Today's Materials:

- **calculator**
- **pencil**
- **notebook**
- **glue**

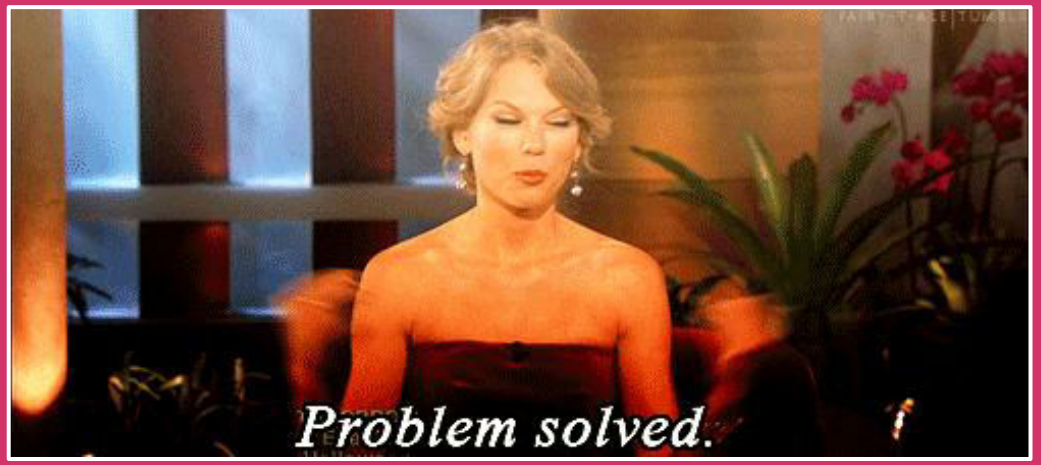
Solving Problems about Proportional Relationships

Lesson 9

CCSS Standards: Addressing	• 7.RP.A • 7.RP.A.2

Lesson Attributions:
https://im.openupresources.org/

Let’s solve problems about proportional relationships!



Today's Goals

- I can ask questions about a situation to determine whether two quantities are in a proportional relationship.
- I can solve all kinds of problems involving proportional relationships.

Evaluating Equations

Bonus Warm Up

$y = 9 + x$

$y = 9x$

$y = 9/x$

$y = x/9$

$y = 9^x$

Evaluate each equation if x = 3.

Then decide which equations show proportional relationships.

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What do you want to know?

Warm Up

Information Gap Introduction

Consider the Problem:

A person is running a distance race at a constant rate. What time will they finish the race?

What information would you need to know to solve this problem?

Why do you need that information?

You will be given a problem card or a data card.

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Do not show your card to your partner.

If you have a data card:

1. Silently read the info. on your card.
2. Ask your partner: **What info. do you need?** Wait for your partner to ask for info. Only give info. that is on your card.
3. Before telling your partner the info., ask, "**Why do you need that information?**"
4. After your partner solves the problem, ask them to explain their reasoning. Listen.

If you have a problem card:

1. Silently read your card and think about what you need to know to answer the question.
2. Ask your partner for specific info. you need.
3. Explain to your partner how you are using the info. to solve the problem.
4. Solve the problem and explain your reasoning to your partner.


CREATED WITH
DATA CARD HOLDER
Clearly Not Mrs. Stipe

Information Gap: **Biking and Rain**

Activity 9.2

- Info. Gap

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Info Gap: Biking and Rain

Problem Card 1

Mai and Noah each leave their houses at the same time and ride their bikes to the park.

1. For each person, write an equation that relates the distance they travel and the time.
2. Who will arrive at the park first?

Info Gap: Biking and Rain

Data Card 1

- Noah lives 1 kilometer farther away from the park than Mai does.
- Mai lives 8,000 meters from the park.
- Noah lives 9,000 meters from the park.
- Mai and Noah each bike at a constant speed.
- Mai bikes 250 meters per minute.
- Noah bikes 300 meters per minute.

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Info Gap: Biking and Rain

Problem Card 2

A slow, steady rainstorm lasted all day. The rain was falling at a constant rate.

1. Write an equation that relates how much rain has fallen and how long it has been raining.
2. How long will it take for 5 cm of rain to fall?

Info Gap: Biking and Rain

Data Card 2

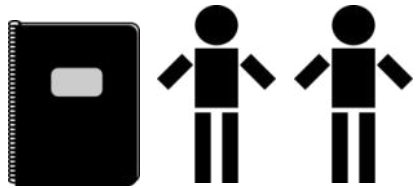
- The rain storm lasted for 24 hours.
- 9.6 centimeters of rain fell during the storm.
- The rate of the rainfall was 2 millimeters of rain every 30 minutes.
- There are 10 millimeters in 1 centimeter.
- There are 60 minutes in 1 hour.

Moderating Comments

(optional)

Activity 9.3

- Stronger and Clearer Each Time



A company is hiring people to read through all the comments posted on their website to make sure they are appropriate.

Four people applied for the job and were given one day to show how quickly they could check comments.

Work with your partner to answer the questions about the applicants.

#1 Order the people from greatest to least in terms of the total number of comments checked.

- Person 1 worked for 210 minutes and checked a total of 50,000 comments.
- Person 2 worked for 200 minutes and checked 1,325 comments every 5 minutes.
- Person 3 worked for 120 minutes, at a rate represented by $c = 331t$, where c is the number of comments checked and t is the time in minutes.
- Person 4 worked for 150 minutes, at a rate represented by $t = (\frac{3}{800})c$.

#1 Order the people from greatest to least in terms of the total number of comments checked.

Person 2 **(53,000 comments)**

Person 1 **(50,000 comments)**

Person 4 **(40,000 comments)**

Person 3 **(39,720 comments)**

#2 Order the people from greatest to least in terms of how fast they checked the comments.

- Person 1 worked for 210 minutes and checked a total of 50,000 comments.
- Person 2 worked for 200 minutes and checked 1,325 comments every 5 minutes.
- Person 3 worked for 120 minutes, at a rate represented by $c = 331t$, where c is the number of comments checked and t is the time in minutes.
- Person 4 worked for 150 minutes, at a rate represented by $t = (\frac{3}{800})c$.

#2 Order the people from greatest to least in terms of how fast they checked the comments.

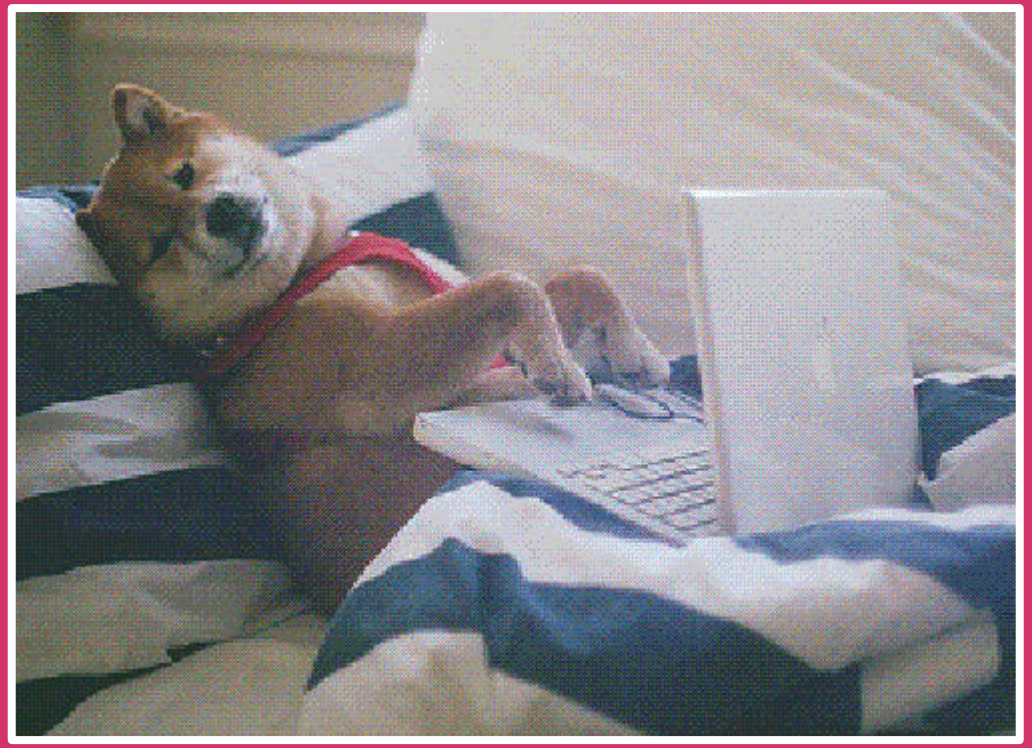
Person 3 (331 comments/min)

Person 4 (267 comments/min)

Person 2 (265 comments/min)

Person 1 (238 comments/min)

Who would you hire? Why?



“Are you ready for more?”

1. Write equations for each job applicant that allow you to easily decide who is working the fastest.
2. Make a table that allows you to easily compare how many comments the four job applicants can check.

Today's Goals

- I can ask questions about a situation to determine whether two quantities are in a proportional relationship.
- I can solve all kinds of problems involving proportional relationships.

What are some situations that we have seen where quantities were proportional to each other?

When we are in a situation where we have a proportional relationship between two quantities, what information do we need to find an equation?

Equations are good tools to make predictions or decisions.

When and how did we use an equation to make a prediction or a decision today?

A Hungry Aardvark

Cool Down