2.MD Choices, Choices, Choices

Alignments to Content Standards: 2.MD.C.8

Task

Arianna has been saving her chore money all summer. Her mother has allowed her to spend the money on school supplies of Arianna’s choosing. Here are some of her favorite items and the price for each:

<table>
<thead>
<tr>
<th>Lunchbox</th>
<th>Art Supplies</th>
<th>Pencil Box</th>
<th>Mechanical Pencil</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2 and 50¢</td>
<td>75¢</td>
<td>$1 and 25¢</td>
<td>45¢</td>
</tr>
</tbody>
</table>

Arianna has four dollars and twenty-five cents to spend.
a. Select two items she might choose to purchase. What is the total cost of these two items?

b. Select three items she might choose to purchase. What is the total cost of these three items? How much money will Arianna have left over if she buys these three items?

c. How many pencil boxes can Arianna buy without going over the $4 and 25¢ she has saved?

Explain your thinking for part (c) in words.

**IM Commentary**

The purpose of this task is for students to solve problems involving money with prices given in both dollars and cents. Parameters are provided in each segment of the word problem that extends the entire task. Store items are an assortment of familiar school supplies. There are multiple correct solutions for the first two questions, while the ramp-up question (the final one) has one correct answer followed by a mathematical explanation.

The “Explain your thinking” prompt encourages students to verify their findings with not only the numerical work, but also to explain their mathematical reasoning using words such as “more than,” “less than” or “not enough” to describe comparative monetary values. As specified in the standard, solutions should include proper symbols for monetary values.

**Solution**

a. There are 9 possible solutions:

Lunchbox and art supplies: $2 and 50¢ plus 75¢ is $3 and 25¢

Lunchbox and pencil box $2 and 50¢ plus $1 and 25¢ is $3 and 75¢

Lunchbox and mechanical pencil: $2 and 50¢ plus 45¢ is $2 and 95¢

Art supplies and pencil box: 75¢ plus $1 and 25¢ is $2
Art supplies and mechanical pencil: 75¢ plus 45¢ is $1 and 20¢

Pencil box and mechanical pencil: $1 and 25¢ plus 45¢ is $1 and 70¢

Two art supplies: 75¢ plus 75¢ is $1 and 50¢

Two pencil boxes: $1 and 25¢ plus $1 and 25¢ is $2 and 50¢

Two mechanical pencils: 45¢ plus 45¢ is 90¢

b. There are 19 possible solutions:

Lunchbox and art supplies and mechanical pencil: $2 and 50¢ plus 75¢ plus 45¢ is $3 and 70¢

Lunchbox and pencil box and mechanical pencil: $2 and 50¢ plus $1 and 25¢ plus 45¢ is $4 and 20¢

Pencil box and art supplies and mechanical pencil: $1 and 25¢ plus 75¢ plus 45¢ is $2 and 45¢

Pencil box and two art supplies: $1 and 25¢ plus 75¢ plus 75¢ is $3 and 75¢

Pencil box and two mechanical pencils: $1 and 25¢ plus 45¢ plus 45¢ is $2 and 15¢

Two pencil boxes and mechanical pencil: $1 and 25¢ plus $1 and 25¢ plus 45¢ is $2 and 95¢

Two pencil boxes and art supplies: $1 and 25¢ plus $1 and 25¢ plus 75¢ is $3 and 25¢

Lunchbox and two mechanical pencils: $2 and 50¢ plus 45¢ plus 45¢ is $3 and 40¢

Lunchbox and two art supplies: $2 and 50¢ plus 75¢ plus 75¢ is $4

Three pencil boxes: $1 and 25¢ plus $1 and 25¢ plus $1 and 25¢ is $3 and 75¢

Three art supplies: 75¢ plus 75¢ plus 75¢ is $2 and 25¢
Three mechanical pencils: 45¢ plus 45¢ plus 45¢ is $1 and 35¢

Two pencil boxes and art supplies: $1 and 25¢ plus $1 and 25¢ plus 75¢ is $3 and 25¢

Two pencil boxes and mechanical pencil: $1 and 25¢ plus $1 and 25¢ plus 45¢ is $2 and 95¢

Two art supplies and pencil box: 75¢ plus 75¢ plus $1 and 25¢ is $2 and 75¢

Two art supplies and mechanical pencil: 75¢ plus 75¢ plus 45¢ is $1 and 95¢

Two mechanical pencils and pencil box: 45¢ plus 45¢ plus $1 and 25¢ is $2 and 15¢

Two mechanical pencils and art supplies: 45¢ plus 45¢ plus 75¢ is $1 and 65¢

Two mechanical pencils and lunchbox: 45¢ plus 45¢ plus $2 and 50¢ is $3 and 40¢

c. Arianna can buy 3 pencil boxes and $1 and 25¢ plus $1 and 25¢ plus $1 and 25¢ is $3 and 75¢. She cannot buy 4 pencil boxes because the cost would be $5, which is 75¢ more than she has.