Today's Materials

- device
- calculator
- pencil
- ruler

Four Representations

Lesson 14

CCSS Standards: Building on	• 6.RP.A.3
CCSS Standards: Addressing	• 7.RP.A • 7.RP.A.2

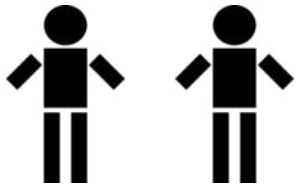
Let's contrast relationships that are and are not proportional in four different ways!

Today's Goals

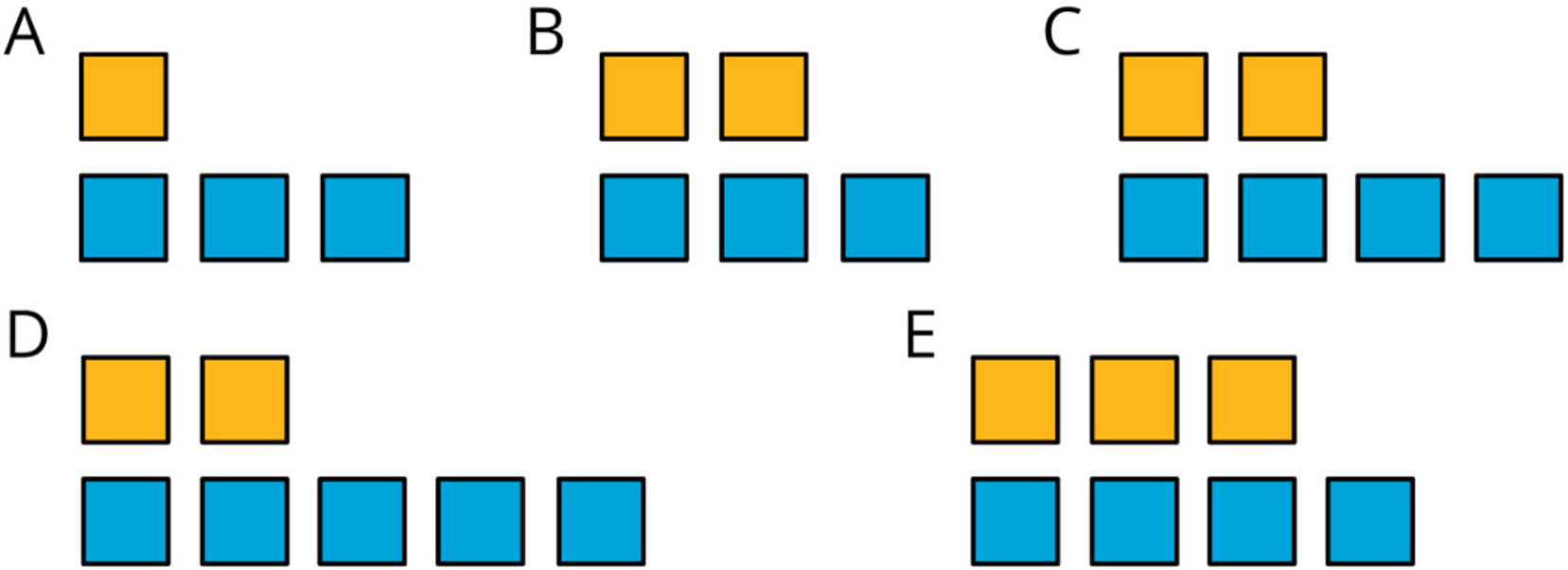
- ❑ I can use units to help me understand information about proportional relationships.
- ❑ I can make connections between graphs, tables, and equations of a proportional relationship.

Which is the Bluest?

Warm Up

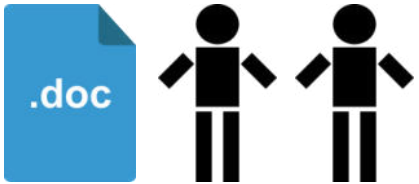


1. Which group of blocks is the bluest?
2. Order the groups of blocks from least blue to bluest.



One Scenario, Four Representations

Activity 14.2



#1 → Select 2 things from different lists. Make up a situation where there is a *proportional relationship* between the quantities.

#2 → Select 2 other things from the lists, and make up a situation where there is a relationship between quantities that involve these things, but the relationship is *not proportional*.

creatures
- starfish
- centipedes
- earthworms
- dinosaurs

length
- centimeters
- cubits
- kilometers
- parsecs

time
- nanoseconds
- minutes
- years
- millennia

volume
- milliliters
- gallons
- bushels
- cubic miles

body parts
- legs
- eyes
- neurons
- digits

area
- square microns
- acres
- hides
- square light years

weight
- nanograms
- ounces
- deben
- metric tonnes

substance
- helium
- oobleck
- pitch
- glue
- salt

#3 → You will receive 2 copies of "One Scenario, Four Representations."

For each of your situations, describe the relationships in detail. Look at the sample if necessary (slide 10).

a. Write one or more sentences describing the relationship between the things you chose.

b. Make a table with titles in each column and at least 6 pairs of numbers relating the two things.

c. Graph the situation and label the axes.

d. Write an equation showing the relationship and explain in your own words what each number and letter in your equation means.

e. Explain how you know whether each relationship is proportional or not proportional. Give as many reasons as you can!

example of a proportional relationship

One Scenario, Four Representations

The two quantities are: d yards or distance traveled during in the race in yards; t minutes or time in minutes that has elapsed in the race.

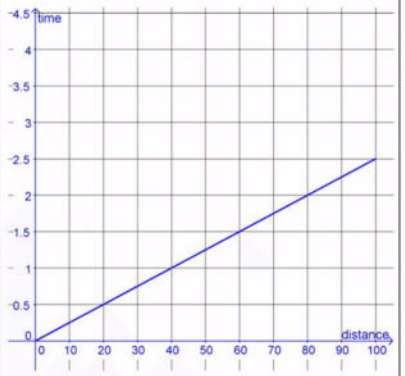
Verbal description: One or more complete sentences describing the relationship.

Adan and Mike are teammates in a 100-yd three-legged race. Their friend Ceril is timing them. Ceril notices that they pass the 20-yd marker at 1/2 minute, the 40-yd marker at 1 minute, and the 60-yd marker at 1.5 minutes.

Table of Values

d	t
20	1/2
40	1
60	1.5
80	2
100	2.5
1	1/40

Graph
Label each axis!



Equation: $t = \frac{1}{40}d$

Explain in words what each letter and number in your equation means:

t represents the time in minutes that has elapsed in the race, d represents the distance in yards they have traveled, and 1/40 is the constant of proportionality. It takes them 1/40 of a minute to travel 1 yard.

Explain how you know the relationship is proportional. Find as many reasons as you can. This relationship is proportional because: each value of d in the table can be multiplied by 1/40 to get the corresponding value of t. The graph is part of a line that goes through the origin and Quadrant I. The equation can be written in the form d = kt.

Make a Digital Poster

Activity 14.3

Create a
visual display of your
proportional situation
that includes all the
information from the
previous activity paper.

Let's Discuss

The most surprising combination of things was _____ because _____ .

The group _____ should check their work where they _____ .

I really like when the group _____ did this _____ because _____ .

Describe any part of your work today that you would do differently, if you could start over.

Tell me about something new you learned in this class recently.

Tell me about any questions you still have, or anything that is confusing you.

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Explain Their Work

Cool Down

Choose a relationship another group found and explain why it is a proportional relationship.

Make sure to include the quantities they used and any important constants of proportionality.