

MTH1W Grade 9 Mathematics

3.4 Connecting Representations

Goal(s)

- To create a table of values and a graph from a description of the relationship between two variables
- State the initial value and rate of change from a description of a linear relationship between two variables
- Write an equation in the form $y = \text{initial value} + (\text{rate of change})x$

Page 124 #s 2, 3, 4, 5, 7, 10, 14cd, 17

A small pizza costs **\$6.00** plus **\$1.50** per topping.

- Complete a table of values showing the cost of a pizza with **0, 1, 2, 3, 4** and **5** toppings.
- Sketch a graph to show the total cost of ordering a pizza with up to **10** toppings.
- Identify the **initial cost** and the **rate of change** for the total cost of ordering a pizza.
- Write an equation to model the total cost, **C**, of ordering a pizza with **t**, number of toppings.

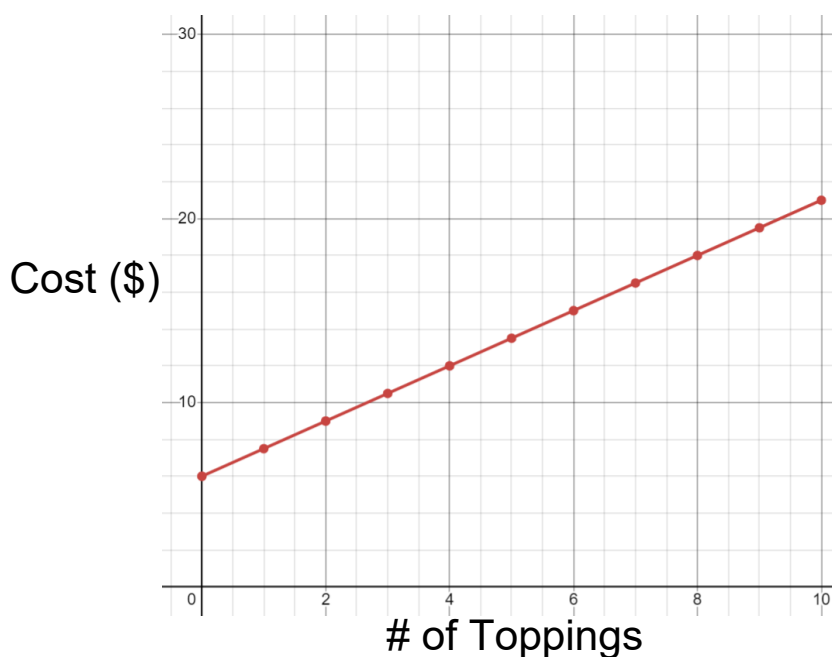
A small pizza costs **\$6.00** plus **\$1.50** per topping.

a) Complete a table of values showing the cost of a pizza with **0, 1, 2, 3, 4** and **5** toppings.

Number of Toppings (<i>t</i>)	Total Cost (<i>C</i>)
0	6.00
1	7.50
2	9.00
3	10.50
4	12.00
5	13.50

A small pizza costs **\$6.00** plus **\$1.50** per topping.

b) Sketch a graph to show the total cost of ordering a pizza with up to **10** toppings.



A small pizza costs \$6.00 plus \$1.50 per topping.

- c) Identify the **initial cost** and the **rate of change** for the total cost of ordering a pizza.

Initial cost is when $t = 0$
 \Rightarrow \$6.00

Rate of change = $\frac{\text{rise}}{\text{run}}$

[but it is also the cost per topping]
 \Rightarrow \$1.50 per topping

A small pizza costs \$6.00 plus \$1.50 per topping.

- d) Write an equation to model the total cost, C , of ordering a pizza with t , number of toppings.

Cost $C =$ Initial value $+$ toppings $\times 1.50$

$$\Rightarrow C = 6 + 1.5t$$

Linear relations can be modelled algebraically using equations of the form:

$$y = \text{initial value} + (\text{rate of change})x$$

A linear relation's initial value and rate of change can be determined from its graph, table of values, equation and word description.