

How Did I Do?

Weight, Not Over (ounces)	Cost to Mail a Large Envelope (\$)	Cost to Mail a Package (\$)
1	0.88	1.71
2	1.08	1.71
3	1.28	1.71
4	1.48	1.88
5	1.68	2.05
6	1.88	2.22
7	2.08	2.39
8	2.28	2.56

a. Write a sentence explaining how much it costs to send a large envelope.

b. Write a sentence explaining how much it costs to send a package.

Rich text editor interface with a toolbar containing icons for undo, redo, copy, paste, and search. The toolbar also includes text formatting options: bold (A), italic (A), underline (A), strikethrough (A), and subscript/superscript (x₂, x²). Below the toolbar are dropdown menus for Styles, Font, and Size. The main text area is empty. The bottom right corner displays "Words: 0".

c. Do you think a large envelope and a package that weigh the same will ever cost the same to mail? Explain.

Rich text editor interface with a toolbar containing icons for undo, redo, copy, paste, and search. The toolbar also includes text formatting options: bold (A), italic (A), underline (A), strikethrough (A), and subscript/superscript (x₂, x²). Below the toolbar are dropdown menus for Styles, Font, and Size. The main text area is empty. The bottom right corner displays "Words: 0".

Words: 0

- d. Create a linear model that could be used to calculate the cost to mail a large envelope, given its weight in ounces. Use L to represent the cost to mail a large envelope and x to represent the envelope weight in ounces. (In reality, weights are rounded up to the nearest whole ounce)

$$L = \text{[input box]} \quad \text{[help icon]} \quad \text{[undo icon]}$$

- e. Create a linear model that could be used to calculate the cost to mail a package, given its weight in ounces. Use P to represent the cost to mail a package and x to represent the package weight in ounces. (This will require two linear pieces.)

If x is a whole number between 1 and 3, then the model is

$$P = \text{[input box]} \quad \text{[help icon]} \quad \text{[undo icon]}$$

If x is a whole number over 3 and not over 8, then the model is

$$P = \text{[input box]} \quad \text{[help icon]} \quad \text{[undo icon]}$$

- f. Find the weight at which a large envelope and a package will cost the same amount to mail, assuming your linear models still apply to higher weights.

Round to the nearest tenth of an ounce (1 decimal place).

Number [input box] ounces

- Question 2

10 points

[How Did I Do?](#)

The table below shows the salary plan for new employees at a company that sells furniture. A new employee earns \$25,000 in base salary and 8% commission on furniture sold after his or her first \$2,000 in sales for the year.

Make sure that you fill in each answer area before checking "How Did I Do?"

- a. Complete the table by entering a new employee's yearly salary at each level of sales.

Submit Assignment

Quit & Save

Question 2

10 points

How Did I Do?

The table below shows the salary plan for new employees at a company that sells furniture. A new employee earns \$25,000 in base salary and 8% commission on furniture sold after his or her first \$2,000 in sales for the year.

Make sure that you fill in each answer area before checking "How Did I Do?".

- a. Complete the table by entering a new employee's yearly salary at each level of sales.

Sales	Yearly salary (\$)
\$0	\$ Number
\$1500	\$ Number
\$2000	\$ Number
\$5000	\$ Number
\$10,000	\$ Number
\$50,000	\$ Number
\$100,000	\$ Number

- b. Write an algebraic model for this situation: If an employee's furniture sales total \$2,000 or less. Use S to represent the yearly salary and x to represent the yearly sales.

Do not enter commas in your answer.

- c. Write an algebraic model for this situation: If an employee sells furniture with a total sales price of x dollars and x is over \$2,000. Use S to represent the yearly salary and x to represent the yearly sales.

Do not enter commas in your answer.

- d. How much in furniture sales would a new employee need in order to earn a salary of \$48,000 for the year?

\$ Number

Submit Assignment

Quit & Save

Question 3

5 points

How Did I Do?

According to an article in *Forbes* magazine, "While major soft drink companies continue to battle declining carbonated soft drink sales, another segment continues to grow..."[†] That segment is bottled water. In 2010, soft drink companies sold 13.78 billion gallons of carbonated soft drinks and 8.74 billion gallons of bottled water. In 2014, the amount of carbonated soft drinks sold fell to 12.75 billion gallons, while the amount of bottled water sold increased to 10.87 billion gallons.

Make sure that you fill in each answer area before checking "How Did I Do?".

- a. What was the rate of change for soft drink sales from 2010 to 2014? What was the rate of change for bottled water sales from 2010 to 2014?

The rate of change in soft drink sales was Number billion gallons per year.

The rate of change in bottled water sales was Number billion gallons per year.

- b. Using the information from part (a), and assuming that sales are linear, write a linear model that represents soft drink sales from 2010 to 2014 and another linear model that represents bottled water sales during the same time period. Use S to represent soft drink sales in billions of gallons, W to represent bottled water sales in billions of gallons, and t to represent the time in years after 2010.

Soft drink model:  

Bottled water model:  

- c. Using your equations from part (b), if sales of bottled water continue to increase at this rate and sales of carbonated soft drinks continue to decline, during what year will the amount sold be the same?

Number

[†]Trefis Team, "Bottled Water Is A Potential Growth Category That Can't Be Ignored," *Forbes*, June 26, 2015, accessed April 29, 2017.

Question 4

1 point

The graph below, from the web site <http://www.autismcincy.org>, shows the increase in the number of children with autism from 1997–2009.

Autism in US Schools - IDEA Data

Ages 6-21

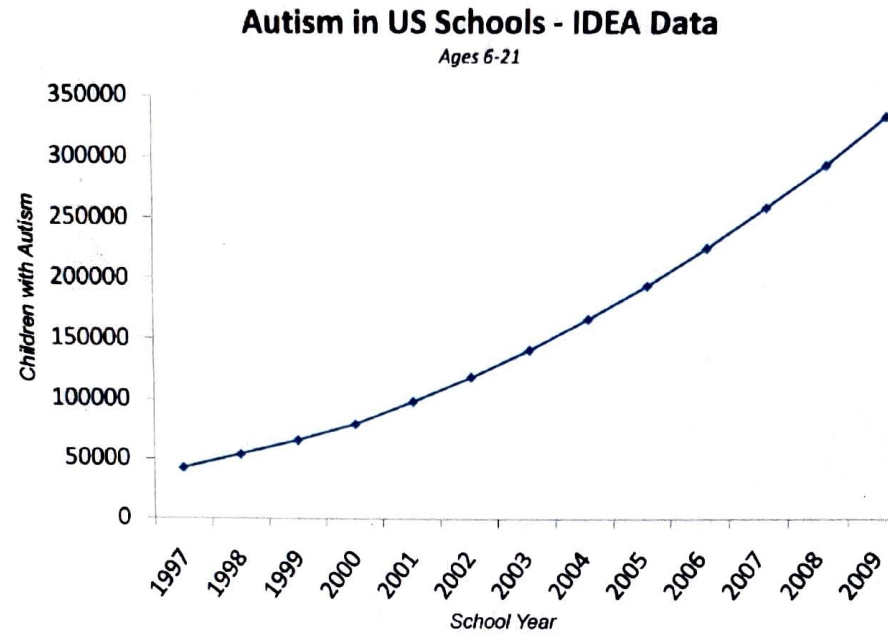
Submit Assignment

Quit & Save

- Question 4

1 point

The graph below, from the web site <http://www.autismcincy.org>, shows the increase in the number of children with autism from 1997–2009.



Is the number of children with autism across these years best modeled by a linear equation, a piecewise model, or neither? Explain.

Styles

Font

Size