

Open-Ended Template

Names:

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Grade Level: 5

Content Area: Numbers & Computation/Estimation

PA Standard(s) addressed: 2.2.5 – G, E, A

- G. Apply estimation strategies to a variety of problems including time and money.
- E. Determine through estimations the reasonableness of answers to problems involving addition, subtraction, multiplication and division of whole numbers.
- A. Create and solve word problems involving addition, subtraction, multiplication and division of whole numbers.

NCTM Standard(s) addressed:

Numbers and Operations

Compute fluently and make reasonable estimates

- Develop fluency in adding, subtraction, multiplying, and dividing whole numbers.
- Develop and use strategies to estimate the results of whole- number computations and to judge the reasonableness of such results.
- Select appropriate methods and tools for computing with whole numbers from among mental computation, estimation, calculators and paper and pencil according to the context and nature of the computation and use the selected method or tool.

Problem Name: Shopping With Jordan

Problem:

Jordan needed school supplies. His grandmother gave him \$30.00 to spend. At the store, Jordan decided to purchase 5 items, but he worried that he would not have enough money.

- A. Estimate the total cost of all the items Jordan purchased. Based on your estimate, will Jordan have enough money to purchase all 5 items?

Show all your work.

Explain the process by which you arrived at your answer.

Make sure you have explained how you estimated.

Write your answer in the box.

Items Jordan purchased

Socks	\$ 1.67
Jeans	\$ 22.18
Pencils	\$.98
Notebook	\$ 2.48
Eraser	\$.35

Answer:

B. Jordan found a different pair of jeans that cost \$4.29 less than the pair he originally purchased. He decided to return the original pair of jeans and buy the less expensive pair. How much did the less expensive pair of jeans cost?

Show all your work.

Explain the process by which you arrived at your answer.

Write your answer in the box.

Answer:

- C. What is the **actual** total cost of Jordan's new jeans and the other four items he purchased? Be sure you show all your work and label carefully.

Show all your work.

Explain the process by which you arrived at your answer.

Write your answer in the box.

Answer:

Problem Solutions:

Question A:

1. Round the cost of each item to the nearest dollar and add the rounded numbers together.
Answer: \$27.00
2. Add the actual cost of each item together, then round the total to the nearest dollar.
Answer: \$28.00
3. Add only dollar amounts (ex. \$1.00, \$22.00, etc.).
Answer: \$25.00 or \$26.00

And

The student will state that Jordan will have enough money to purchase all 5 items.

And

If the student used the method shown in part 1, the explanation should include front-end rounding.

If the student used the method shown in part 2, the explanation should include rounding the total cost.

If the student used the method shown in part 3, the explanation should include estimating by using dollar values.

Question B:

1. The work is: $\$22.18 - \4.29
2. The correct answer is \$17.89
3. The student should explain that subtraction was needed to find the cost of the new jeans because they were less expensive than the original pair.

Question C:

1. The work is: $\$1.67 + \$17.89 + \$0.98 + \$2.48 + \$0.35$
2. The answer is: \$23.37
3. The student should explain that addition was used to find the actual total cost of all 5 items.

Specific Rubric:

Question A -

4 points total - To receive all possible points for part A:

- Correct answer of yes - **1 point**
- Explanation of method - **2 points**
- Show all work - **1 point**

Question B -

5 points total - To receive all possible points for part B:

- Correct answer of \$17.89 - **2 points**
- Explanation of method - **1 point**,
- Show all work - **2 points**

Question C -

4 points total - To receive all possible points for part C:

- Correct answer of \$23.37 - **2 points**
- Explanation of method - **1 point**
- Show all work - **1 point**

Entire point total - 13

General Rubric

5 - Advanced Understanding: The student must earn 13 points.

4 - Satisfactory Understanding: The student must earn 11 or 12 points.

3 - Almost Satisfactory Understanding: The student must earn 8, 9 or 10 points.

2 - Partial Understanding: The student must earn 4, 5, 6, or 7 points.

1 - Minimal Understanding: The student must earn 3, 2, or 1 point(s).

0 - No Understanding: The student must earn 0 points.