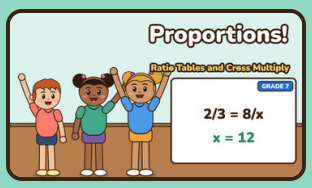
HAKILLO KIDS · TEACHER GUIDE · VIRGINIA SOL EDITION · GRADE 7 · LESSON 1

# Proportions and Ratio Tables




**VIRGINIA SOL (2023)**
7.CE.2

**VIDEO LENGTH**
4:42 · Common Core 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

**7.CE.2** The student will solve problems, including those in context, involving proportional relationships.

**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)

© 2026 Hakillo Kids · Free to copy for classroom and home use · hakillokids.org
Virginia Standards of Learning © Commonwealth of Virginia, Virginia Department of Education.

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
Practice online with Mia, Sam & Ivy: **learn.hakillokids.org**