# **Ball Bounce I**

Ball Description: An old blue handball

This ball rebounds to a height of 8 inches when dropped from 24 inches.

The rebound ratio for this ball is: 24/8 or 3/1 (simplify if possible)

Predict the rebound height when the ball is dropped from 30 inches.

DROP Height

REBOUND Height

0

0

1

8

b

3

24

30



3b = 30

b = 10

The ball should rebound to a height of 10 inches when dropped from 30 inches.

Teacher Instructions: The emphasis of this lesson will be to introduce the concept of the double sided numberline for word problems. Begin by showing this experiment in front of the class. Using a bouncy ball, drop it from a height of 24 inches (using a meterstick). Repeat this several times and come to a consensus as to the rebound height. Then illustrate the use of a doublesided numberline to chart the rebounds for several heights and predict a rebound from a specified height. See example above.

Predict what drop height would be necessary to have a rebound of \_\_\_\_ inches.

# **Ball Bounce II**

Ball Description: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

This ball rebounds to a height of \_\_\_\_\_ inches when dropped from 20 inches.

The rebound ratio for this ball is: \_\_\_\_\_\_\_\_\_ (simplify if possible)

Return your meter stick and ball to your teacher and ask for numbers to complete the following questions.

Use a proportion with a variable to predict the rebound height when the ball is dropped from \_\_\_\_ inches.

Use a proportion with a variable to predict what drop height is needed to have a rebound of \_\_\_\_\_.

# **Rates on a Double-sided Numberline**

Teacher Instructions: Repeat the previous experiment with another ball of a differing rebound ratio. The emphasis of this lesson will be to reinforce the concept of the double sided numberline for word problems. See previous example.

Teacher Instructions: This experiment should be done as a whole-class demo. Have one student walk heel-to-toe for a set number of seconds (short… 12, 20, etc.) Put this information on the numberline and write a simpler ratio if possible. Then create a question that can be solved using a numberline, such as one of the examples below. Walk through each step until the answer is in a complete sentence. Make sure students use the simplest ratio and the ratio with the variable to write their proportion. See example below.

A rate means the constant speed at which something happens.

Rates are usually expressed as a ratio.

**RATES EXPERIMENT #1:**

**Juan** walks **15 steps** in **12 seconds.**

DIRECTIONS: Fill in this information on the double-sided number line below and follow directions to use it to answer the question your teacher will ask.

x

15

Steps

5

0

120

12

4

0

Seconds

Question from the teacher: “How far can Juan walk in 120 seconds?”



Proportion:

Answer to the question in a sentence:

Juan can walk 150 steps in 120 seconds.

# **Rates on a Double-Sided Numberline II**

Teacher Instructions: Repeat the instructions from the previous experiment. Do the experiment having a student clap their hands quickly, then create a question that can be solved using a numberline. Walk through each step until the answer is in a complete sentence. Make sure students use the simplest ratio and the ratio with the variable to write their proportion.

A rate means the constant speed at which something happens.

Rates are usually expressed as a ratio.

**RATES EXPERIMENT #2:**

\_\_\_\_\_\_\_\_ claps \_\_\_\_\_\_\_\_\_\_\_ times in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DIRECTIONS: Fill in this information on the double-sided number line below and follow directions to use it to answer the question your teacher will ask.

0

0

Question from the teacher:

Proportion:

Answer to the question in a sentence:

# **Rates on a Double-Sided Numberline III**

**RATES EXPERIMENT #3:**

\_\_\_\_\_\_\_\_ can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

DIRECTIONS: Fill in this information on the double-sided number line below and follow directions to use it to answer the question your teacher will ask.

0

0

Question from the teacher:

Proportion:

Answer to the question in a sentence:

Use a double-sided number line and a proportion to solve each of the questions below.

1. Maribel earns $34 in 4 hours of work. How long will it take her to earn $85?

It will take her 10 hours to earn $85.

2. The factory can make 60 bicycles in 8 hours. How many can it make 20 hours?

The factory can make 150 bicycles in 20 hours.