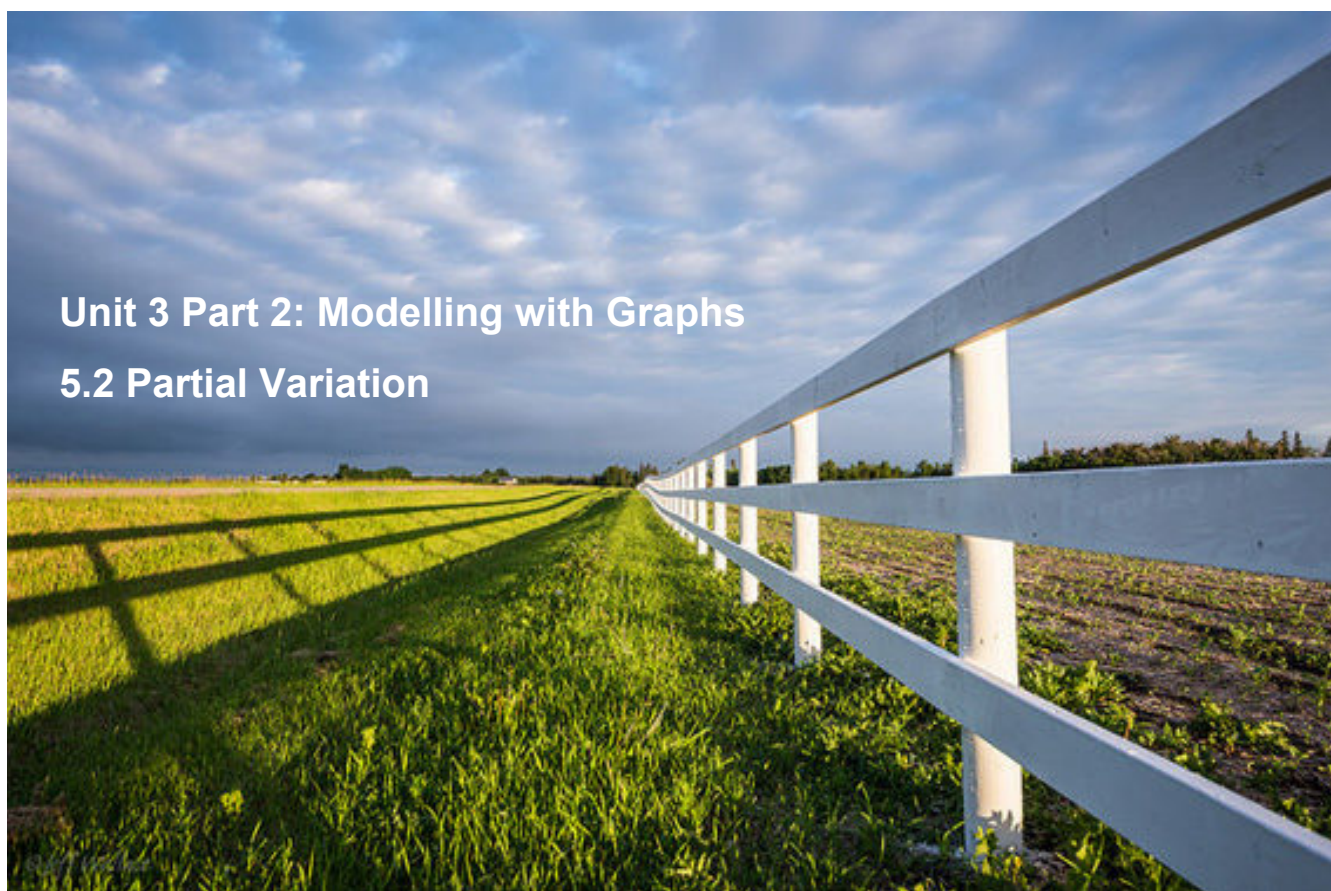
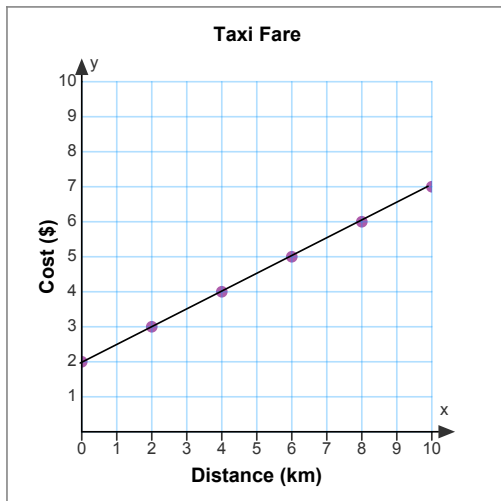


Unit 3 Part 2: Modelling with Graphs
5.2 Partial Variation



5.2 Partial Variation

The graph of a **partial variation** is a straight line that **does not pass through the origin**.



Explain what this graph is showing:

This graph shows the total cost, C , for a taxi ride of distance, d .

2 is the **fixed cost**. It's how much you pay even if you don't drive anywhere!

$0.5d$ represents how much you pay depending on how far you travel, so it's the **variable cost**.

$$C = 2 + 0.5d$$

fixed cost variable cost

The equation of a partial variation

A partial variation has an equation of the form $y = mx + b$, where b represents the fixed, or initial value of y and m represents the constant of variation.

$$y = mx + b$$

constant of variation (slope) initial value (fixed value)

Example 1:

X	Y
0	6
1	9
2	
3	15
4	
	27

- Copy and complete the table of values given that y varies partially with x .
- Identify the initial value and the constant of variation. Write the equation in the form $y=mx+b$.
- Graph this relation.
- Describe the graph.

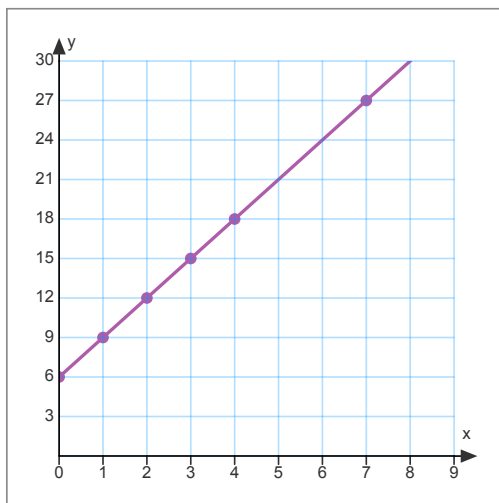
a) We see that as x goes up by 1 (ex from 0 to 1), y goes up by 3.

b) The initial value is y when x is 0: $b = 6$.

Constant of variation is 3: $m = 3$.

The equation in $y = mx + b$ form is $y = 3x + 6$

c)



d) The graph is a straight line that intersects the y - axis at $(0, 6)$. The y - values increase by 3 as the x - values increase by 1.

Example 2: A school is planning an awards banquet. The cost of renting the banquet facility and hiring serving staff is \$675. There is an additional cost of \$12 per person for the meal.

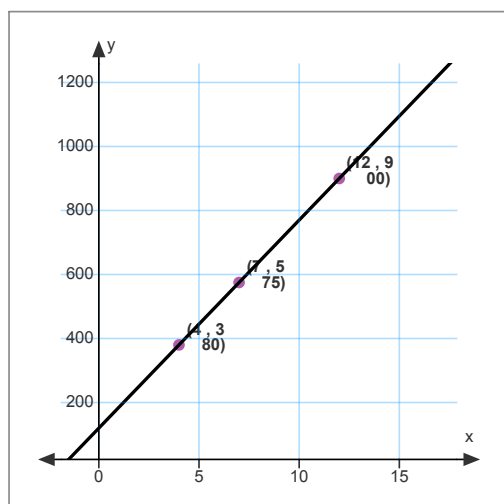
- a) Identify the fixed cost and the variable cost of this partial variation.
- b) Write an equation to represent this relationship.
- c) Use your equation to determine the total cost if 500 people attend the banquet.

Example 3: You have paid \$8300 to rent a different hall and 525 people came to your function. This hall charged a flat fee of \$600. What did they charge per person?

Example 4: The table below represents the linear relationship between cost and repair time at a local mechanic shop.

Repair time, t (h)	Cost, C (\$)
4	380
7	575
12	900

If the mechanic charges \$65 per hour, what does he charge as his base fee?



Practice pg 250 #1, 2, 3, 5, 6, 7, 8, 9