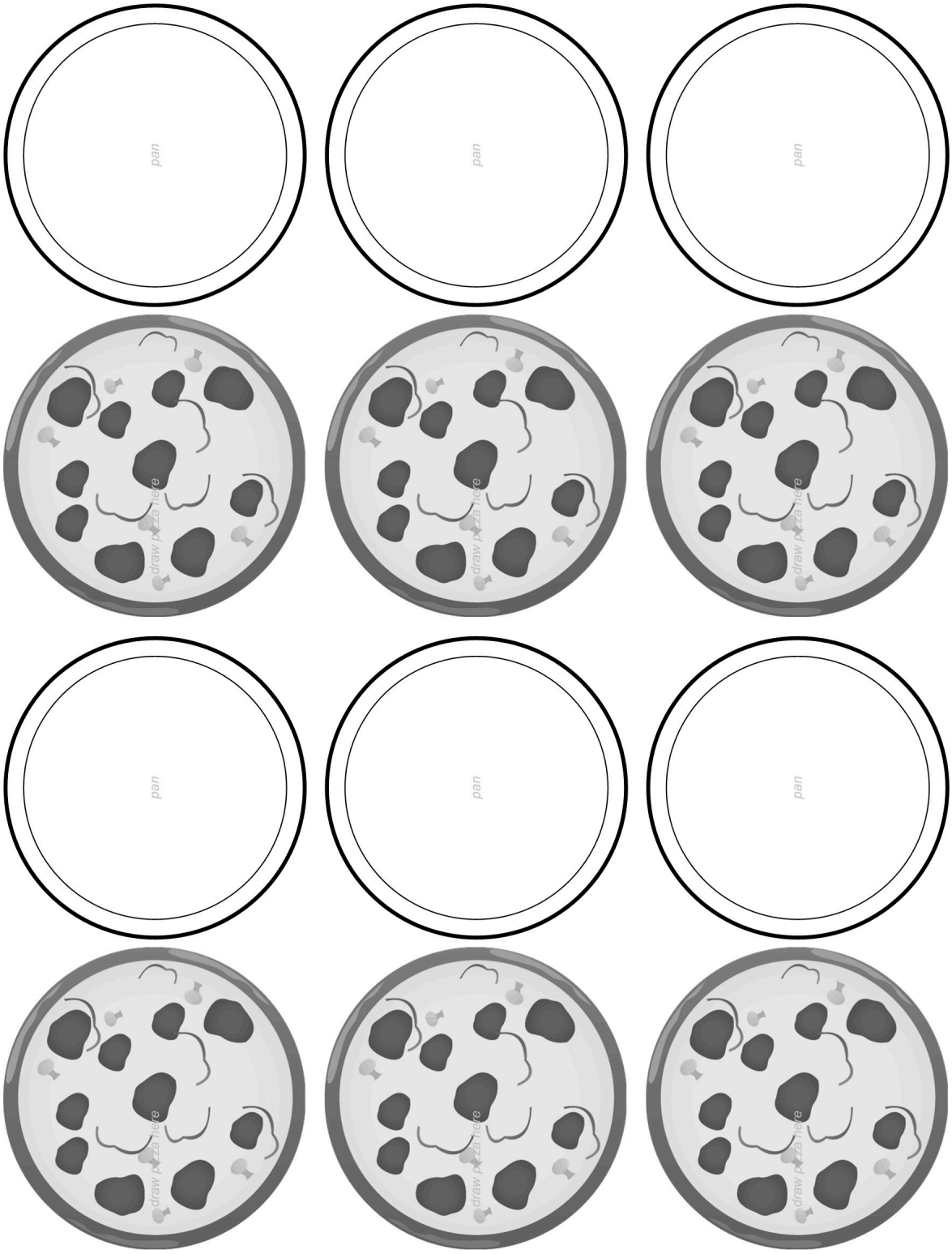

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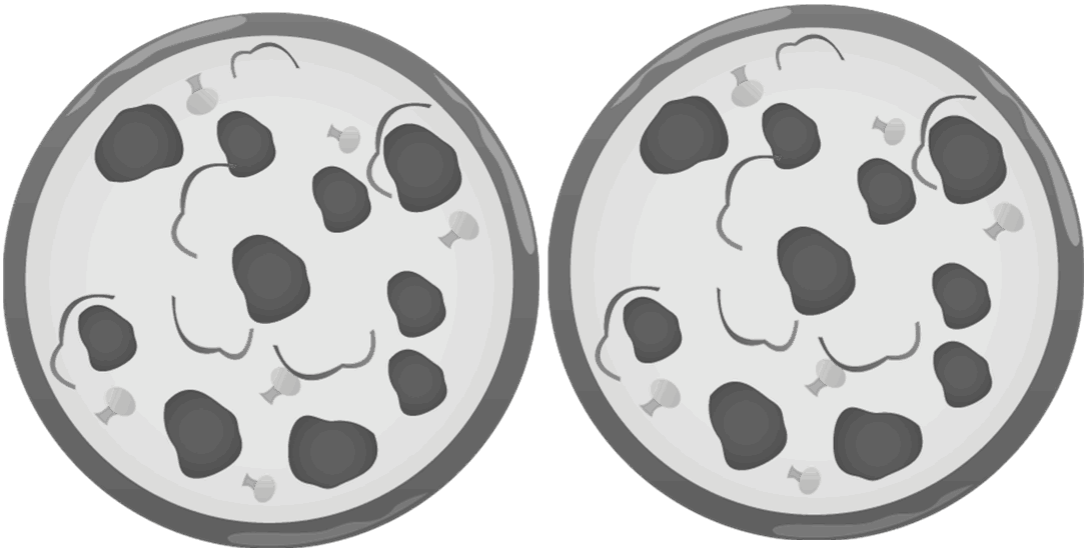

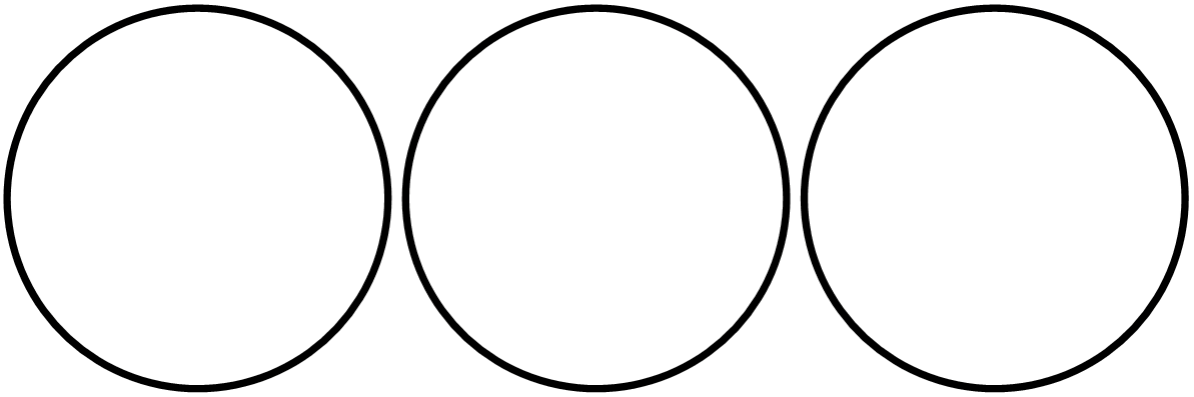

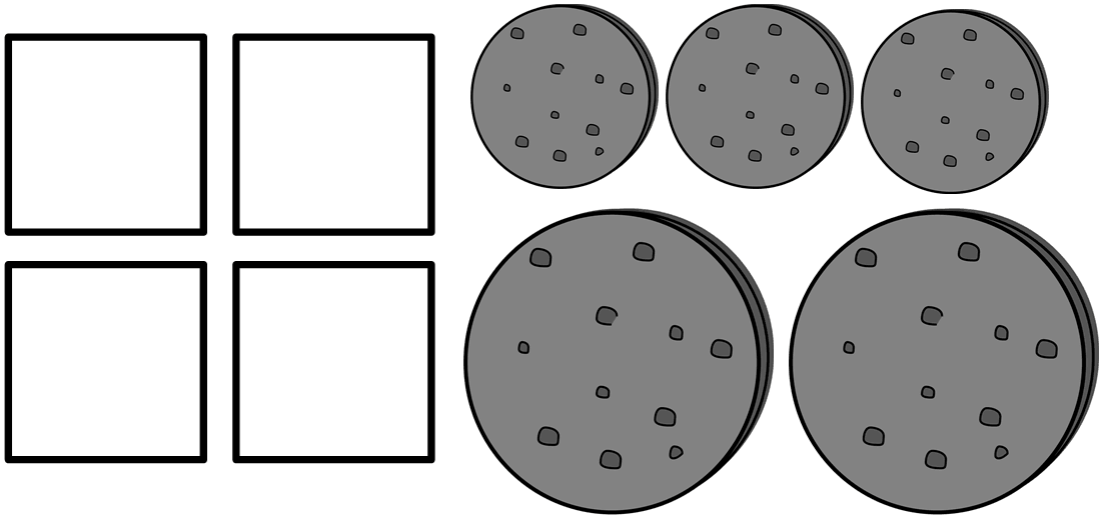

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-- cutouts --