

Communicating About Math

Sharpen your students' math argument skills to prepare for The Hardest Math Problem contest!

Objective

Students will use proportional relationships to solve multistep math problems, then explain their process effectively.

Standards

Common Core Math

6.RP.A.3 solve real-world rate and ratio problems

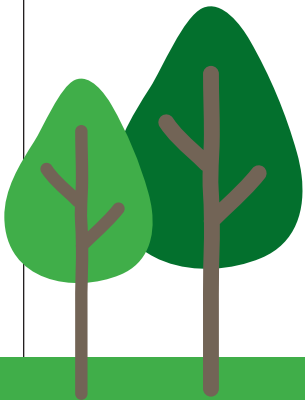
7.RP.A.3 solve multistep ratio, percent, and proportional relationships problems

Time

75 minutes

Materials

- Explain Your Math Thinking activity sheet
- Contest entry form
- Challenge 1 questions
- Optional: Student flyer to distribute or hang up



1 Set a timer for 5 minutes. Challenge student groups to find as many ways as they can to cut a rectangular “cake” into 12 equal pieces for sharing. How many solutions could they find? Lead a discussion. There are many ways to solve a problem and lots of interesting pathways to a solution! Your math argument will help others understand the strategy and reasoning that led to your solution.

2 Distribute the Explain Your Math Thinking activity sheet. Use these strategies together as a class to interpret the first example:

- Read the question. Sketch or jot notes as you read.
- Find the problem you're being asked to solve (*sale price of graphic novels*).
- Find unit measurements (such as hours, dollars, miles, percentages) and draw a box around them.
- Underline information you'll use to solve the problem and cross out information that isn't needed (\$20 novels are 15% off. ~~\$10 prints are 50% off.~~).

3 Read the first math argument aloud (*I multiplied 20 by 0.15 to get 3*). Discuss the tips and tricks which help to make an argument stronger. Ask students to state what was missing from the math argument you read aloud. Explore ways that students may have solved the same problem differently (*for example: 15% = 3/20, \$20.00 x 85%*). Challenge students to explain their thinking.

4 Ask students to apply the tips and tricks from the activity sheet to interpret, solve, and write a strong math argument for the second problem (*numerical answer: 56 orders*).

5 As a class, compare the different ways students solved problems and shared their math reasoning in their arguments. Discuss which tips and strategies your students found most helpful.

6 Tell students that they have practiced reasoning and communication skills that they'll use for **The Hardest Math Problem** student contest. The next day, distribute the contest entry form and Challenge 1 math problems. See more info below!

The Hardest Math Problem Student Contest

2022 Contest Topic: Food Access

- **Grade 6 math skills:** proportions, percentages, median
- **Grade 7 math skills:** proportions, percentages, equations
- **Grade 8 math skills:** equations, decimals, percentages

[scholastic.com/hardestmathcontest](https://www.scholastic.com/hardestmathcontest)
Mail or upload entries by 12/5/22.

All students are invited to answer entries at either their current grade level or above.

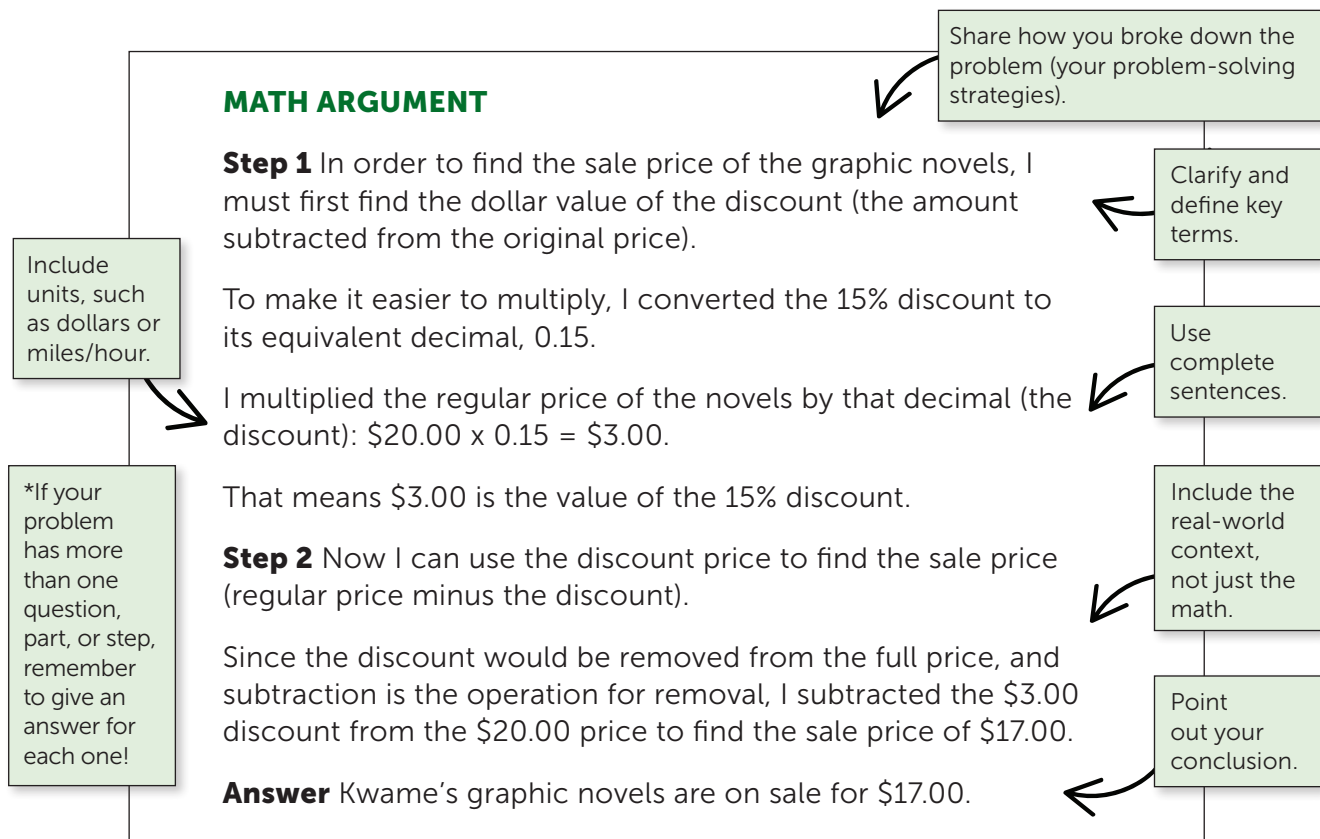
Explain Your Math Thinking

Math skills rely on both numbers and words. Calculating an answer is important—and so is explaining it. Consider the conversation two friends had about the problem below.

Kwame draws graphic novels. His website is having a sale! His \$20 novels are 15% off. His \$10 art prints are 50% off. What is the sale price of his graphic novels?

“I’m so confused. Can you explain how you solved this problem?” > “Sure, I multiplied 20 by 0.15 to get 3.”

“But how did you know to do that? And where did the 0.15 come from?” > “Let me try to explain more clearly...”



YOUR TURN On a separate sheet, write a strong math argument to support your solution to the problem below. Then, switch with a classmate and give each other feedback.

As a gift for his customers, Kwame includes 3 stickers with every order he ships. Kwame has printed 168 stickers, the exact amount he’ll need. How many orders are being shipped?

Now that you’ve sharpened your calculation and reasoning skills, give The Hardest Math Problem contest a try! You’ll use your skills to explain how you solved a real-world math problem. Ask your teacher how to enter.