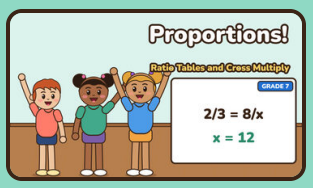
HAKILLO KIDS · TEACHER GUIDE · COMMON CORE EDITION · GRADE 7 · LESSON 1

Proportions and Ratio Tables



COMMON CORE
6.RP.A.3.a, 7.RP.A.2.a

VIDEO LENGTH
4:42 · Virginia SOL edition also available

WATCH THE LESSON FREE
hakillokids.org/math/grade-7#G7-01

PRACTICE ONLINE
learn.hakillokids.org · videos stop for each question, scored automatically

6.RP.A.3.a Make tables of equivalent ratios relating quantities with whole- number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.

7.RP.A.2.a Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

Materials: Ratio tables, recipe cards, calculators (optional).

Students will

- Extend a ratio table by multiplying both quantities by the same number.
- Write a proportion as two equal ratios.
- Solve proportions using a scale factor or cross multiplication.
- Explain why proportions use multiplication, not addition.

Key words

proportion	an equation saying two ratios are equal
ratio table	a table of equivalent ratios
scale factor	the number both parts are multiplied by
cross multiplication	if a/b = c/d then ad = bc

Before the video 2 minutes

Ask: “A recipe needs 2 cups of glue for 3 spoons of activator. How much activator for 8 cups of glue?”

What happens in the video

0:00	Welcome to seventh grade and today's goal: proportions
0:20	A slime recipe ratio table: 2 cups for 3 spoons
0:41	2/3 = 8/x: times 4, so x = 12
0:57	Cross multiply: 4/6 = x/15, so x = 10
1:16	Spot the mistake: proportions multiply, they don't add
1:42	Your turn! Students answer during each pause (see below)
4:23	Recap and goodbye

Spot the mistake at 1:16

> **Sam:** Two over five equals x over ten. Five plus five is ten, so two plus five. x equals seven!
> **Ivy:** Hmm... do we add in a proportion?
> **Mia:** No! Five times two is ten, so multiply the top by two as well. Two times two. x equals four.
> **Sam:** Oops! Multiply, don't add. Four!

- Ask: “What do we multiply 5 by to get 10?” (2.)
- Multiply the top by the same factor: 2 × 2 = 4.
- Check: 2/5 = 0.4 and 4/10 = 0.4, but 7/10 = 0.7.

Your-turn pauses students answer out loud, then the characters give the answer

TIME	QUESTION	ANSWER IN THE VIDEO
1:43	One over two equals x over ten. What is x?	Five! Two times five is ten, so one times five is five.
2:01	Three over four equals x over twelve. What is x?	Nine! Times three on top and bottom.
2:17	Two over five equals x over twenty. What is x?	Eight!
2:31	x over six equals five over three. What is x?	Ten! Three times two is six, and five times two is ten.
2:48	Four over x equals two over seven. What is x?	Fourteen!
3:02	Three tickets cost twelve dollars. How much do six tickets cost?	Twenty-four dollars! Twice the tickets, twice the cost.
3:20	A car goes a hundred and twenty miles in two hours. How far in five hours?	Three hundred miles! Sixty miles each hour.
3:38	Five over eight equals fifteen over x. What is x?	Twenty-four!
3:52	Six over nine equals x over three. What is x?	Two! Divide top and bottom by three.
4:09	Seven over ten equals twenty-one over x. What is x?	Thirty! Times three.

Tip: pause the video a little longer on any question your class finds hard, and ask a student to explain how they know.

After the video: talk about it

1. How can you tell if two ratios form a proportion?
2. When is cross multiplication easier than finding a scale factor?
3. Write a real-life proportion problem.

Go further

Scale model: students use a proportion to plan a scale drawing of the classroom and check two measurements against the real room.

Answer key for the practice page

1. x = 12
2. x = 21
3. x = 15
4. x = 12
5. $24
6. 22.5 km (2/5 = 9/x, 2x = 45)

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HAKILLO KIDS · GRADE 7 · LESSON 1 · PRACTICE

Proportions and Ratio Tables

Name: _____ **Date:** _____

1. **3/5 = x/20**

   Answer: _____

2. **4/7 = 12/x**

   Answer: _____

3. **x/9 = 10/6**

   Answer: _____

4. **6/8 = 9/x**

   Answer: _____

5. **5 notebooks cost $15. How much do 8 cost?**

   Answer: _____

6. **A map scale is 2 cm : 5 km. Two towns are 9 cm apart on the map. How far apart are they? Show the proportion.**

   Answer: _____

Watch the lesson free: hakillokids.org/math/grade-7#G7-01
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