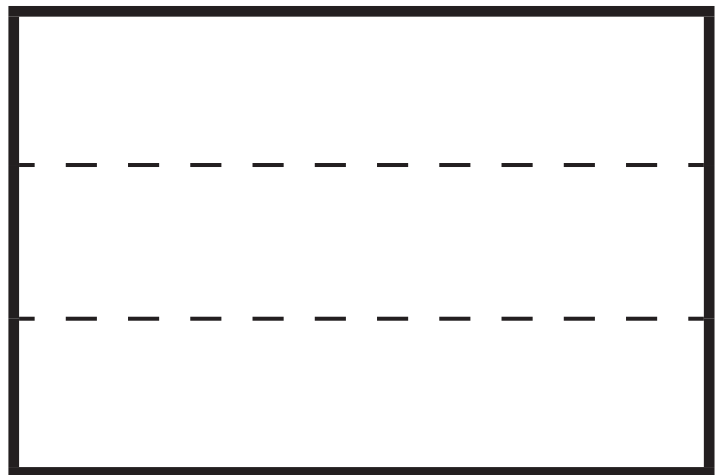
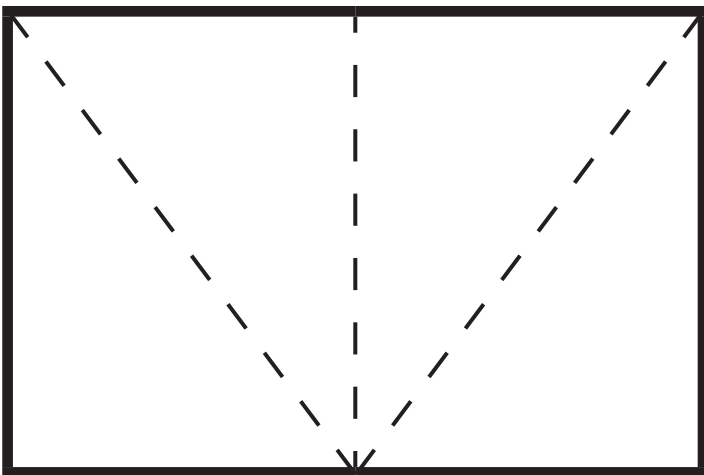
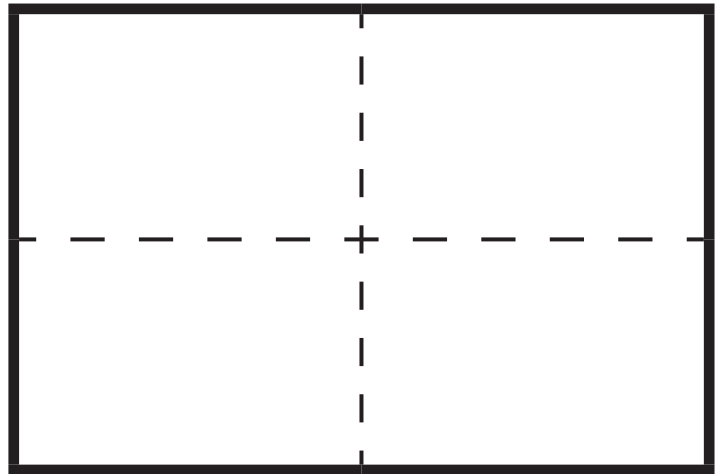
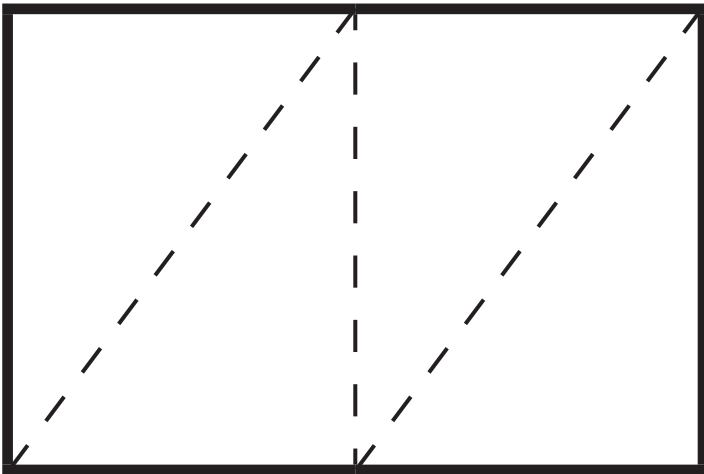
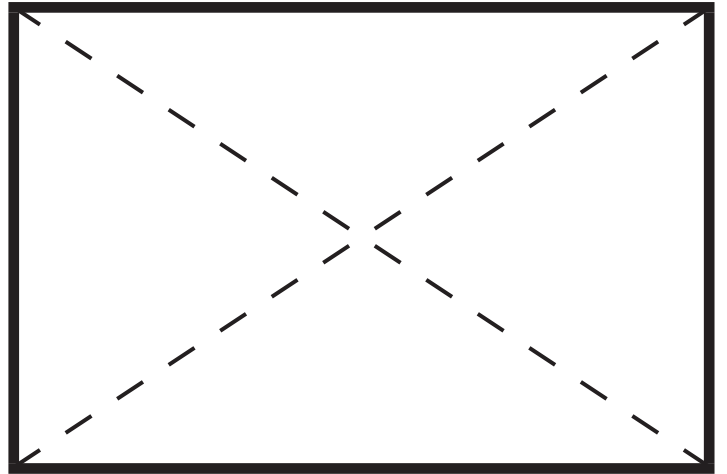
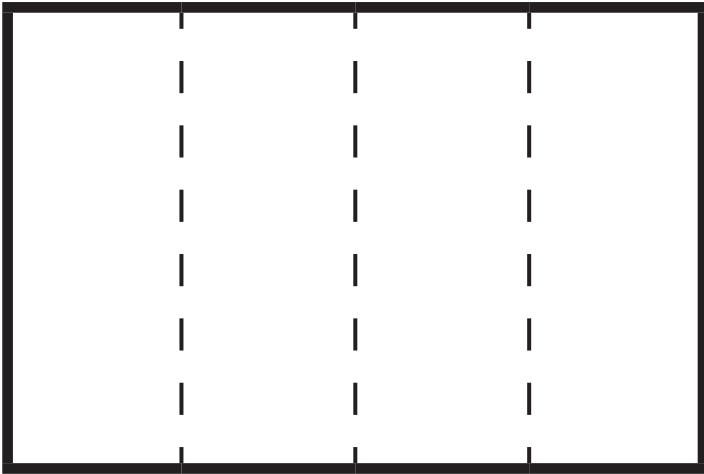




# Now I See! Visualizing Fractions Through Models

Melinda Schwartz

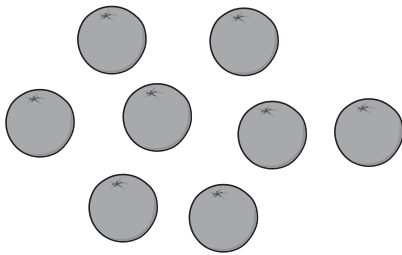


Show  $\frac{1}{4}$  in each of these models.

For each model, consider the following questions:

- What is the whole?
- What does equal-sized mean?
- What does the fraction indicate?
- What attribute is the focus?

**Set Model:**



**Area Model:**



**Length Model:**



**Number Line Model:**



# Representing Fractions

Teachers and students need to consider the following:

- The type of quantity (continuous or discrete?) that the model is intended to represent.
- How the whole is defined.
- What equal-sized means in the model.
- What the fraction indicates.



## Representing Fractions

### Set Model



The number – a discrete (countable) quantity

The whole is determined by a defined **count** of a collection or set.

The **same number** of items represents equal-sized parts.

The fraction indicates the count of objects in the subset compared to the defined set of objects.



## Representing Fractions

### Area Model



The area – a continuous (measureable) quantity

The whole is determined by the defined **area** or region.

The **same area** represents equal-sized parts.

The fraction indicates the area of the part compared to the area of the whole.



## Representing Fractions

### Length Model



The length – a continuous (measureable) quantity

The whole is determined by a defined **length**.

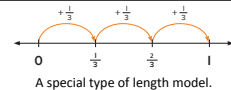
The **same length** represents equal-sized parts.

The fraction indicates the length of the part compared to the length of the whole.



## Representing Fractions

### Number Line Model



The distance – a continuous (measureable) quantity

The whole is determined by a unit of **distance** from 0 to 1.

The **same distance** represents equal-sized parts.

The fraction indicates the location of a point in relation to the distance from 0 with regard to the defined unit.



2

Eight circles is  $\frac{8}{6}$ . What does the whole look like?



Show your thinking.



Reasoning with Fractions

© ORIGO Education

Purple Tank

1

Each shape is one whole.

Which shape does **not** represent three-fourths?

a.



b.



c.



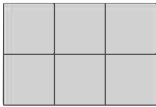
Reasoning with Fractions

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Purple Tank

3

Six blocks is  $\frac{3}{4}$ . What does one-fourth look like?



Show your thinking.



Reasoning with Fractions

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Purple Tank

12

Four friends share three sandwiches. Each friend gets the same amount.



e. Draw a picture to show what each share will look like.

f. What fraction of a sandwich is in each friend's share.



Reasoning with Fractions and Decimals

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Red Tank

3

Eight tiles is  $\frac{8}{6}$ . What does the whole look like?



Show your thinking.



Reasoning with Fractions and Decimals

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Green Tank

8

Which picture does not belong?



$\frac{3}{5}$



Show or explain your thinking.



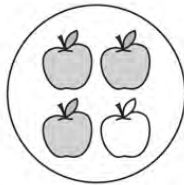
Reasoning with Fractions

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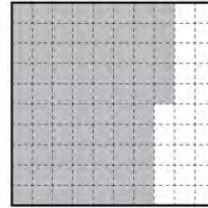
Purple Tank

11

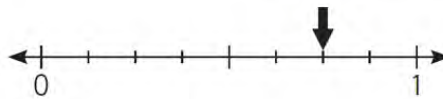
Which representation does not belong?



$$\frac{3}{4}$$



0.34



Show or explain your thinking.

Reasoning with Fractions and Decimals

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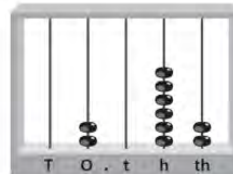


Green Tank

3

Which representation does not belong?

2.062



206 hundredths + 2 thousandths

$$2 \frac{62}{1000}$$

Show or explain your thinking.

Reasoning with Fractions and Decimals

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Red Tank

# Representing Fractions

Type of Model	Type of Quantity	Whole	Meaning of Equal-Sized Parts	What the Fraction Indicates
Set model	discrete	determined by a defined count of a collection or set	same number of items	the count of objects in the subset compared to the defined set of objects
	continuous	determined by a defined area or region	same area	the area of the indicated part compared to the area of the indicated whole
Length model	continuous	determined by a defined length	same length	the length of the indicated part compared to the length of the indicated whole
	continuous	unit of distance from 0 to 1	same distance	the location of a point in relation to the distance from 0 with regard to the defined unit