

## TABLE OF CONTENTS

### Session One

NCTM Learning Principle-----	BLM 1
Math Class Web-----	BLM 2
Tangram Pattern Sheets-----	BLMs 3-8
Bringing Mathematics Home 1-----	BLM 9

### Session Two

NCTM Problem Solving Standard-----	BLM 10
Color Tile Collections-----	BLM 11
Color Tile Mysteries-----	BLM 12
Bringing Mathematics Home 2-----	BLM 13
Fraction Problems I-----	BLM 14

### Session Three

NCTM Number and Operation Standard-Grades 3-5-----	BLM 15
Sharing Cookies-----	BLM 16
Pattern Block Chart-----	BLM 17
Bringing Mathematics Home 3-----	BLM 18
Fraction Problems II-----	BLM 19

### Session Four

NCTM Communication Standard-----	BLM 20
Measuring Map-----	BLM 21
List of Locations-----	BLM 22
Cuisenaire® Rod Relationships-----	BLM 23
Bringing Mathematics Home 4-----	BLM 24
Fraction Problems III-----	BLM 25

### Session Five

NCTM Technology Principle-----	BLM 26
Which Is Larger?-----	BLM 27
Decimal Strips-----	BLM 28
Bringing Mathematics Home 5-----	BLM 29
Decimal Problems I-----	BLM 30

## TABLE OF CONTENTS

### Session Six

NCTM Reasoning and Proof Standard-----	BLM 31
Fraction Family Cards-----	BLM 32
Fraction Strips A-----	BLM 33
Fraction Strips B-----	BLM 34
Fraction-Decimal Summary Chart-----	BLM 35
Bringing Mathematics Home 6-----	BLM 36
Decimal Problems-II-----	BLM 37

### Session Seven

NCTM Number and Operation Standard-Grades 6-8-----	BLM 38
Transparent Grids-----	BLM 39
Percent Estimation-----	BLM 40
Percent and Color Tiles-----	BLM 41
Percent Grids-----	BLM 42
Percent Number Lines-----	BLM 43
Bringing Mathematics Home 7-----	BLM 44
Top Ten Tips for Parents-----	BLM 45
Percent Problems-----	BLM 46

### Session Eight

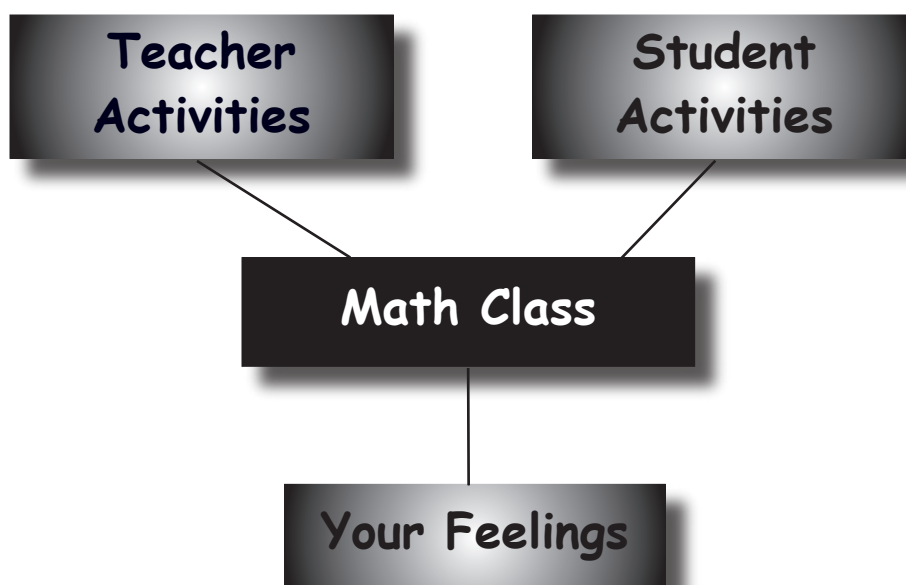
NCTM Connections Standard-----	BLM 47
Percent Strip-----	BLM 48
Cuisenaire® Rod Puzzles-----	BLM 49
Bringing Mathematics Home 8-----	BLM 50
How Will Math Look in Your Child's Classroom?-----	BLM 51

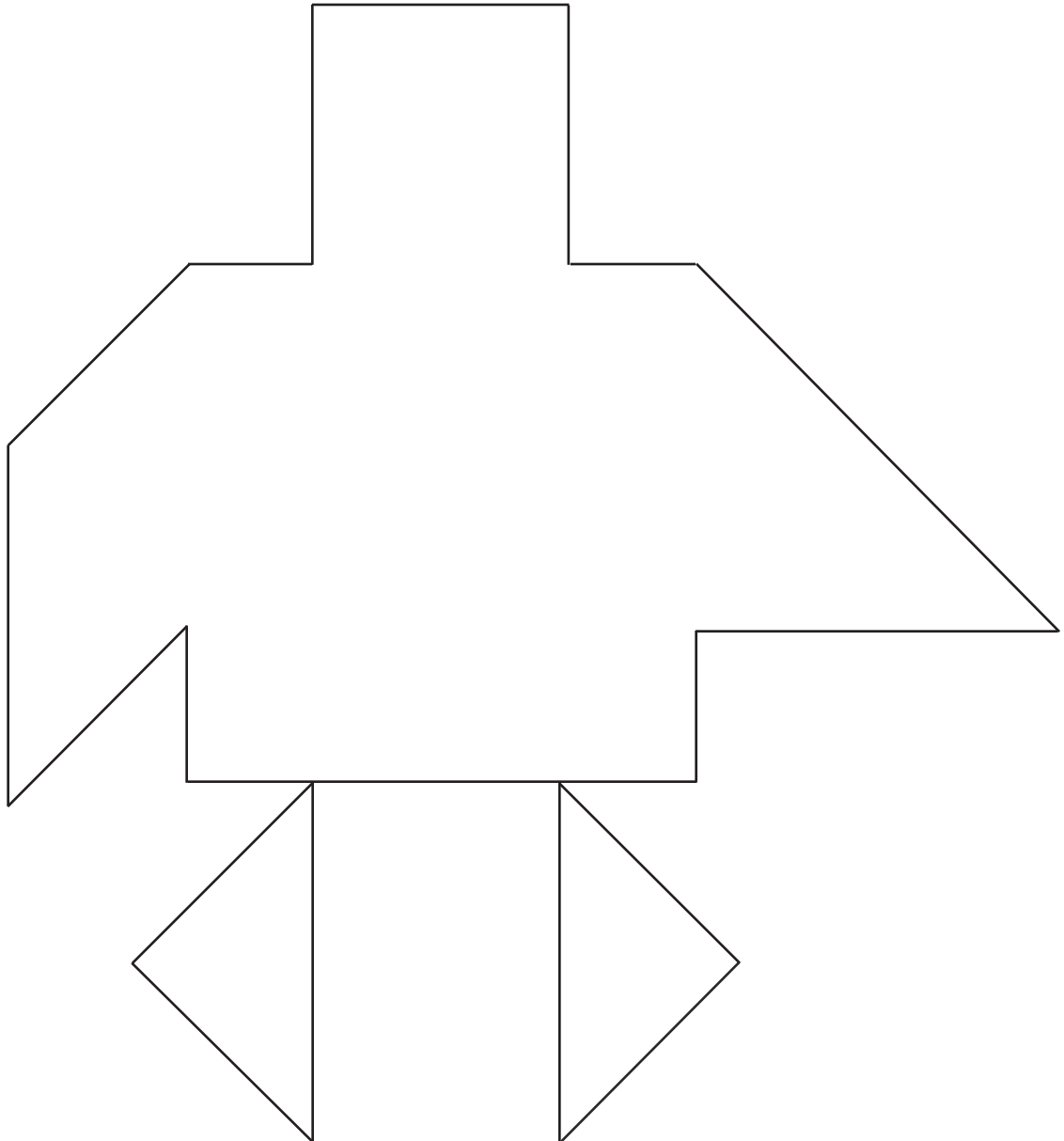
## NCTM Learning Principle

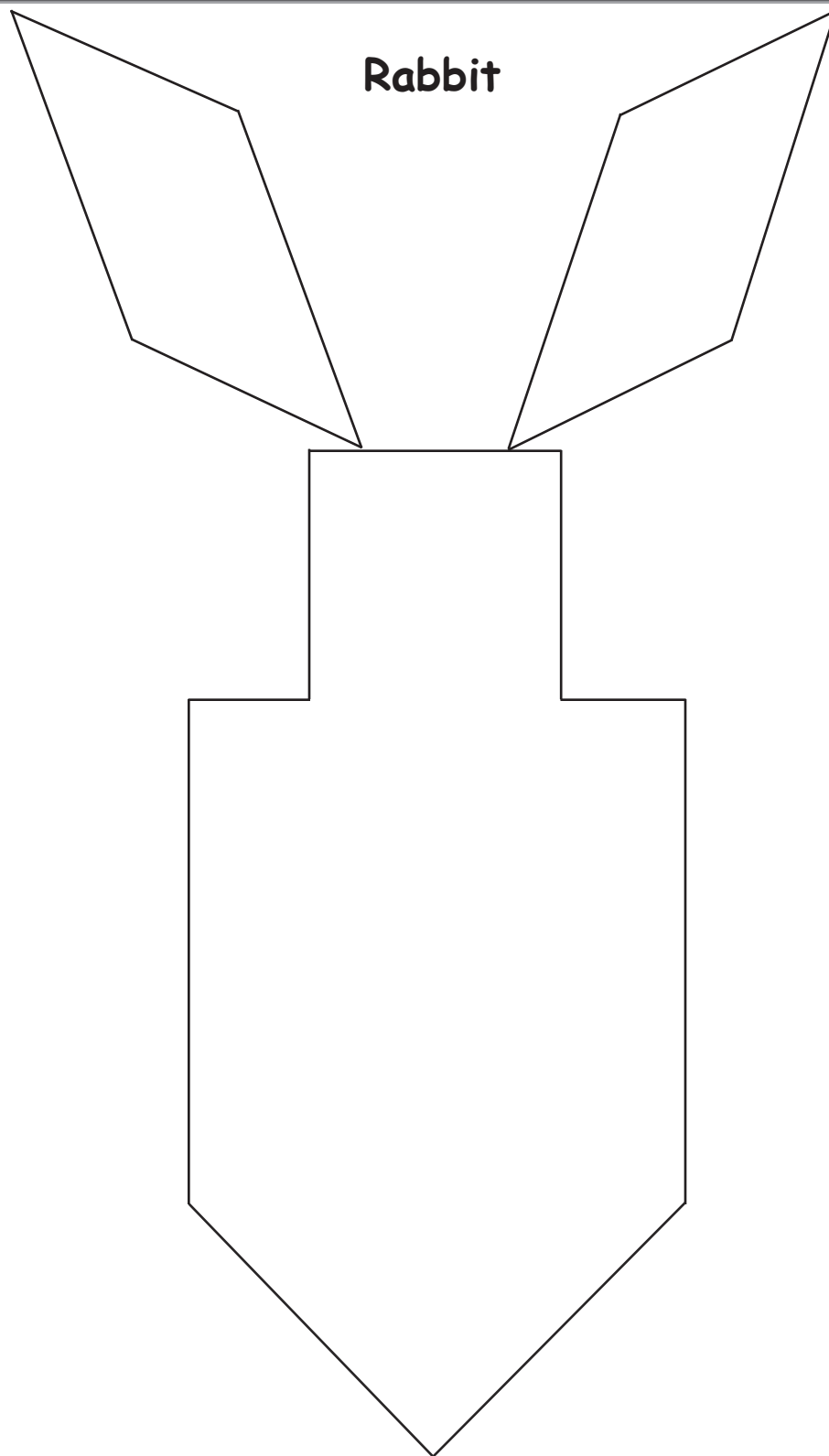
Students must learn  
mathematics with understanding,  
actively building new knowledge  
from experience and prior knowledge.

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## Math Web Class

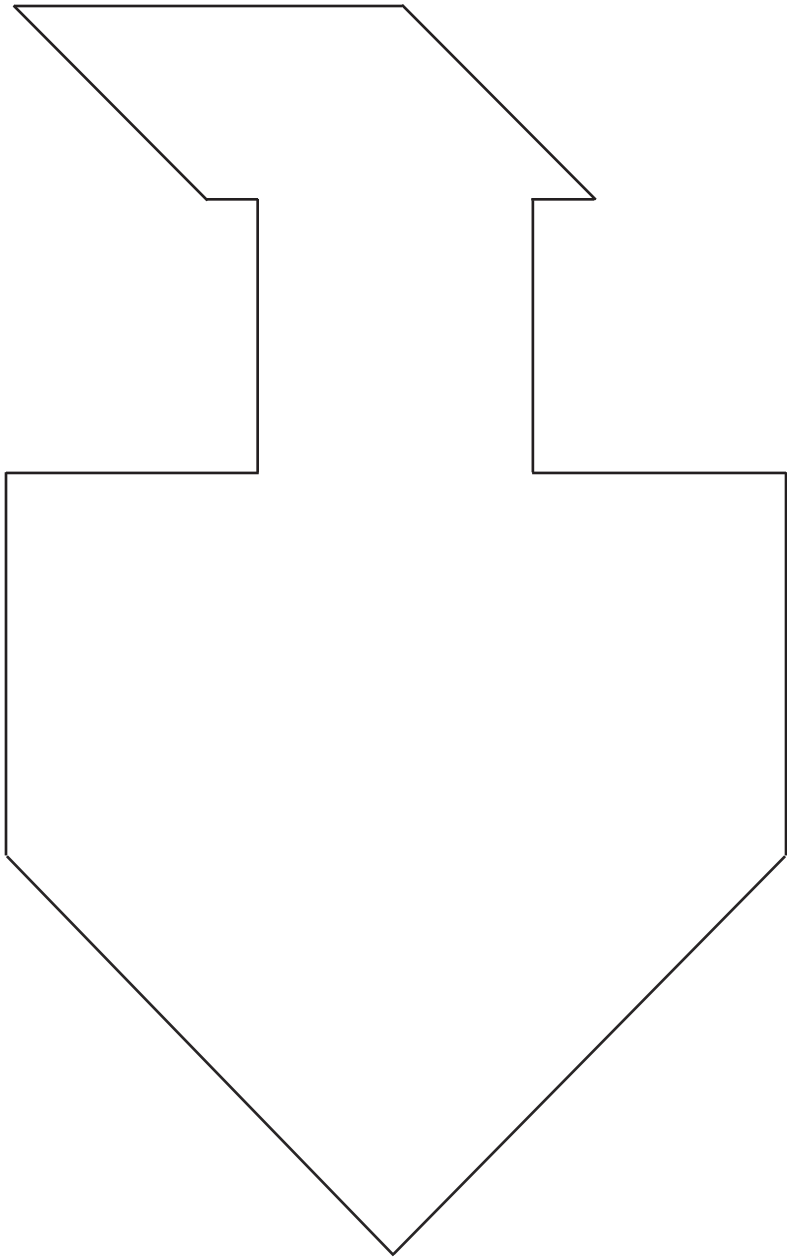


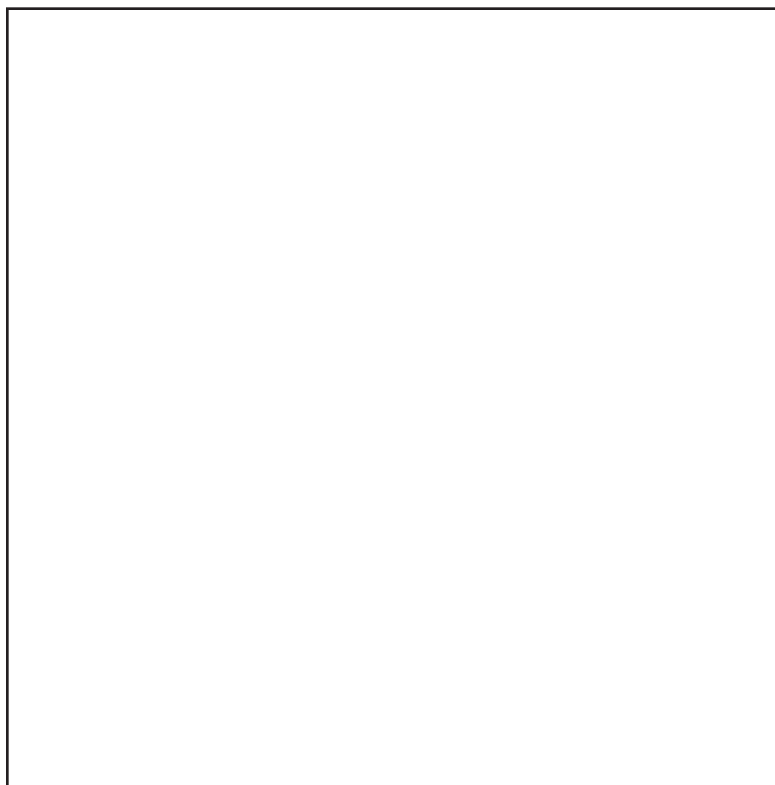
**Tangram Pattern Sheet 1****Robot**

**Tangram Pattern Sheet 2****Rabbit**

Tangram Pattern Sheet 3

Shovel



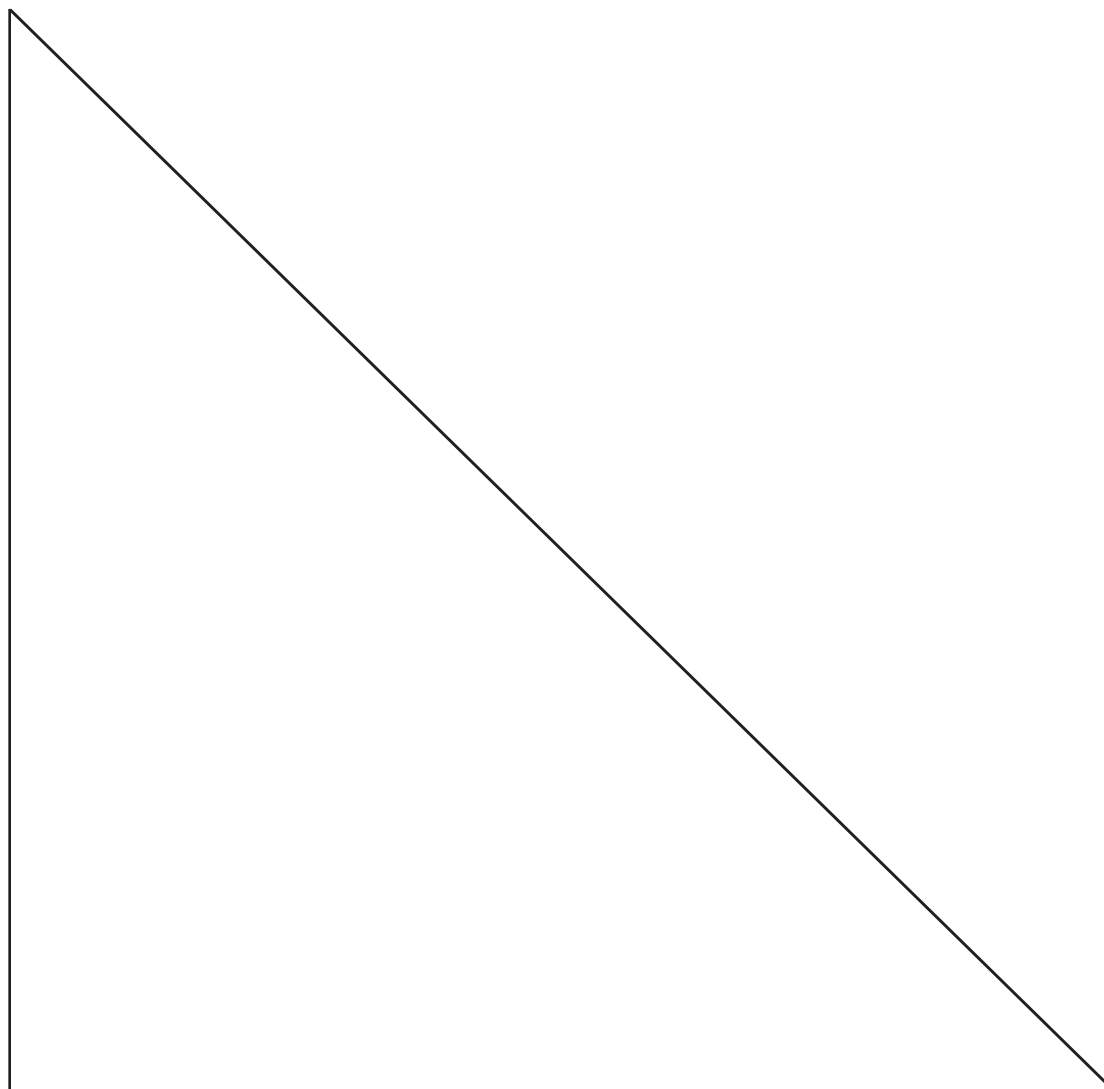
**Tangram Pattern Sheet 4****Square**



## Tangram Pattern Sheet 5

### Rectangle



**Tangram Pattern Sheet 6****Triangle**

**Bringing Mathematics Home 1**

# Fraction Activities with Tangrams

**In your day-to-day experiences**

- A) This week, look for ways you see and use fractions, decimals, percents. Write your observations down or cut out examples (from magazines, newspapers, etc.). You will share these with us at our next class meeting and add to the class chart.
- B) Ask your children where they use fractions, decimals and percent in their lives. What examples of their uses can they think of? Write these down and share them at the next class.

**With your grades K-3 children:**

- A) Take a set of Tangrams and Pattern Sheets home. Before showing your K-3 child the Pattern Sheets, ask your child to make as many shapes/designs as he/she can using the pieces. Try to make a sailboat, a house, a rabbit or any other design.
- B) Show your child the Tangram Pattern Sheets. Ask him/her to fill in the shapes using the Tangrams. Does your child solve this kind of problem in the same way that you did?

**With your grades 4-8 children:**

- A) Take a set of Tangrams and Pattern Sheets home. Ask your grade 4-8 child to fill in the shapes using the Tangrams. Does your child solve this kind of problem in the same way that you did?
- B) Give your child the same problem we did in class. "What is the value of each piece if the entire set is worth \$8.00 (or \$12.00, or \$1.60, or \$1.00)." Ask your child to explain his/her thinking.

**With your grades 9-12 children:**

- A) Take a set of Tangrams and Pattern Sheets home. Ask your grade 9-12 child to fill in the shapes using the Tangrams. Does your child solve this kind of problem in the same way that you did?
- B) Ask your child to estimate the percent each of the pieces is of the whole set. Ask your child to explain how he/she is making the estimates. Ask him/her to how he/she would go about finding out exactly what percent each piece is of the whole set. (Your child does not need to actually find the exact percentages.)

Instructional programs from prekindergarten through grade 12 should enable all students to--

- **Build new mathematical knowledge through problem solving.**
- **Apply and adapt a variety of appropriate strategies to solve problems.**

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## Color Tile Collections

Find a collection of color tiles to fit each description below.

Write the equivalent fraction name for each color using the total number of tiles as the denominator.



- |    |                      |                      |                      |                      |
|----|----------------------|----------------------|----------------------|----------------------|
| 1. | $\frac{1}{2}$ blue   | $\frac{1}{4}$ green  | $\frac{1}{4}$ red    |                      |
| 2. | $\frac{1}{8}$ red    | $\frac{1}{2}$ green  | $\frac{3}{8}$ yellow |                      |
| 3. | $\frac{1}{6}$ yellow | $\frac{2}{3}$ blue   | $\frac{1}{6}$ red    |                      |
| 4. | $\frac{2}{3}$ blue   | $\frac{1}{9}$ red    | $\frac{2}{9}$ green  |                      |
| 5. | $\frac{1}{6}$ red    | $\frac{1}{6}$ yellow | $\frac{1}{3}$ blue   | $\frac{1}{3}$ green  |
| 6. | $\frac{1}{2}$ green  | $\frac{1}{4}$ blue   | $\frac{1}{8}$ yellow | $\frac{1}{8}$ red    |
| 7. | $\frac{1}{10}$ blue  | $\frac{1}{2}$ green  | $\frac{1}{5}$ red    | $\frac{1}{5}$ yellow |
| 8. | $\frac{1}{4}$ yellow | $\frac{1}{12}$ blue  | $\frac{2}{3}$ green  |                      |

## Color Tile Mysteries

Find a collection of color tiles to fit each description below.

The symbol " $\frac{?}{?}$ " means "the mystery amount."



- |                         |                         |                         |                        |
|-------------------------|-------------------------|-------------------------|------------------------|
| 1. $\frac{3}{8}$ red    | 1. $\frac{1}{4}$ blue   | 1. $\frac{?}{?}$ green  |                        |
| 2. $\frac{1}{12}$ green | 2. $\frac{5}{6}$ yellow | 2. $\frac{?}{?}$ blue   |                        |
| 3. $\frac{3}{16}$ blue  | 3. $\frac{1}{4}$ green  | 3. $\frac{1}{8}$ yellow | 3. $\frac{?}{?}$ red   |
| 4. $\frac{1}{6}$ green  | 4. $\frac{1}{3}$ red    | 4. $\frac{?}{?}$ blue   |                        |
| 5. $\frac{1}{9}$ yellow | 5. $\frac{1}{18}$ blue  | 5. $\frac{1}{2}$ red    | 5. $\frac{?}{?}$ green |
| 6. $\frac{1}{4}$ yellow | 6. $\frac{2}{3}$ blue   | 6. $\frac{?}{?}$ green  |                        |
| 7. $\frac{1}{5}$ red    | 7. $\frac{1}{3}$ blue   | 7. $\frac{2}{5}$ yellow | 7. $\frac{?}{?}$ green |
| 8. $\frac{1}{4}$ green  | 8. $\frac{1}{3}$ yellow | 8. $\frac{1}{6}$ red    | 8. $\frac{?}{?}$ blue  |

## Bringing Mathematics Home 2



# Fraction Activities with Color Tiles

### With your grades K-3 children:

Take out a total of 12 color tiles in two colors (perhaps red and blue).

- A) Ask your child to determine whether the red tiles in the collection are "exactly half," "more than half," or "less than half" of the collection.
- B) Encourage your child to explain his/her reasoning.
- C) Ask the same set of questions for other fractions like one-third and one-fourth.
- D) Use 18 or 24 tiles in two colors and ask the same questions.

### With your grades 4-8 children:

Take out a collection of color tiles using all four colors.

- A) Ask your child to name a fraction for each color in the collection.
- B) Encourage your child to find equivalent names for fractional parts when possible.
- C) Ask your child to explain his/her understanding of how one color can have more than one fractional name.

### With your grades 9-12 children:

Pose some of the Color Tile Mystery problems to your child.

- A) Ask him/her to solve them both with and without color tiles.
- B) Ask him/her to explain his/her thinking when solving them without tiles.

**Fraction Problems I**

Solve using color tiles, other objects, or a picture.

1. Carla spent  $\frac{2}{5}$  of her allowance on a CD and  $\frac{1}{3}$  of her allowance on a new book. What part of her allowance does she have left?
2. A large bag of flour is  $\frac{2}{3}$  full. The pastry chef used  $\frac{3}{4}$  of this flour to bake a cake. What part of a full bag did she use?
3. Rita has read 360 pages in her book. The book has 570 pages in it. Is she more or less than  $\frac{2}{3}$  of the way through her book?



## NCTM Number and Operation Standard

Instructional programs from prekindergarten through grade 12 should enable all students to--

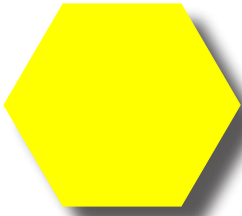
- Understand numbers, ways of representing numbers, relationships among numbers, and number systems
- Understand meanings of operations and how they relate to one another
- Compute fluently and make reasonable estimates

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This standard lists grade-specific concepts for participants.  
The grades 3-5 portion states:

*During grades 3–5, students should build their understanding of fractions as parts of a whole and as division. They will need to see and explore a variety of models of fractions, focusing primarily on familiar fractions such as halves, thirds, fourths, fifths, sixths, eighths, and tenths. By using an area model in which part of a region is shaded, participants can see how fractions are related to a unit whole, compare fractional parts of a whole, and find equivalent fractions.*

## Sharing Cookies



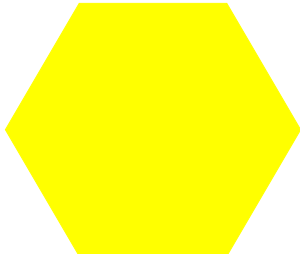



Let the yellow hexagon stand for the unit (a cookie). Each time cookies are shared, they must be shared equally. Act out each situation described below. Look for patterns or generalizations that come from this experience.

How much does each person get if:

1. One cookie is shared with three people.
2. One cookie is shared with six people.
3. Three cookies are shared with two people.
4. Four cookies are shared with six people.
5. Two cookies are shared with four people.
6. Five cookies are shared with three people.
7. Seven cookies are shared with six people.
8. Eight cookies are shared with three people.
9. Some people shared some cookies. Each person got  $1\frac{2}{3}$  cookies. How many cookies were shared and how many people shared them? Find more than one way!

## Pattern Block Chart

Complete each row of the chart by naming values for each block. The value of each block must relate to the given value on that row.

			
1	<hr/>		
			1
		1	
	1		
$\frac{1}{2}$			
	$\frac{1}{3}$		
		$\frac{1}{4}$	

**Bringing Mathematics Home 3**

# Fraction Activities with Pattern Blocks

**With your grades K-3 children:**

Allow your child to explore a collection of pattern blocks.

- A) Ask him/her to make the yellow hexagon out of other blocks in as many ways as possible.
- B) Ask him/her to describe each color as a fraction of the yellow hexagon.

**With your grades 4-8 children:**

Allow your child to explore a collection of pattern blocks.

- A) Ask him/her to describe each color as a fraction of the yellow hexagon.
- B) Pose some of the "Sharing Cookies" or "Pattern Block Chart" problems. Ask your child to think out loud so that you can better understand his/her thinking about fractions.

**With your grades 9-12 children:**

Ask your child how he/she would explain fractions to a younger sibling or friend. Ask your son/daughter to consider some of these questions:

- A) What are the most important fraction ideas to convey to someone just learning fractions?
- B) What pictures or models would you use to explain fractions to someone?
- C) What ideas about fractions did you find the most challenging to learn?

## Fraction Problems II

Solve using pattern blocks, other objects, or a picture.



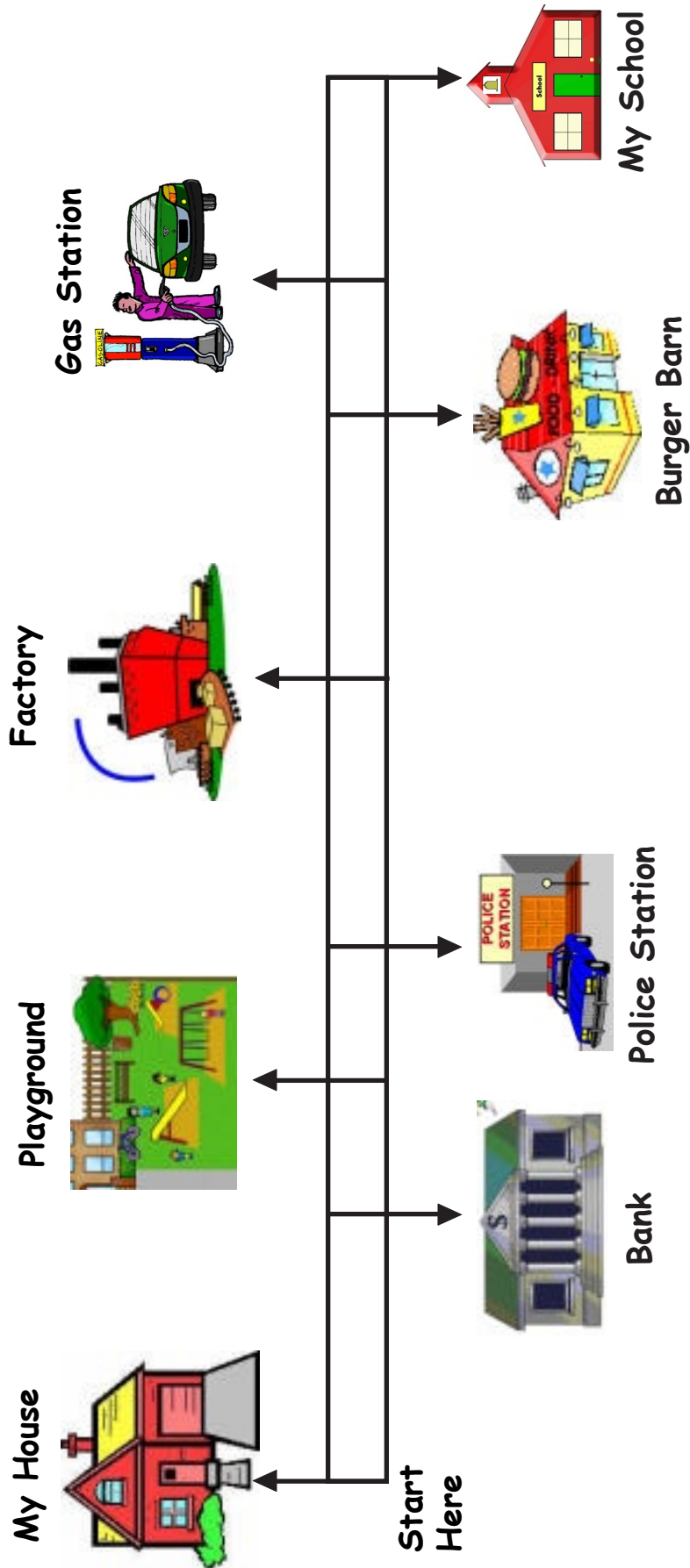
1. It takes  $2\frac{1}{3}$  cups of water to make 2 servings of soup. How much water will it take to make 5 servings of the same soup?
2. This week Angel volunteered for  $6\frac{2}{3}$  hours at an animal shelter and for  $3\frac{1}{2}$  hours at the Children's Center. How many hours of volunteer work did he do this week?
3. Maria used  $8\frac{5}{6}$  feet of pipe to repair the sprinkler system in her front yard and  $6\frac{1}{3}$  feet of pipe to repair the sprinkler system in her back yard. How much more pipe did she use in her front yard than her back yard?

Instructional programs from prekindergarten through grade 12 should enable all students to--

- **Communicate their mathematical thinking coherently and clearly to peers, teachers, and others**
- **Analyze and evaluate the mathematical thinking and strategies of others**

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## Measuring Map



This map shows the way from my house to my school.  
Always start measuring at My House.

## List of Locations

Write the fractional distance from "My House" to the following locations.

Spanish

From



Bank

\_\_\_\_\_



Playground

\_\_\_\_\_



Police Station

\_\_\_\_\_



Factory

\_\_\_\_\_



Burger Barn

\_\_\_\_\_



Gas Station

\_\_\_\_\_



My School

\_\_\_\_\_



**Cuisenaire® Rod Relationships**

Use Cuisenaire rods to complete each statement.  
Fill in each blank with a single color or a fraction.



1. \_\_\_\_\_ is  $\frac{1}{3}$  of blue.
2. White is  $\frac{1}{6}$  of \_\_\_\_\_.
3. Lt green is \_\_\_\_\_ of blue.
4. \_\_\_\_\_ is  $\frac{3}{5}$  of orange.
5. Purple is \_\_\_\_\_ of black.
6. Lt green is  $\frac{3}{5}$  of \_\_\_\_\_.
7. Yellow is \_\_\_\_\_ of dark green.
8. Black is  $\frac{7}{8}$  of \_\_\_\_\_.
9. Brown is \_\_\_\_\_ of blue.
10. \_\_\_\_\_ is  $\frac{3}{4}$  of brown.

Find as many pairs as you can to complete each statement:

11. \_\_\_\_\_ is  $\frac{2}{3}$  of \_\_\_\_\_
12. \_\_\_\_\_ is  $\frac{4}{5}$  of \_\_\_\_\_

## Bringing Mathematics Home 4

# Fraction Activities with Cuisenaire® Rods

**With your grades K-3 children:**

Let your child examine the Cuisenaire® rods.

- A) Ask your child to find all the rod pairs that show  $\frac{1}{2}$ ,  $\frac{1}{3}$ , or  $\frac{1}{4}$ .
- B) Show your child the "Measuring Map." Ask your child to place rods along the length of the map from MY HOUSE to MY SCHOOL. Now ask your child to complete statements like, "When I get to the \_\_\_\_\_ I will be  $\frac{1}{3}$  of the way to school" or "The Burger Barn is \_\_\_\_\_ of the way from home to school."
- C) Now cover the map with 14 green rods and pose similar statements for your child to complete.
- D) Ask your child to find other colors that divide the map evenly and make additional statements.

**With your grades 4-8 children:**

Let your child examine the Cuisenaire® rods.

- A) Ask him/her to name some fractional relationships he/she finds in the form "\_\_\_\_\_ is (fraction) of \_\_\_\_\_."
- B) Pose some of the questions on the "Cuisenaire Rod Relationships" sheet to your child. Ask your child to explain his/her thinking in solving these problems.

**With your grades 9-12 children:**

Let your child to examine the Cuisenaire rods. Pose some of the questions on the "Cuisenaire® Rod Relationships" sheet to your child.

- A) Ask your child to explain his/her thinking in solving these problems.
- B) Ask him/her to explore how the rods could be used to explain other mathematical concepts like ratio, percent, factors, and multiples.

## Fraction Problems III

Solve using a Cuisenaire® rods, other objects, or pictures.



1. On Friday, the Martinez family drove  $\frac{3}{4}$  of the way to grandma's house. They drove 315 miles on Friday. How far is it from the Martinez family home to grandma's house?
2. Brenda is saving money so that she can buy a new CD player that costs \$80. So far she has saved \$64. What fraction of the total has she saved so far?
3. Dominic planted  $\frac{2}{5}$  of the flowers his father bought for their garden. His brother, Julio, planted  $\frac{1}{4}$  as many as Dominic. Father planted the rest. What fraction of the whole garden did each person plant?

### NCTM Technology Principle

Technology is essential in teaching and learning mathematics; it influences the mathematics that is taught and enhances students' learning.

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## Which is Larger?

- a) Which is larger? **0.45** or **0.71**
- b) Which is larger? **0.8** or **0.24**
- c) Which is larger? **0.05** or **0.5**
- d) Which is larger? **0.734** or **0.73**
- e) Which is larger? **0.02** or **0.020**
- f) Which is larger? **0.5931** or **0.6**

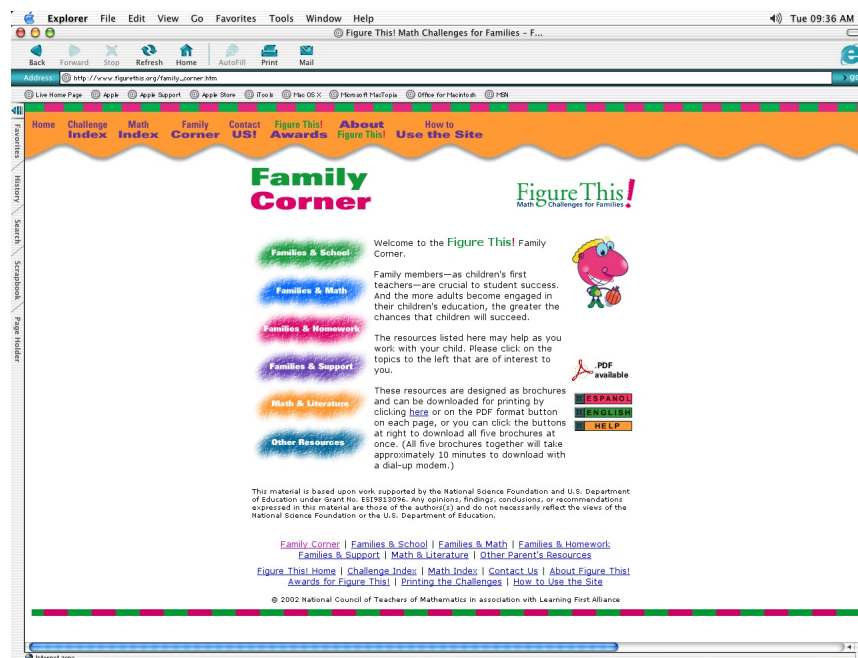
**Decimals Strips**

**Cut on solid outlines to make two number strips.**

1
0

1
0

## Bringing Mathematics Home 5



Go online to do math! Invite your children to work with you.

If you do not have a computer with Internet access at home, visit your child's school or a public library. Bring along a pencil and paper so that you can try some of the problems. If possible, print pages you find interesting to share in the next class session.

<http://www.ed.gov/pubs/Recipes/index.html>

<http://www2.edc.org/makingmath/parent.asp>

[http://www.figurethis.org/fc/family\\_corner.htm](http://www.figurethis.org/fc/family_corner.htm)

*Note: website addresses updated as of November 26, 2007*

**Decimal Problems I**

Look at the student work shown below.  
Explain and correct their errors using a number strip, base ten blocks, money or a picture.



1. Addition Error:

$$\begin{array}{r} 3.1 \\ +1.63 \\ \hline 1.94 \end{array}$$

2. Notation Error:

**two and 3 hundredths is written 2.3**

3. Comparison Error:

**0.15 is larger than 0.8**



Instructional programs from prekindergarten through grade 12 should enable all students to--

- **Make and investigate mathematical conjectures**
- **Develop and evaluate mathematical arguments and proofs**

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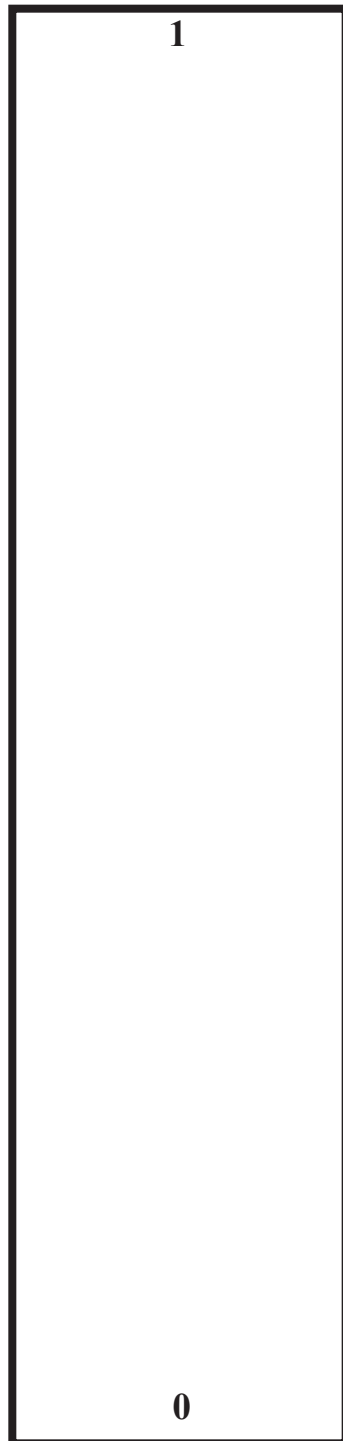
**Fraction Family Cards**

Copy on cardstock and cut into 16 cards per group of two or three.

<b>Halves</b>	<b>Elevenths</b>
<b>Thirds</b>	<b>Twelfths</b>
<b>Fourths</b>	<b>Fifteenths</b>
<b>Fifths</b>	<b>Sixteenths</b>
<b>Sixths</b>	<b>Eighteenths</b>
<b>Eighths</b>	<b>Twentieths</b>
<b>Ninths</b>	<b>Twenty-Fifths</b>
<b>Tenths</b>	<b>Thirtieths</b>

**Fraction Strips A**

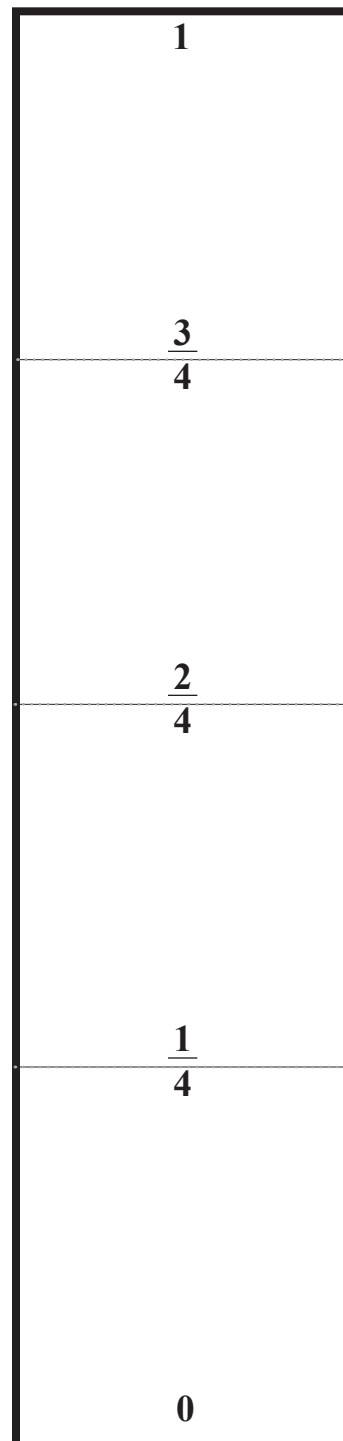
Cut on solid outlines to make three fraction strips.



**Halves**



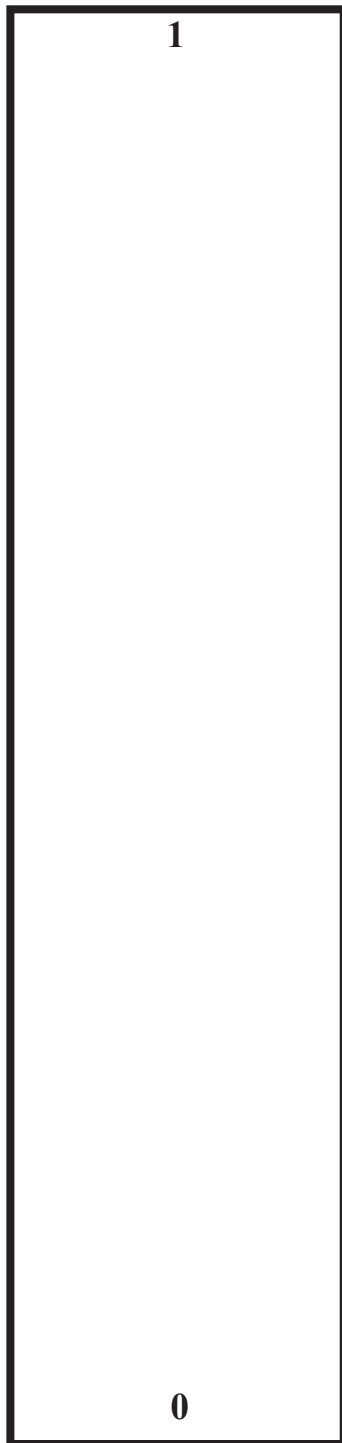
**Thirds**



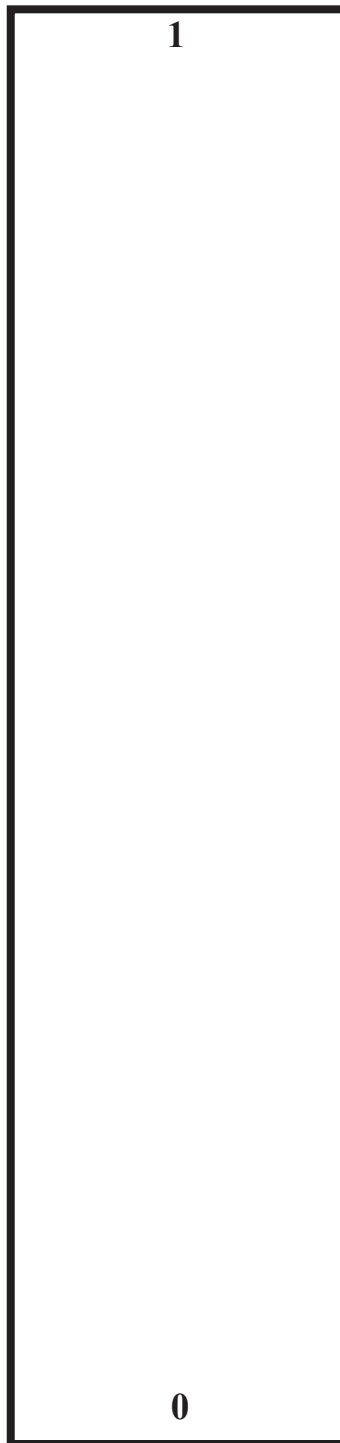
**Fourths**

**Fraction Strips B**

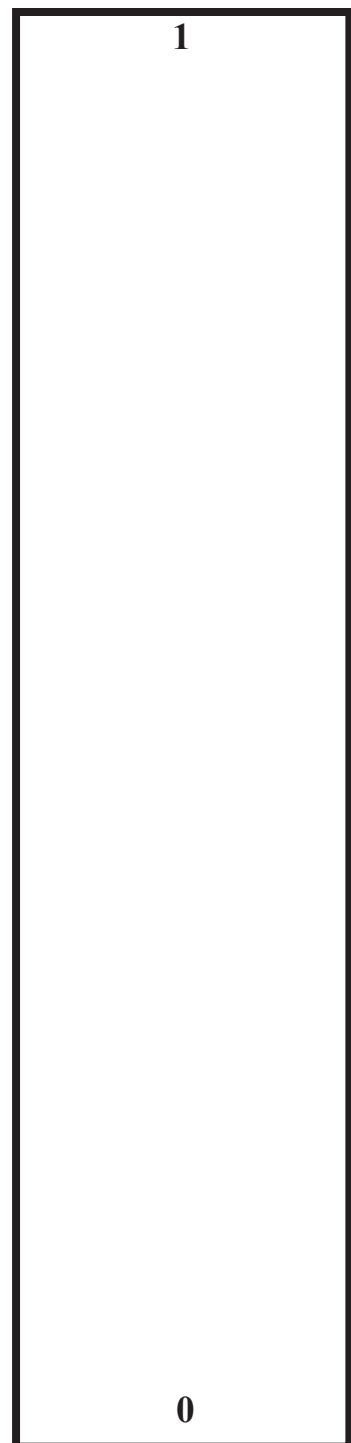
**Cut on solid outlines to make three fraction strips.**



**Fifths**



**Eighths**



**Twentieths**

## Fraction-Decimal Summary Chart

<b>Halves</b>	<b>1/2</b>	<b>0.5</b>
<b>Thirds</b>	<b>1/3</b>	<b>0.<math>\overline{3}</math></b>
	<b>2/3</b>	<b>0.<math>\overline{6}</math></b>
<b>Fourths</b>	<b>1/4</b>	<b>0.25</b>
	<b>3/4</b>	<b>0.75</b>
<b>Fifths</b>	<b>1/5</b>	<b>0.2</b>
	<b>2/5</b>	<b>0.4</b>
	<b>3/5</b>	<b>0.6</b>
	<b>4/5</b>	<b>0.8</b>
<b>Sixths</b>	<b>1/6</b>	<b>0.<math>\overline{16}</math></b>
	<b>5/6</b>	<b>0.<math>\overline{83}</math></b>
<b>Sevenths*</b>	<b>1/7</b>	<b>0.<math>\overline{142857}</math></b>
	<b>2/7</b>	<b>0.<math>\overline{285714}</math></b>
	<b>3/7</b>	<b>0.<math>\overline{428571}</math></b>
	<b>4/7</b>	<b>0.<math>\overline{571428}</math></b>
	<b>5/7</b>	<b>0.<math>\overline{714285}</math></b>
<b>Eighths</b>	<b>1/8</b>	<b>0.125</b>
	<b>3/8</b>	<b>0.375</b>
	<b>5/8</b>	<b>0.625</b>
	<b>7/8</b>	<b>0.875</b>
<b>Ninths</b>	<b>1/9</b>	<b>0.<math>\overline{1}</math></b>
	<b>2/9</b>	<b>0.<math>\overline{2}</math></b>
	<b>4/9</b>	<b>0.<math>\overline{4}</math></b>
	<b>5/9</b>	<b>0.<math>\overline{5}</math></b>
	<b>7/9</b>	<b>0.<math>\overline{7}</math></b>
	<b>8/9</b>	<b>0.<math>\overline{8}</math></b>
<b>Tenths</b>	<b>1/10</b>	<b>0.1</b>
	<b>3/10</b>	<b>0.3</b>
	<b>7/10</b>	<b>0.7</b>
	<b>9/10</b>	<b>0.9</b>
<b>Elevenths</b>	<b>1/11</b>	<b>0.<math>\overline{09}</math></b>
	<b>2/11</b>	<b>0.<math>\overline{18}</math></b>
	<b>3/11</b>	<b>0.<math>\overline{27}</math></b>
	<b>4/11</b>	<b>0.<math>\overline{36}</math></b>

<b>Twelfths</b>	<b>1/12</b>	<b>0.<math>\overline{083}</math></b>
	<b>5/12</b>	<b>0.<math>\overline{416}</math></b>
	<b>7/12</b>	<b>0.<math>\overline{583}</math></b>
	<b>11/12</b>	<b>0.<math>\overline{916}</math></b>
<b>Thirteenths*</b>	<b>1/13</b>	<b>0.<math>\overline{076923}</math></b>
	<b>2/13</b>	<b>0.<math>\overline{153846}</math></b>
	<b>3/13</b>	<b>0.<math>\overline{230769}</math></b>
	<b>4/13</b>	<b>0.<math>\overline{307692}</math></b>
<b>Fourteenths*</b>	<b>1/14</b>	<b>0.<math>\overline{0714285}</math></b>
	<b>3/14</b>	<b>0.<math>\overline{2142857}</math></b>
	<b>5/14</b>	<b>0.<math>\overline{3571428}</math></b>
	<b>7/14</b>	<b>0.<math>\overline{6428571}</math></b>
<b>Fifteenths</b>	<b>1/15</b>	<b>0.<math>\overline{06}</math></b>
	<b>2/15</b>	<b>0.<math>\overline{13}</math></b>
	<b>4/15</b>	<b>0.<math>\overline{26}</math></b>
	<b>7/15</b>	<b>0.<math>\overline{46}</math></b>
<b>Sixteenths</b>	<b>1/16</b>	<b>0.0625</b>
	<b>3/16</b>	<b>0.1875</b>
	<b>5/16</b>	<b>0.3125</b>
	<b>7/16</b>	<b>0.4375</b>
<b>Eighenths</b>	<b>1/18</b>	<b>0.<math>\overline{05}</math></b>
	<b>5/18</b>	<b>0.<math>\overline{27}</math></b>
	<b>7/18</b>	<b>0.<math>\overline{38}</math></b>
	<b>11/18</b>	<b>0.<math>\overline{61}</math></b>
<b>Twentieths</b>	<b>1/20</b>	<b>0.05</b>
	<b>3/20</b>	<b>0.15</b>
	<b>7/20</b>	<b>0.35</b>
	<b>9/20</b>	<b>0.45</b>
<b>Twenty-fifths</b>	<b>1/25</b>	<b>0.04</b>
	<b>2/25</b>	<b>0.08</b>
	<b>3/25</b>	<b>0.12</b>
	<b>4/25</b>	<b>0.16</b>
<b>Thirtieths</b>	<b>1/30</b>	<b>0.<math>\overline{03}</math></b>
	<b>7/30</b>	<b>0.<math>\overline{23}</math></b>
	<b>11/30</b>	<b>0.<math>\overline{36}</math></b>
	<b>13/30</b>	<b>0.<math>\overline{43}</math></b>

\* Not included in the participants' fraction family cards

## Bringing Mathematics Home 6



Go online to do math! Invite your children to work with you.

If you do not have a computer with Internet access at home, visit your child's school or a public library. Bring along a pencil and paper so that you can try some of the problems. If possible, print pages you find interesting to share in the next class session.

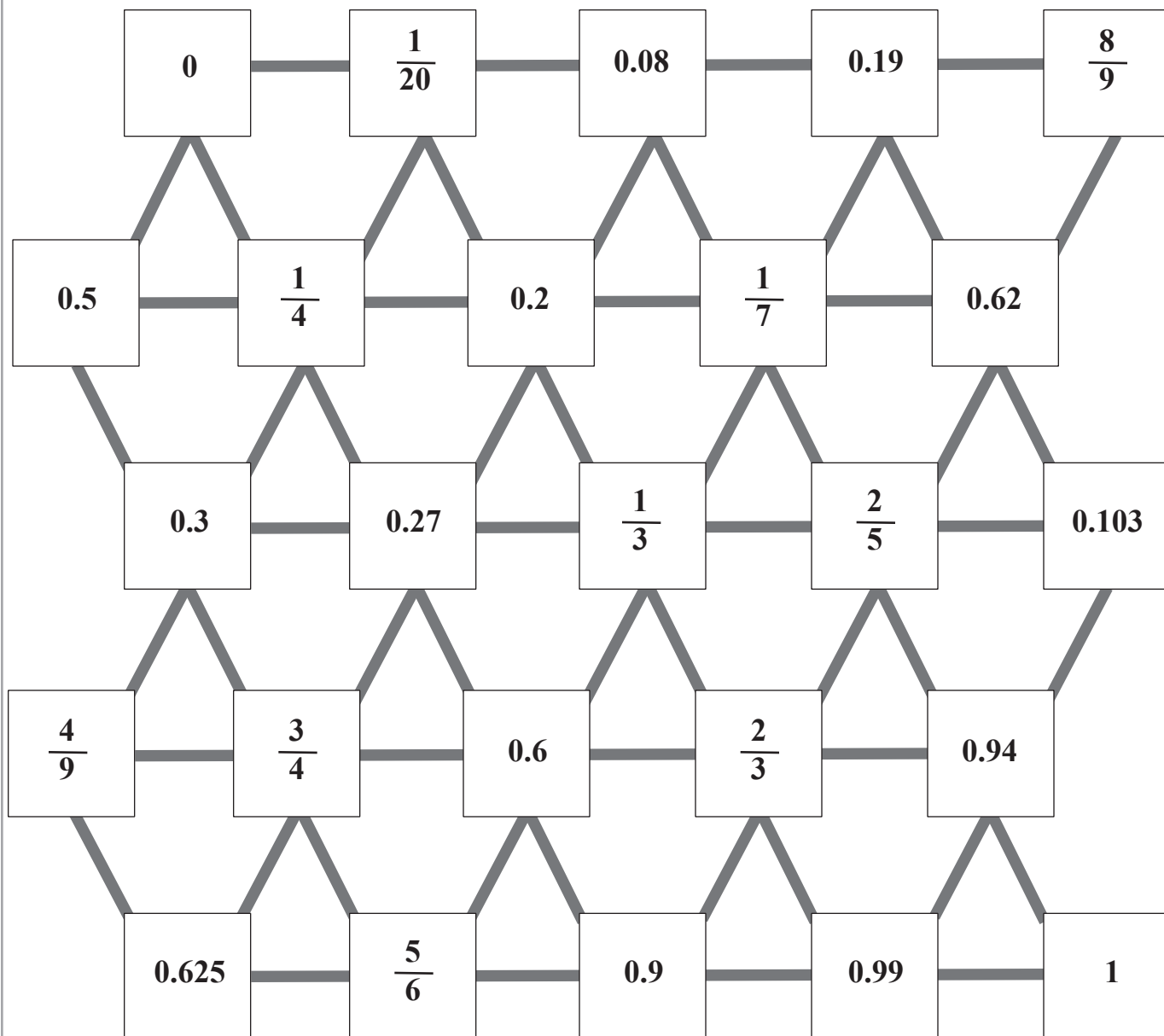
<http://www.nctm.org/resources/families.asp>

<http://www.gomath.com>

<http://visualfractions.com>

## Decimal Problems II

Find a path through the maze from zero to one. You must always move to a larger value. How many paths can you find? What is the longest path? The shortest path?



Instructional programs from prekindergarten through grade 12 should enable all students to--

- Understand numbers, ways of representing numbers, relationships among numbers, and number systems
- Understand meanings of operations and how they relate to one another
- Compute fluently and make reasonable estimates

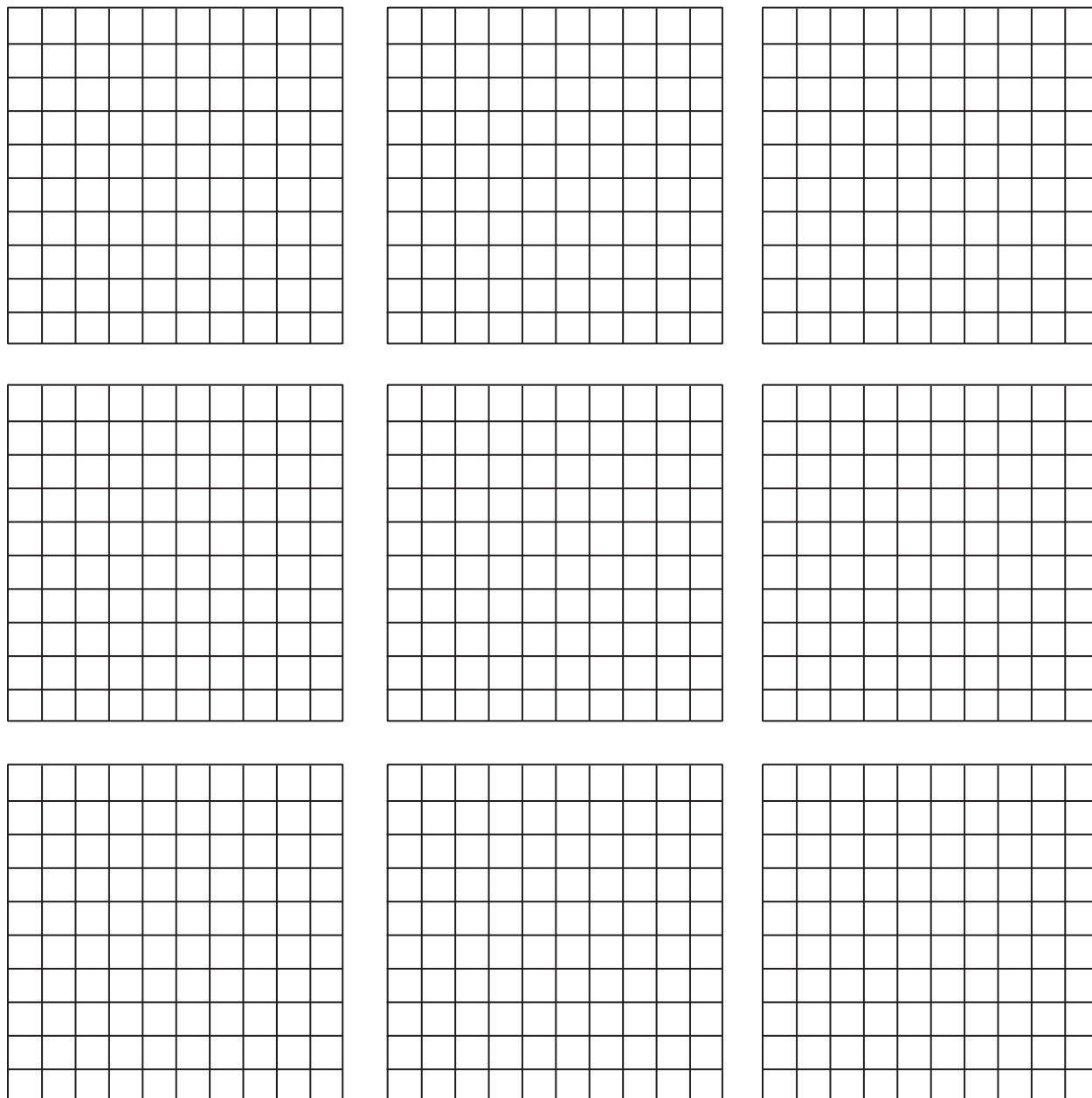
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*In the middle grades, students should become facile in working with fractions, decimals, and percents.*

*Students can develop a deep understanding of rational numbers through experiences with a variety of models such as fraction strips, number lines, 10 x 10 grids, area models, and objects.*



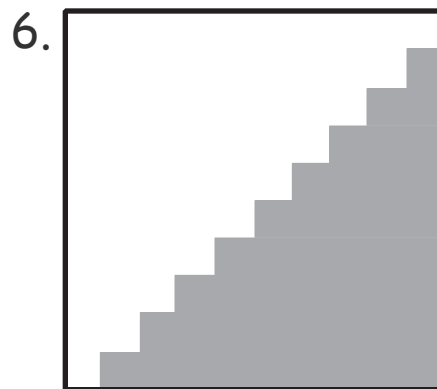
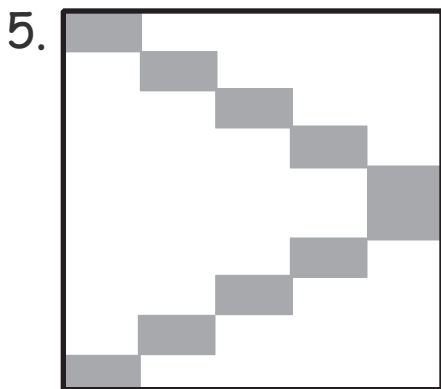
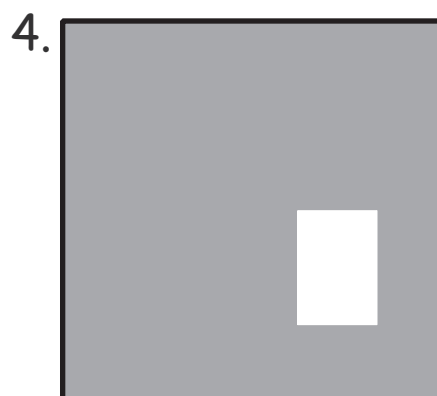
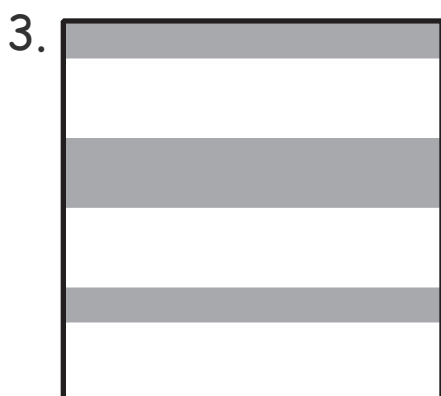
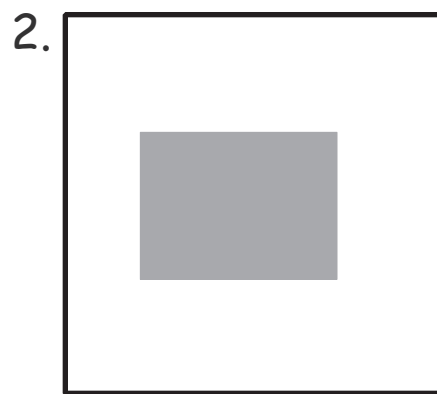
## Transparent Grids



Copy this sheet onto transparency film and cut apart to form  
9 transparent hundred grids. Give each participant 1 transparent grid.

## Percent Estimation

Estimate the percent of each square that is shaded.



## Percent and Color Tiles



Form a collection of color tiles to fit each description below.  
What are the fewest tiles that could be used to form this collection?  
Write the number of tiles in each color below each problem.

- |                            |                       |                          |              |
|----------------------------|-----------------------|--------------------------|--------------|
| 1) 10% blue                | 20% green             | 30% red                  | 40% yellow   |
| 2) 50% red                 | 10% blue              | 25% yellow               | 15% green    |
| 3) 75% green               | 25% yellow            |                          |              |
| 4) 80% blue                | 10% red               | 5% yellow                | 5% green     |
| 5) 20% yellow              | 60% blue              | 20% green                |              |
| 6) 16% green               | 34% blue              | 40% yellow               | 10% red      |
| 7) 48% yellow              | 12% red               | 17% blue                 | 23% green    |
| 8) 12.5% blue              | 25% green             | 50% red                  | 12.5% yellow |
| 9) 75% green               | 24% yellow            | 0.5% blue                | 0.5% red     |
| 10) $33\frac{1}{3}\%$ blue | $33\frac{1}{3}\%$ red | $33\frac{1}{3}\%$ yellow |              |

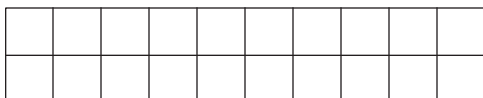
## Percent Grids

### 1. Shade each grid as indicated.

- a) Shade 60% of this grid.



- b) Shade 85% of this grid.

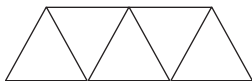


- c) Shade 44% of this grid.

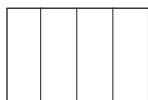


### 2. Complete each grid to show 100% of the grid.

- a) The portion shown is 50% of the whole grid.



- b) The portion shown is 80% of the whole grid.



- c) The portion shown is 60% of the whole grid.

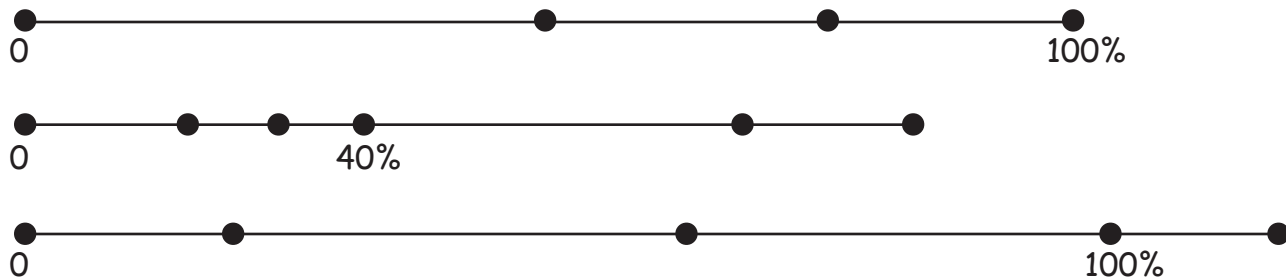


- d) The portion shown is 75% of the whole grid.

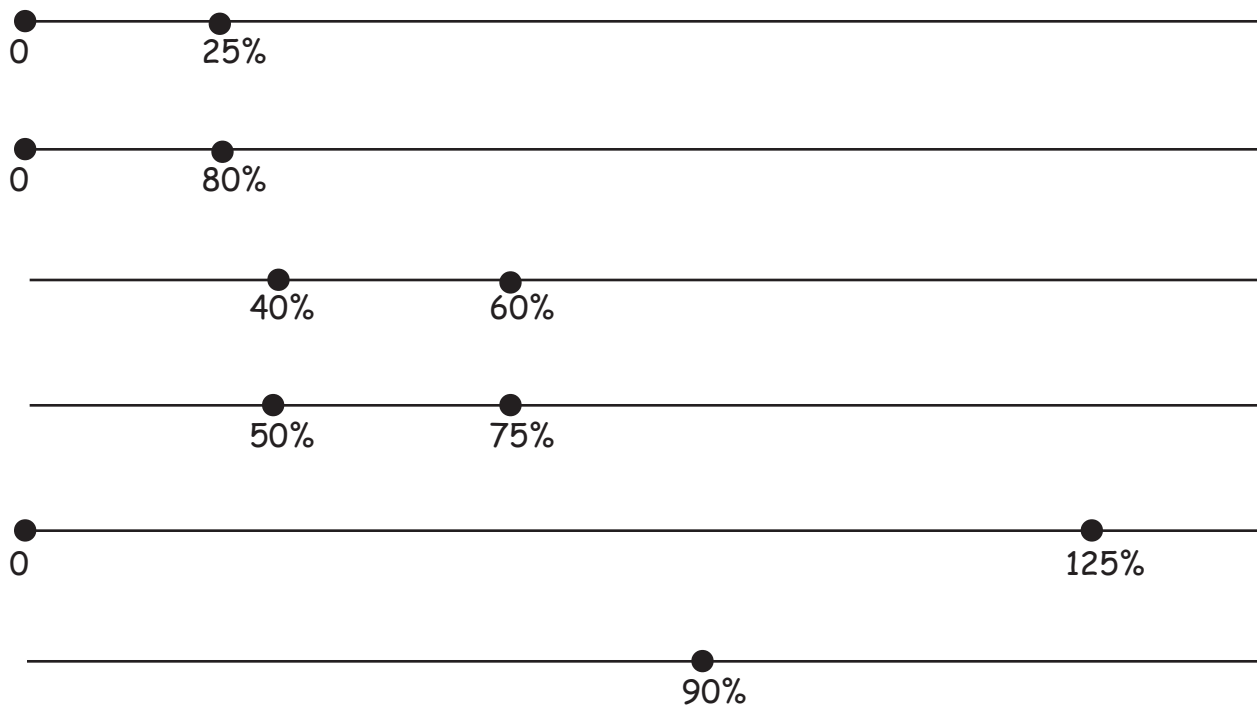


**Percent Number Lines**

1. Estimate a percent to go with each spot on each line.



2. Estimate and label the 100% spot on each line.



**Bringing Mathematics Home 7**

## Positively Impact Your Children!

There are many ways parents can positively impact their children's success in mathematics. Read the **Top Ten Tips for Parents** on the following page. Choose one or more of the suggestions on the list to be your focus for the week. See how many ways you can apply these ideas in your family's life. Be prepared to share with the class next week.

## Top Ten Tips for Parents

1. **There is nothing to fear but fear itself.** Regardless of your own experience with school mathematics, you can encourage your child to develop a love of math through supporting their performance, helping with school projects, and discussing their homework. Help them appreciate how a strong foundation in math can lead to great opportunities in the future.
2. **Stay informed.** Keep yourself apprised of the specific academic standards that children are required to meet at each grade level. Let school administrators know that you support professional development for teachers so that all participants can be taught by instructors who are well prepared in content and technique of mathematics training and current technology.
3. **Make sure your kids are taking advanced courses.** Encourage your child to master Algebra and Geometry by the end of ninth grade. The mathematics participants study in the middle grades has a strong effect on whether they will be able to take the higher levels of mathematics necessary for admission to college and for an increasing number of jobs.
4. **Be a champion for challenge.** A challenging math curriculum can stimulate children to learn and can positively influence growth in other areas of their education. Advocate for mathematics reform efforts that focus on raising expectations for participant performance.
5. **Make math fun.** Spend time with kids on simple board games, puzzles, and activities that encourage better attitudes and stronger math skills. Even everyday activities such as playing with toys in a sandbox or in a tub at bath time can teach children math concepts like weight, density, and volume. Check your television listings for shows that can reinforce math skills in a practical and fun way.
6. **Mix in math.** The kitchen is filled with tasty opportunities to teach fractional measurements, like doubling and dividing cookie recipes.
7. **Use real world examples to teach math.** Point out ways that people use math every day to pay bills, balance their checkbooks, figure out their net earnings, make change, and tip at restaurants. Involve older children in projects that incorporate geometric and algebraic concepts like planting a garden, building a bookshelf, or figuring how long it will take to drive to your family vacation destination.
8. **Prepare them for a profession.** Let kids know what vocations require a sound base in mathematics. Careers in carpentry, landscaping, medicine, pharmacy, aeronautics, and meteorology all require strong math skills. Let them know that they too can be successful in math. Ask local employers to sponsor school-to-work programs and career fairs.
9. **Tune into technology.** Encourage your child to use computers and the Internet at home, your local library, and after-school programs for tasks like developing charts, graphs, maps, and spreadsheets.
10. **Encourage children to solve problems.** Provide assistance, but let them figure it out themselves. Problem solving is a lifetime skill.

From [http://www.learningfirst.org/math\\_tips.html](http://www.learningfirst.org/math_tips.html), Retrieved on July 27, 2001

## Percent Problems



Solve using color tiles, a grid or picture.

- 1) There are 20 participants in Mr. Ruiz's class. Three of these participants are left-handed. What percent of his participants are left-handed?
- 2) In Mrs. Brown's class 80% of the participants have a younger brother or sister. Mrs. Brown has 25 participants in her class. How many participants in her class have a younger brother or sister?
- 3) There are 18 participants in Ms. Vega's class who have perfect attendance. This is 60% of her class. How many participants are in Ms. Vega's class?



## NCTM Connections Standard

Instructional programs from prekindergarten through grade 12 should enable students to--

- Recognize and use connections among mathematical ideas.
- Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.

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**Percent Strip**

**Cut on solid outlines to make a percent number strip.**

<b>100%</b>
<b>0%</b>

**Cuisenaire® Rod Puzzles**

Fill in each blank with a color or a percent.

1. If orange = 100%, then red = \_\_\_\_\_%.
2. If orange = 100%, then \_\_\_\_\_ = 70%.
3. If brown = 100%, then yellow = \_\_\_\_\_%.
4. If \_\_\_\_\_ = 100%, then white = 25%.
5. If \_\_\_\_\_ = 100%, then purple = 90%.
6. If purple = 100%, then dark green = \_\_\_\_\_%.
7. If dark green = 50%, then light green = \_\_\_\_\_%.
8. If blue = 90%, then \_\_\_\_\_ = 20%.
9. If \_\_\_\_\_ = 125%, then red = 50 %.
10. If orange = 10%, then white = \_\_\_\_\_%.
11. If black =  $\frac{7}{8}$ , then red = \_\_\_\_\_%.
12. If purple =  $\frac{1}{3}$ , then \_\_\_\_\_ = 50%.
13. If red = 0.4, then \_\_\_\_\_ = 100%.
14. If \_\_\_\_\_ = 0.1, then orange = 50%.



## Bringing Mathematics Home 8



### Your Child's Classroom

It is likely that the teaching approach used in this class is different from what you remember in your school experience. Applying the Principles and Standards set for the by the NCTM requires teachers to rethink and revise their instructional methods.

Read the list on the next page, **"How Will Math Look in Your Child's Classroom?"** Ask your child if this description matches their experience in their mathematics class. Perhaps you might like to visit your child's classroom. In this way you will be able to see for yourself what kind of mathematical experiences are being provided for your child!

Remember that during any one visit, you should see some evidence of these things taking place in the classroom; however, you may have visited the teacher during a time when less are evident than usual. Do not jump to quick conclusions about the teacher. It may take several visits before you get a good picture of what takes place in the classroom.

If your child's classroom contains many of the attributes on this list, you should feel assured that your child is gaining a positive educational experience in line with what expert educators advocate.

If your child's classroom does not contain many of the attributes on this list, perhaps you can give them these experiences at home while encouraging change at their school.

## How Will Math Look in Your Child's Classroom?

As a result of the recent effort in mathematics teaching to include understanding in the teaching of math, from basic through advanced levels, the picture of your child's math class may, indeed, look different from what you remember when you were in school. For instance:

- **Children will be expected to know their math facts:** Children will be learning their math facts with an understanding of how facts relate to each other.
- **Children may be doing more than arithmetic:** Children will be seeing that math is much more than arithmetic (knowing the facts and number operations); it involves estimation, geometry, probability, statistics, and more.
- **Children will be striving to achieve high goals:** Children will be achieving high standards of understanding, complexity, and accuracy set for them by their parents, teachers, schools, and states.
- **Children may be actively involved in a mathematics investigation:** Children will be doing tasks that involve investigations. They will be talking and writing explanations for their thinking.
- **Children may be working with one another:** Children will be collaborating to make discoveries, draw conclusions, and discuss math.
- **Children may be evaluated in a variety of ways:** Teachers will use many different ways to determine if children know and understand math concepts. Some of these will include writing samples, projects, or written tests. Not all evaluation will be the same for every classroom or every child.
- **Children may be using calculators to solve problems:** They will be using calculators not as crutches but as tools to solve more complex problems with bigger numbers than they could do otherwise. Children with good knowledge of math facts, number sense, and reasoning about math will be able to use the calculator most effectively.
- **Children may be using computers:** They will be developing databases, spreadsheets and computer graphics, while solving problems.

From <http://www.ed.gov/pubs/parents/math/mathlook.html>

Retrieved July 27, 2001