Try Your

THE HARDEST MATH PROBLEM STUDENT CONTEST

Congrats on making it to the final round of the contest! Ready to show off your math and writing skills? You could win a laptop, plus $5,000 for college!

To view the questions, visit: **scholastic.com/HMP**.

Use the Challenge 2 Question Sheet to answer the story problem for your grade.
Want an extra challenge? You can also answer the problem for any grade level *above* you!

My Grade I'm currently in grade ❑ 5 ❑ 6 ❑ 7 ❑ 8

PART A: My Answer(s)

Grade 6 Problem: _____

Grade 7 Problem: _____

Grade 8 Problem: _____

PART B: My Reasoning Use a separate sheet of paper to **explain how you arrived at your answer(s)**. Write as if you are explaining the math to a student in your class who was absent and isn't sure how to solve the problem. Be clear, detailed, and precise. Be sure to write neatly, or type your answer!

CONTACT INFORMATION

Only a student's parent/guardian or teacher can submit entries.

Student's First Name _____ School Phone _____

Student's Last Name _____ School Name _____

Teacher's Name _____ City _____

Teacher's Email _____ State _____

NO PURCHASE NECESSARY. 50 US, DC, and US territories. Open to grs. 5-8 students. Students may enter by answering at least one question at or above their current grade level. For each problem submitted, only one answer may be submitted. Entries must be submitted by the student's teacher, parents, or guardians, 18+. Teachers or parents/guardians submit entries online at scholastic.com/hardestmathcontest, by email at hardestmathproblem@scholastic.com, or by mail: Scholastic Inc., The Hardest Math Contest, ATTN: SNP, Space 3-226, 557 Broadway, New York, NY 10012. Challenge 1: Entry period: 12:01 a.m. ET on 9/15/21 to 11:59 p.m. ET on 12/2/21. Mailed entries: postmarked by 12/2/21, and rec'd by 12/16/21. Three teachers who submit at least three eligible student entries (except as set forth in official rules) will each receive a $500 gift card. Challenge 2: Open to grs. 5-8 students who answered correctly in Challenge 1. Teachers or parents of eligible students will be notified on or around 1/31/22. Entry period: 12:01 a.m. ET on 1/31/22 to 11:59 p.m. ET on 3/21/22. Mailed entries: postmarked by 3/21/22, and rec'd by 4/1/22. Three (3) Grand Prize Winning students, one from each of sixth, seventh, and eighth grade problems, will each receive a laptop computer with Microsoft Office Home and Student Office products (ARV $550) and a $5,000 contribution to a 529 plan (a college savings account) (ARV $5,000). The three teachers who submitted the entries of the Grand Prize Winners will each receive a $500 American Express gift card for classroom use (ARV $500). Three (3) Runner-Up winning students, one from each of sixth, seventh, and eighth grade problems, will each receive a tablet computer, which does not include a data plan (ARV $125). Official Rules: scholastic.com/hardestmathcontest/rules. Void where prohibited.

Expect the Unexpected With Math®
A Program of The Actuarial Foundation

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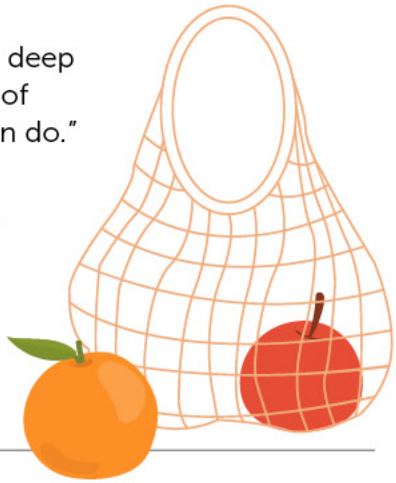
GRADE 6

After Aliza and Darius give a presentation to their class about food access, they head to lunch. While Pizza Day is normally a cause for excitement, both teens are preoccupied, thinking about the **tens of millions of people in the U.S. living with food insecurity—the lack of consistent access to enough food**.



Thinking of their classmates, teammates, and neighbors being hungry makes a deep impression on Aliza and Darius. "I know that we can't solve the *entire* problem of food insecurity ourselves," says Aliza, "but there must be *something* that we can do."

"I agree," Darius responds. **"Let's think about different solutions, then use our school community service hours to take action."**

"I believe in us—we can make a difference!" Aliza says.

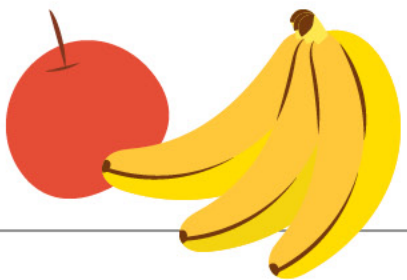
Solve the Problem

Aliza and Darius read about the Weekend Snack Sack program, which provides nutritious snacks each weekend to students in food-insecure households. Their principal, Mr. Fendley, gives them permission to bring the program to their school.

Ms. Jacobson, the director of the local food pantry, tells Aliza and Darius that she will give them 75 apples, 75 oranges, 75 bananas, and 75 lunch sacks each week if they can obtain the additional required items. **The program guidelines specify that the ratio of protein:fruit:vegetables must be 5.5:16:20.** For ratio calculation purposes, Ms. Jacobson says they should use 12 oz. for an apple, 10 oz. for an orange, and 6 oz. for a banana.

Aliza and Darius reach out to the community. A local grocery will donate 8 oz. bags of dried fruit for each sack. Camila's Uncle Nicolás will provide vegetables from the community greenhouse at a discounted price of $0.13/oz. Mr. Fendley will ask the school board to cover that cost, as well as provide jerky for the protein, which a distributor will supply at a discounted price of $1.12/oz.

SOLVE IT: If each of the 75 Weekend Snack Sack bags has 1 apple, 1 orange, 1 banana, and an 8 oz. bag of dried fruit, how much money is needed from the school board for the vegetables and jerky each week in total? Please round all work to the thousandths place when working out solutions. Provide the final answer to the nearest cent.



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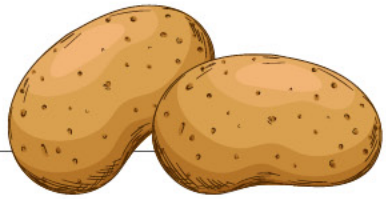
GRADE 7

After Aliza and Darius give a presentation to their class about food access, they head to lunch. While Pizza Day is normally a cause for excitement, both teens are preoccupied, thinking about the **tens of millions of people in the U.S. living with food insecurity—the lack of consistent access to enough food**.

Thinking of their classmates, teammates, and neighbors being hungry makes a deep impression on Aliza and Darius. "I know that we can't solve the *entire* problem of food insecurity ourselves," says Aliza, "but there must be *something* that we can do."

"I agree," Darius responds. **"Let's think about different solutions, then use our school community service hours to take action."**

"I believe in us—we can make a difference!" Aliza says.

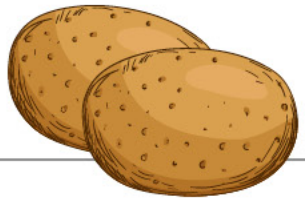


Solve the Problem

Aliza and Darius decide to volunteer with Ji-Hoon and Camila at the community greenhouse, which is run by Camila's uncle, Nicolás. One day, Nicolás asks Aliza and Darius to help him plan for the potato crop. "This year, I want to increase the production of total pounds of potatoes by 25%. Based on soil tests, the production per acre is expected to decrease by 8% compared to last year's production. Last year, we planted 12 acres of potatoes, and the crop yielded an average of 28,471 pounds per acre. Will you help me determine how many additional acres of potatoes to plant this year to reach my goal?"

At harvest time, Nicolás finds the duo again and shares a concern, "Sadly, a chemical spill contaminated 50% of the additional acres that we planted with potatoes. The chemical company offered to compensate us by providing an equal quantity of pounds of wholesale brown rice to replace the contaminated pounds of potatoes. Will you calculate how many pounds of brown rice are needed?"

SOLVE IT: Determine how many pounds of brown rice should be provided to replace the contaminated potatoes. Please round all work to the thousandths place when working out solutions and providing your final answer.



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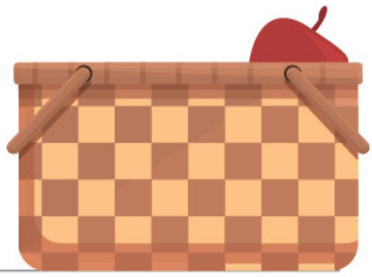
GRADE 8

After Aliza and Darius give a presentation to their class about food access, they head to lunch. While Pizza Day is normally a cause for excitement, both teens are preoccupied, thinking about the **tens of millions of people in the U.S. living with food insecurity—the lack of consistent access to enough food**.

Thinking of their classmates, teammates, and neighbors being hungry makes a deep impression on Aliza and Darius. "I know that we can't solve the *entire* problem of food insecurity ourselves," says Aliza, "but there must be *something* that we can do."



"I agree," Darius responds. **"Let's think about different solutions, then use our school community service hours to take action."**

"I believe in us—we can make a difference!" Aliza says.

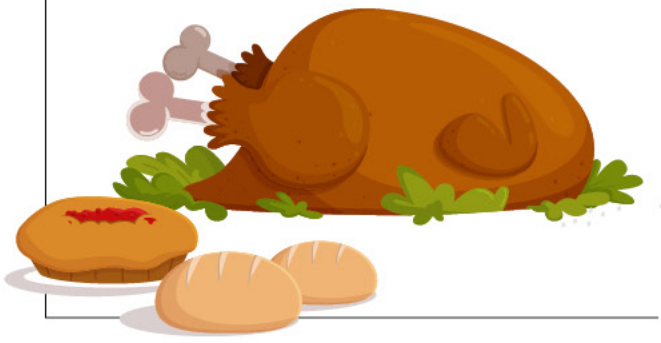
Solve the Problem

Aliza and Darius develop a plan. They decide to launch Operation Turkeytime, a project that will donate 100 Thanksgiving baskets to local families experiencing food insecurity.

Aliza reports, "The community greenhouse will donate 100 wicker baskets and the fresh vegetables. Plus, the bakeries in town will collectively donate 100 packages of rolls and 100 pies." Darius replies, "That's great! **The owner of the poultry farm will sell us fresh 10-pound turkeys for $9.25 each and 14-pound turkeys for $12.75 each**, plus donate stuffing ingredients with each turkey. Ten local businesses donated $100 each for the money to purchase the turkeys."

Darius wondered, "How many 10-pound turkeys and how many 14-pound turkeys do we want to purchase?" Aliza replied thoughtfully, "I'd like to purchase as many of the larger turkeys as possible with the money that we have, yet we need to buy 100 total turkeys... Oh, hey! This situation reminds me of the systems of equations problems that we've been doing in Mrs. Cavazos' math class!"

SOLVE IT: What is the maximum number of 14-pound turkeys that can be purchased with the donated money while still purchasing 100 total turkeys? Round the final answer to the nearest whole number since it represents whole turkeys.



Name _____

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Rubric/Judging Criteria

Use the criteria below to help you write your contest entry. The contest judges will use these criteria to pick winners. Your teacher may also use this sheet to grade your work.

Audience for your math argument: Write as if you are explaining the math to a student in your class who was absent and isn't sure how to solve this problem.

CRITERIA	Possible Points	Points Earned
Mathematical Reasoning • Takes valid, logical steps to solve the problem (and points out patterns or other math concepts where applicable) • Uses math **vocabulary** ◦ Examples: quotient, quantity, dependent variable, distributive property	10	
Clarity, Organization, and Precision • Explains their steps in an organized way • Balances the amount of detail ◦ Enough detail to be clear (reader doesn't have to figure anything out themselves), but not so much detail that it's repetitive, confusing, or tiring to read • Attaches **units** to all numbers ◦ Examples: hours/hrs, dollars/$, inch/"/in • Gives **context** of each number, especially when first used ◦ Example: saying "the 5 cups of flour remaining in the bag" instead of just "5"	10	
Presentation • Legible • Essay Length: half a page minimum; **two pages maximum** • Calculations (or graphs, charts, or diagrams, as applicable) are integrated into the essay body (not on a separate sheet)	10	
BONUS Innovation of Approach • Creative, non-traditional, or exceptionally efficient	3	
TOTAL POINTS	**30-33**	