



Monday cup #8- Solution

Posted on: May 20, 2019

Due on: May 26, 2019



Problem

Lower Elementary:

Question: A bakery is having a half-price sale on donuts. A half-dozen donuts are only GEL 3.00! How much do a dozen donuts cost at their regular price?

Upper Elementary:

Question: Gela has GEL 31.00 to spend on groceries. He has 4 boxes of cookies that cost GEL 2.85 each and a half-gallon of milk that costs GEL 3.50 in his cart already. How much money does Eric have left to spend on his other groceries?

Middle School:

Question: Russell's new diesel car gets 41 miles per gallon. He wants to take a road trip from Los Angeles to Dallas, a distance of 1,435 miles. The average price of diesel for the whole trip is GEL 3.73 per gallon. How much will the fuel cost for the whole trip, there and back?

Algebra and Up:

Question: Shiv has two fish tanks. One is shaped like a rectangular prism that measures 25 inches long by 10 inches wide by 15 inches high. The other tank is shaped like a cylinder with a 10-inch radius and a 12-inch height. Which tank can hold the most water? How much more water can it hold than the other tank?

(Round π to 3.14)

Lower Elementary:

Question: A bakery is having a half-price sale on donuts. A half-dozen donuts are only GEL 3.00! How much do a dozen donuts cost at their regular price?

Answer: GEL 12.00

Solution: If something is on sale for half price, the sale price is half of the regular price. Since a half-dozen donuts cost GEL 3.00 on sale, we can double GEL 3.00 to find the regular price. GEL 3.00 doubled is GEL 6.00.

Two half-dozen equal one dozen. Since a half-dozen donuts cost GEL 6.00 at regular price, a dozen donuts cost GEL 6.00 + GEL 6.00 = GEL 12.00 at regular price.

Upper Elementary:

Question: Eric has GEL 31.00 to spend on groceries. He has 4 boxes of cookies that cost GEL 2.85 each and a half-gallon of milk that costs GEL 3.50 in his cart already. How much money does Eric have left to spend on his other groceries?

Answer: GEL 16.10

Solution: The 4 boxes of cookies cost $4 \times \text{GEL } 2.85 = \text{GEL } 11.40$. The cookies plus the milk cost GEL 11.40 + GEL 3.50 = GEL 14.90. Subtracting GEL 14.90 from GEL 31.00, we get GEL 16.10.

Middle School:

Question: Russell's new diesel car gets 41 miles per gallon. He wants to take a road trip from Los Angeles to Dallas, a distance of 1,435 miles. The average price of diesel for the whole trip is GEL 3.73 per gallon. How much will the fuel cost for the whole trip, there and back?

Answer: GEL 261.10

Solution: The round trip is $1,435 \times 2 = 2,870$ miles. Russell's car gets 41 miles per gallon, so he needs $2,870 \text{ miles} \div 41 \text{ mpg} = 70$ gallons of fuel for the whole trip. The average price of diesel is GEL 3.73 per gallon. The cost for fuel for the whole trip is $\text{GEL } 3.73 \times 70 = \text{GEL } 261.10$.

Algebra and Up:

Question: Shiv has two fish tanks. One is shaped like a rectangular prism that measures 25 inches long by 10 inches wide by 15 inches high. The other tank is shaped like a cylinder with a 10-inch radius and a 12-inch height. Which tank can hold the most water? How much more water can it hold than the other tank? (Round π to 3.14)

Answer: The cylindrical tank hold 18 in^3 more water than the rectangular prism.

Solution: The volume of the rectangular prism tank is $25 \text{ in} \times 10 \text{ in} \times 15 \text{ in} = 3,750 \text{ in}^3$.

The volume of the cylindrical tank is $(3.14)(10)^2(12) \approx 3,768 \text{ in}^3$.

The cylindrical tank holds $3,768 - 3,750 = 18 \text{ in}^3$ more water than the rectangular prism tank.

There were correct solutions from Gela Tsetsckhadze (Georgia, the country).

The prize was split between Tsetsckhadze

Rules

1. Anyone is eligible to participate. Each solution is to be the work of one individual without any input from faculty or others. An answer must be accompanied by appropriate justifications to be considered correct.
2. The solution is to be submitted with the solver's name, email, year in school (if applicable), local phone number, and local address. If you are submitting this for possible credit in a class, include your class number and instructors name.
3. The solution is to be typed or legibly written. Solutions must be submitted to the by 2 p.m. on the due date.
4. Entries will be graded on clarity of exposition and elegance of solution. An award of **GEL10** will be given for the best correct solution. In the case of a two-way tie, the award will be split. If there are more than two best solutions, a drawing will be held to determine two award winners.
5. Graduate students, faculty, and members of the general public are encouraged to submit solutions, but they will not be considered.

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Solution for this problem can be submitted proveweek@gmail.com