Bad Date
Guide and Answer Key for Instructors

The *Bad Date* animation is available on iTunes U (search "Math Snacks") and at mathsnacks.org
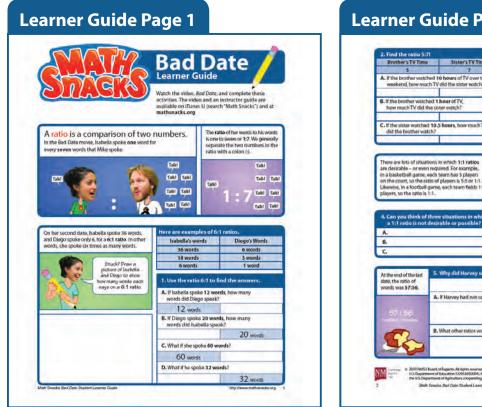
Learning Objectives:
The *Bad Date* animation is about ratios and proportions. By watching the animation, completing the activities in the *Learner Guide*, and completing at least one bonus activity, students learn that:

- Ratios can represent part-whole or part-part relationships.
- Ratios can be extended into patterns using proportional relationships.
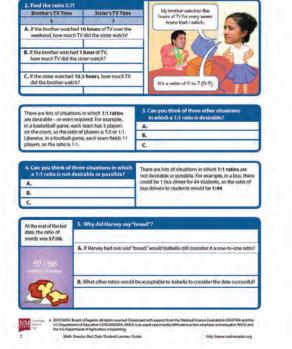- 1:1 ratios can be found in everyday situations.

Animation Discussion

With your students, watch the 3-minute animation *Bad Date* at http://www.mathsnacks.org and spend about 10 minutes discussing the big ideas or key points in the animation. Ask:

- What do you think the animation is about?
- What did you learn from it?
- Can you think of situations in your life where ratios are used to compare numbers?
- Why are ratios helpful in these situations?
- What are some different ways of expressing ratios, e.g., 1:7, 1/7, or 1 to 7? Can you think of situations where one expression might be more appropriate to use than another?

Learner Guide Page 1

Learner Guide Page 2

| **Vocabulary** | Proportional relationships, ratios, part-whole, part-part, one-to-one |

Bonus Activities

Select one or more of these activities to do with your students after they have completed the *Learner Guide*.

1. Ask students to imagine that Isabella had a date during which she spoke 64 words and her date spoke 512 words. Ask them to draw a picture, chart or graph that illustrates the ratio of her words to his words.

2. Isabella complains that she has had a lot of bad dates. Her idea of a bad date is someone who talks a lot more than she does or a lot less. Ask students to imagine themselves on a bad date and write a funny story or an animation script about it. They should use ratios to help explain what was so bad about it.

   For example, maybe a student's idea of a bad date is someone who eats a lot more or a lot less than he or she does. A student may not consider a 1:1 ratio ideal!

3. Ask students to make up five of their own ratio questions about text messaging. For example, if Derek sent 480 text messages last month and Angelina sent 464, what is the ratio of Derek's messages to Angelina's? Ask them to make an answer key on a separate sheet of paper. If there are several students in the class, they may exchange and answer each other's questions.

4. Complete the following table and have students calculate the ratios.

Question	Yes	No	Ratio Yes:No	Fraction: Yes	Ratio No:Yes	Fraction: No
a. Are you an only child?						
b. Are you wearing red today?						
c. Do you understand what a ratio is?						

5. Student-created surveys. Divide students into teams of 2 or 3.

   - Have students create a 3-question survey with yes/no questions.
   - Have students ask these questions to their classmates and other students in the school.
   - Have students create a table of their information similar to the table in #4.
   - Have students calculate the ratios of the answers for each question and explain them verbally, in pictures, or in writing.
   - Have students calculate the appropriate ratios. Remember to remind them during the discussion how important it is to LABEL their ratios appropriately.

   NOTE: If you would like to see additional activities about ratios, please refer to the *Instructor Guide* for *Atlantean Dodgeball*.

Page 1   Answer Key

1. On her second date, Isabella spoke 36 words, and Diego spoke only 6, for a 6:1 ratio. In other words, she spoke six times as many words.

Find the ratio 6:1!

Isabella	Diego
6 words	**1 word**
a. If Isabella spoke **12 words**, how many words did Diego speak?	
12 words	*Answer: 2 words*
b. If Diego spoke **20 words**, how many words did Isabella speak?	
Answer: 120 words	20 words
c. What if she spoke **60 words**?	
60 words	*Answer: 10 words*
d. What if he spoke **32 words**?	
Answer: 192 words	32 words

Page 2   Answer Key

2. "My brother watches five hours of TV for every seven hours that I watch. It's a ratio of 5 to 7 (5:7)."

Find the ratio 5:7!

Brother's TV Time	Sister's TV Time
5	7
a. If the brother watched **10 hours** of TV, how much did the sister watch?	
Answer: 10 hours	*Answer: 14 hours*
b. If the brother watched **1 hour** of TV, how much did the sister watch?	
Answer: 1 hour	*Answer: 1 hr., 24 min., or 84 min.*
c. If the sister watched **10.5 hours** of TV, how much did the brother watch?	
Answer: 7.5 hours; or 7 hours, 30 min.	*Answer: 10.5 hours*

NOTE: Please offer some guidance for 2b. and 2c. because students must take into consideration the conversion from hours to minutes before doing the ratio. If this is too difficult, do this as a large group.

3. There are lots of situations in which 1:1 ratios are desirable – or even required. For example, in a basketball game, each team has 5 players on the court, so the ratio of players is 5:5 or 1:1. Likewise, in a football game, each team fields 11 players, so the ratio is 1:1.

Can you think of three other situations in which a 1:1 ratio is desirable?

Answers will vary. Possible answers could include: marriage or dating, a party with boys to girls, piece of dessert for each person eating at a party.

Instructors: There are many possible answers. Ask students to explain why they feel a 1:1 ratio is desirable for the situations they choose.

4. **There are lots of situations in which 1:1 ratios are not desirable or possible. For example, in a bus, there could be 1 bus driver for 44 students, so the ratio of bus drivers to students is 1:44.**

   Can you think of three other situations in which a 1:1 ratio is not desirable or possible?

   Answers will vary. Possible answers could include: referees to players, slices of pizza to hungry kids, teachers to students in a classroom

   Instructors: There are many possible answers. Ask students to explain why they feel a 1:1 ratio is not desirable for the situations they choose.

5. **At the end of the last date, the ratio of words was 57:56.**

   Why did Harvey say "bread"?

   Answer: Harvey said "bread" to make the ratio exactly 57:57, or 1:1.

   a. **If he had not said "bread," would Isabella still consider it a one-to-one ratio? Explain.**

   Answer: Yes. The ratio is close enough to 1:1 for this situation.

   b. **What other ratios would be acceptable for Isabella to consider the date successful? Explain.**

   Answer: Any ratio that closely resembles a 1:1 ratio would be acceptable. For example, 42:35, when rounded, is close to 40:40, a 1:1 ratio. In some situations, estimation is acceptable as long as students can justify answers or it is reasonable mathematically.

Common Core State Standards of Mathematics	
6.RP	Understand ratio concepts and use ratio reasoning to solve problems.
6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
6.RP.2	Understand the concept of a unit rate a/b associated with the ratio a:b with b not equal to 0, and use rate language in the context of a ratio relationship.
6.RP.3	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g. by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
7.RP	Ratios and Proportional Relationships
7.RP.1	Compute unit rates associated with ratios and fractions, including ratios of lengths, areas and other quantities measured in like or different units.
7.RP.2	Recognize and represent proportional relationships between quantities.
7.RP.3	Use proportional relationships to solve multistep ratio and percent problems.

Math Snacks animations, games and support materials address all of the Common Core State Standards for Mathematical Practices when used as recommended in the teacher guide.