MathLinks: Essentials
Proportional Reasoning 1, Student Packet
RATIO REPRESENTATIONS

MY WORD BANK (page 0)

Explain the mathematical meaning of each word or phrase, using pictures and examples when possible. (See section 1.5.) Key mathematical vocabulary is underlined throughout the packet.

double number line / equivalent ratios / ratio / tape diagram / unit price / unit rate

NANA'S CHOCOLATE MILK (page 1)

Follow your teacher's directions. How would you fix the recipe?

(chart) What I should have done: / What I did:

TABLES AND TAPE DIAGRAMS (page 2)

We will use ratios, tables, and tape diagrams to solve problems.

GETTING STARTED

1. According to the *directions* on a *can of frozen orange juice* concentrate, 3 *cans* of water are to be mixed with 1 can of concentrate to make *orange juice.*
   Draw a picture to illustrate this mixture.

2. Complete the table.

(chart-horizontal) Draw a picture to illustrate this mixture. / Will this mixture be "more orangey" than, "less orangey" than, or "the same" as recommended in the directions?
(chart-vertical) Maria adds 4 cans of water to one can of concentrate. / Gustave adds 2 cans of water to one can of concentrate.

PAINT MIXTURES (page 3)

Your teacher will give you cards that indicate different ways to mix red paint (shaded) with white paint (un-shaded) to form shades of pink. Discuss with your partners and record your thinking.

1. Arrange the mixture cards from lightest pink to darkest pink and draw the results here.

(chart) Mixture Card:

Critique the reasoning of each student.

2. Jody said, “Mixture B and mixture C will be the same because they both have the same number of parts of red.

3. Ed said, “Mixture A and mixture D will be the same because mixture A has one more cup of white than red, and mixture D has one more cup of white than red.”

4. Choose a different pair of mixture cards than the ones discussed in 2 and 3 above and explain how you know which mixture represents the darker pink.

TAPE DIAGRAMS (page 4)

1. On this page we will work with tape diagrams. Find the definition and examples in section 1.5, discuss them with your teacher and the class, and record in My Word Bank.

Here are two ways to draw a tape diagram to represent the mixture card B.

Problems 2-4: Draw tape diagrams to represent each paint mixture.

(chart) Mixture A / Mixture C / Mixture D

Problems 5-6: Alex and Lily were asked how many gallons of red paint and white paint were needed to make 12 gallons of paint that is the same shade as the mixture on card B.

(chart) Explain method

5b. Use Alex’s method to find the amount of each ingredient needed to make 9 quarts of mixture C.

6b. Use Lily’s method to find the amount of each ingredient needed to make 72 ounces of mixture D.

PRACTICE 1 (page 5)

Use tape diagrams to solve these problems.