



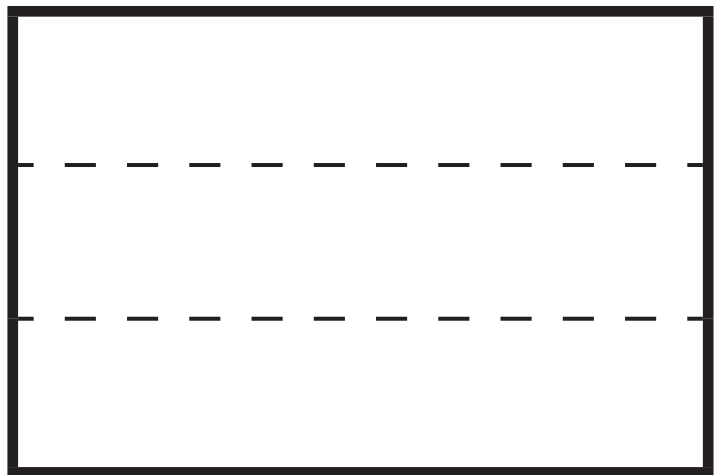
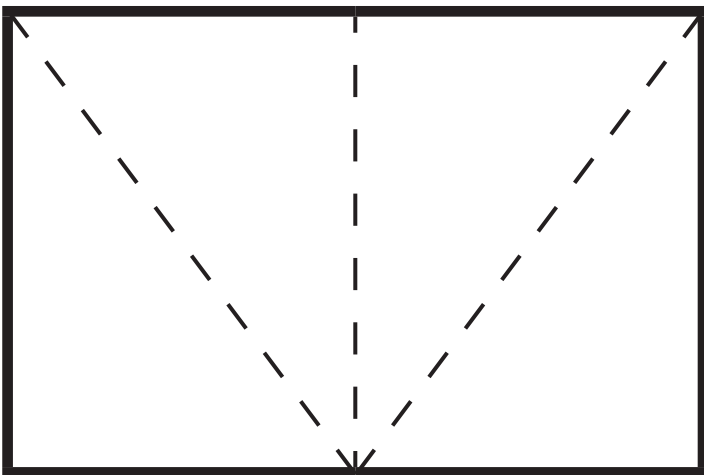
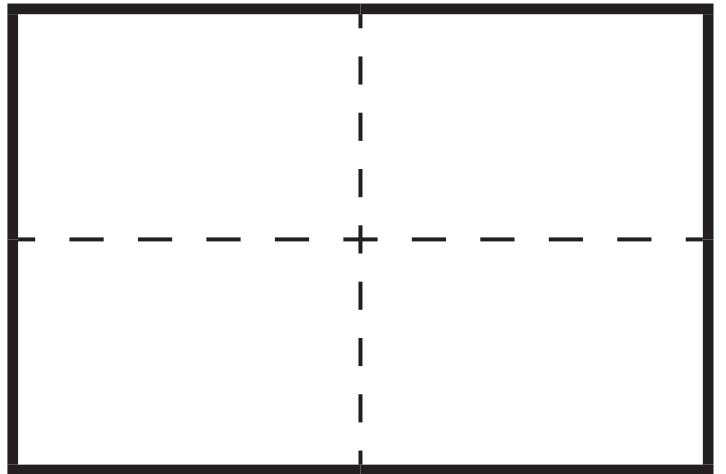
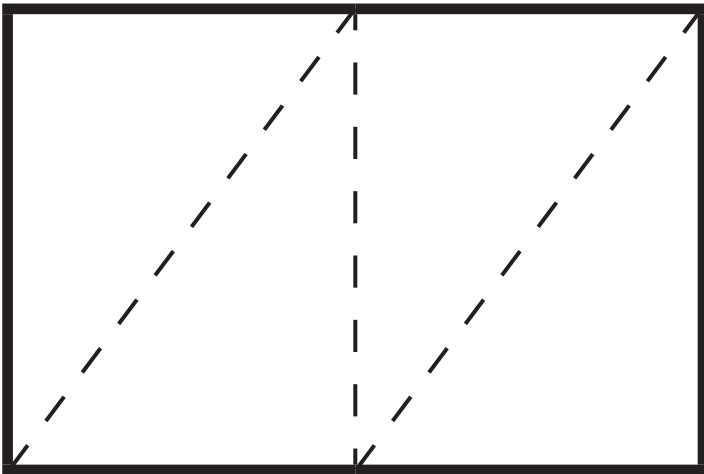
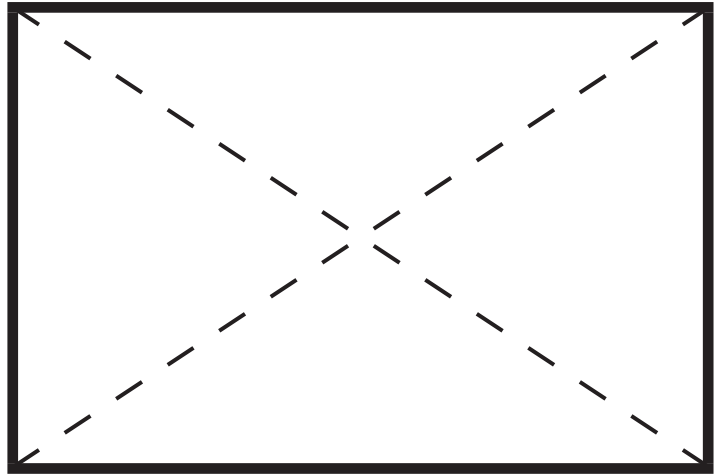
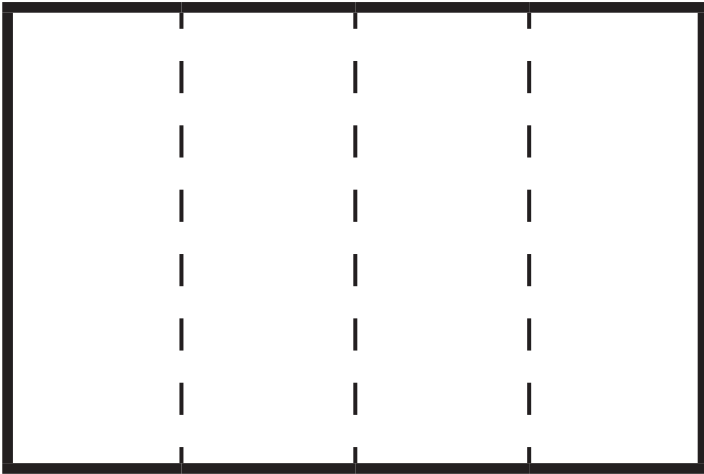
# Fear Not the Fractions

PROFESSIONAL LEARNING  
[www.origoeducation.com](http://www.origoeducation.com)

**James Burnett**  
President • Publisher • Author

**ORIGO**  
EDUCATION



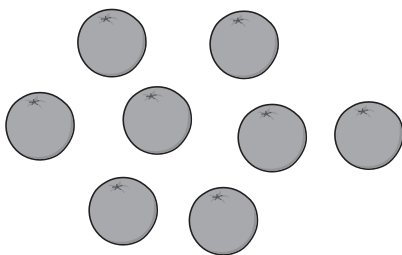


Show  $\frac{1}{4}$  in each of these modules.

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 that the model is intended to represent (continuous or discrete?).
- 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 (measurable) 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 (measurable) quantity.

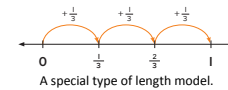
The whole is determined by a defined **length**.

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 length – a continuous (measurable) 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.



# Representing Fractions

Type of Model	Type of Quantity	Whole	Meaning of Equal-Sized Parts	What the Fraction Indicates
<b>Set model</b>	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
<b>Area model</b>	continuous	determined by a defined area or region	same area	the area of the indicated part compared to the area of the indicated whole
<b>Length model</b>	continuous	determined by a defined length	same length	the length of the indicated part compared to the length of the indicated whole
<b>Number line model</b>	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

# Fraction Fill Up

$\frac{1}{2}$				$\frac{1}{2}$							
$\frac{1}{4}$			$\frac{1}{4}$			$\frac{1}{4}$			$\frac{1}{4}$		
$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$		$\frac{1}{8}$	
$\frac{1}{3}$						$\frac{1}{3}$					
$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$		$\frac{1}{6}$	
$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{12}$
$\frac{1}{5}$			$\frac{1}{5}$			$\frac{1}{5}$			$\frac{1}{5}$		
$\frac{1}{10}$		$\frac{1}{10}$		$\frac{1}{10}$		$\frac{1}{10}$		$\frac{1}{10}$		$\frac{1}{10}$	

## Two or more players

Each player needs a fraction wall. The group needs one cube.

Write these fractions on the cube  $\frac{1}{2}$   $\frac{1}{3}$   $\frac{1}{4}$   $\frac{1}{6}$   $\frac{1}{8}$   $\frac{1}{12}$

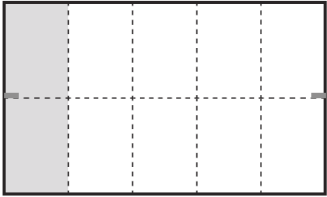
Take turns to roll the cube. Shade that fraction on a single strip if space allows.


It can be the fraction shown on the cube or an equivalent fraction.


The winner is the first person to exactly fill 2 strips (other than the strips that shows one whole.).

**Step Up**

1. Each large rectangle is one whole. Write how much is shaded in each rectangle. Then draw extra lines to figure out an equivalent fraction. The first one has been partly done for you.

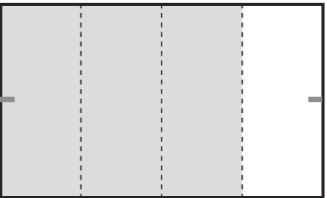
a.   
 $\frac{2}{5} = \frac{4}{10}$

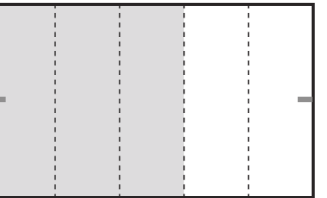
b.   
 $\frac{2}{6} = \frac{4}{12}$

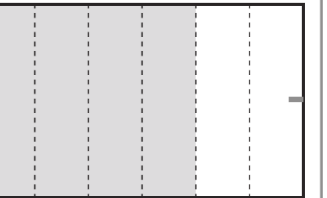
c.   
 $\frac{1}{2} = \frac{3}{6}$

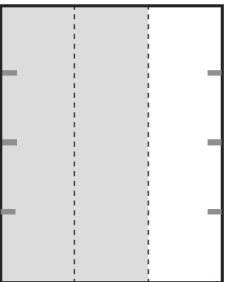
© ORIGO Education.

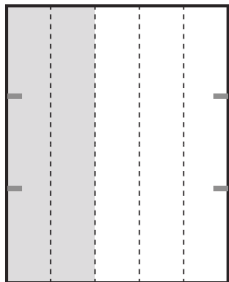
2. Each large rectangle is one whole. Write how much is shaded in each rectangle. Then draw extra lines to figure out an equivalent fraction.

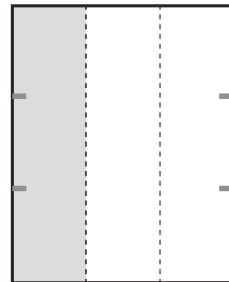
a.   
 $\frac{3}{4} = \frac{6}{8}$

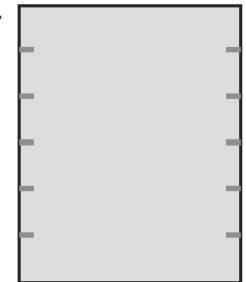
b.   
 $\frac{3}{5} = \frac{6}{10}$

c.   
 $\frac{4}{6} = \frac{8}{12}$

d.   
 $\frac{2}{3} = \frac{4}{6}$

e.   
 $\frac{2}{5} = \frac{4}{10}$

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

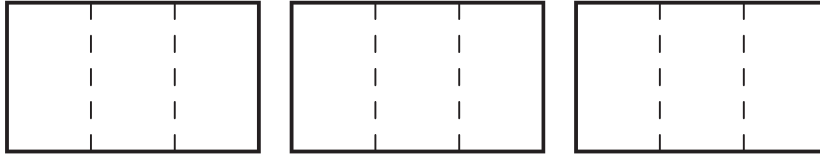
g.   
 $\frac{1}{1} = \frac{1}{1}$



# Exploring Equivalent Fractions

Each rectangle is one whole.

---



is the same  
amount as

---

---



is the same  
amount as

---

---



is the same  
amount as

---

---



is the same  
amount as

---

---





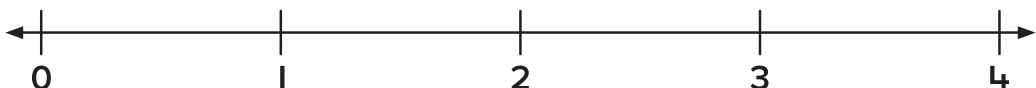
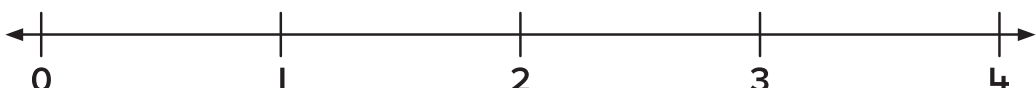


is the same  
amount as

---

# Exploring Fractions on Number Lines

On each number line, the distance from 0 to 1 is one whole.

<input type="text"/> <hr/> <input type="text"/>		<input type="text"/> <hr/> <input type="text"/>
<input type="text"/> <hr/> <input type="text"/>		<input type="text"/> <hr/> <input type="text"/>
<input type="text"/> <hr/> <input type="text"/>		<input type="text"/> <hr/> <input type="text"/>
<input type="text"/> <hr/> <input type="text"/>		<input type="text"/> <hr/> <input type="text"/>
<input type="text"/> <hr/> <input type="text"/>		<input type="text"/> <hr/> <input type="text"/>
<input type="text"/> <hr/> <input type="text"/>		<input type="text"/> <hr/> <input type="text"/>