

**MARCH 29, 2016**

**UNIT 6: LINEAR RELATIONS**

**4.2: LINEAR RELATIONS**

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*MATH 9*



## **WHAT'S THE POINT OF TODAY'S LESSON?**

**We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Patterns and Relations 2" OR "PR2" which states:**

**"Graph linear relations, analyze the graph and interpolate or extrapolate to solve problems."**

DETERMINE THE **EQUATION**  
ASSOCIATED WITH THE RELATIONSHIP  
IN THE FOLLOWING TABLE OF VALUES:

| x  | y   |
|----|-----|
| 10 | 500 |
| 11 | 450 |
| 12 | 400 |
| 13 | 350 |
| 14 | 300 |

Handwritten red annotations: On the left side of the table, four curved arrows point downwards from one row to the next, each labeled with '+1'. On the right side, four curved arrows point downwards from one row to the next, each labeled with '-50'.

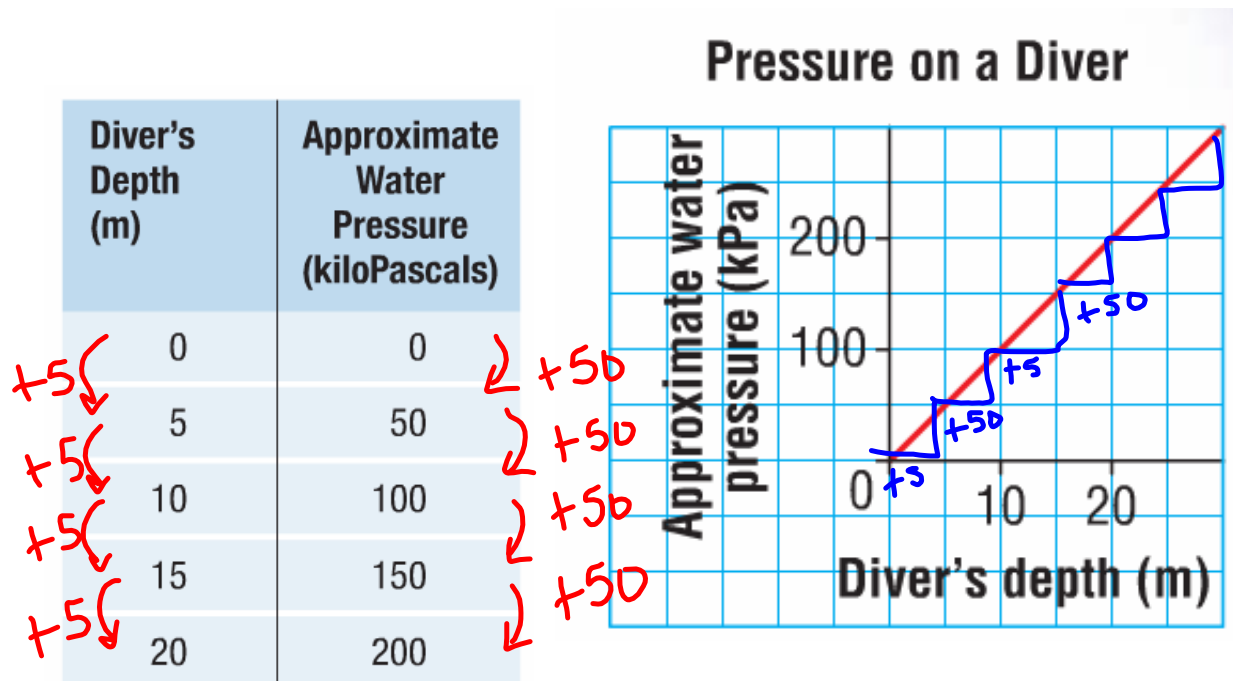
**EQUATION:  $y = -50x + 1000$**



**HOMEWORK QUESTIONS???**  
**(PAGE 170, #4 and #5)**

**Example:** Please turn to page 164 in *MMS9*.

**When a scuba diver goes under water, the weight of the water exerts pressure on the diver.**



$$\frac{50}{5} = 10$$
$$k = 10 \text{ m}$$

**"Investigate", page 164 in *MMS9*:**

**Working with your assigned group, represent the relation between the total cost and the number of text messages sent in as many different ways as possible. Be prepared to share and discuss your findings.**

**REMINDER: "Discuss the Ideas", page 158:**

- "1. What different ways can you represent a between two quantities?"**  
**diagrams, words, tables of values,**  
**expressions, equations;**  
**new way: graph**

***In words:***    **The total cost of the cell phone plan per month is equal to the number of text messages sent in one month multiplied by \$0.10 plus the fixed cost of \$20.**

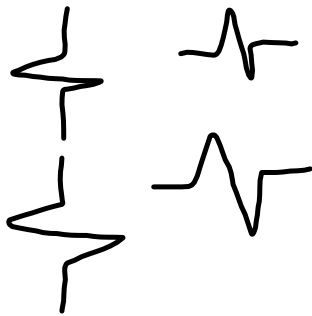
*In a table of values:*

| <b>Number of Text Messages Sent (n)</b> | <b>Total Cost (C)</b> |
|---|-----------------------|
| <b>0</b>                                | <b>20</b>             |
| <b>10</b>                               | <b>21</b>             |
| <b>20</b>                               | <b>22</b>             |

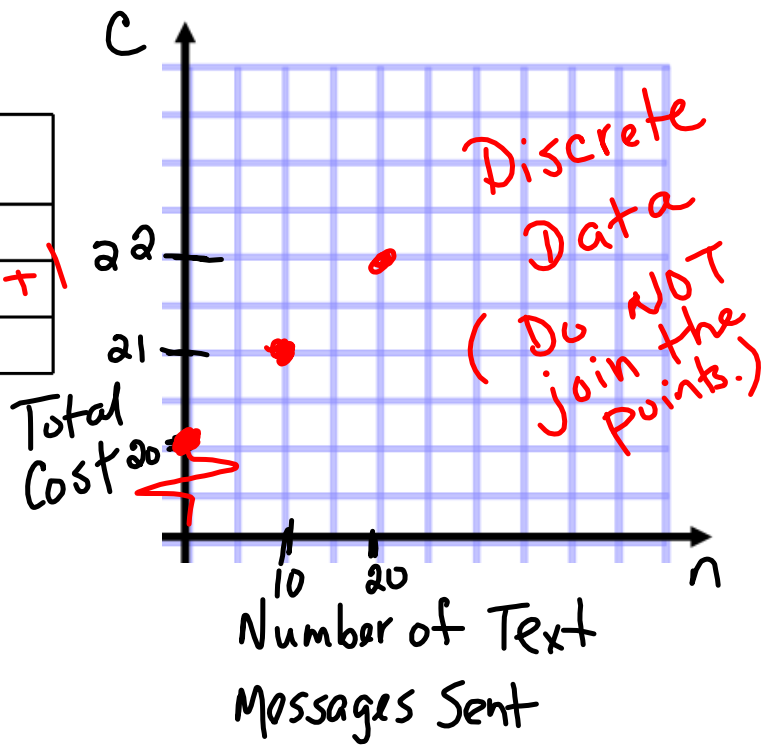


*In a graph:*

| Number of Text Messages Sent (n) | Total Cost (C) |
|----------------------------------|----------------|
| 0                                | 20             |
| 10                               | 21             |
| 20                               | 22             |



$$\frac{1}{10} = 0.10$$



*Using an expression:*

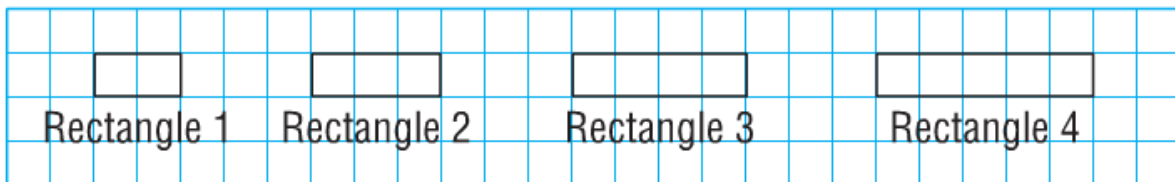
$$0.10n + 20$$

*Using an equation:*

$$C = 0.10n + 20$$

**PLEASE CLOSE YOUR TEXTBOOKS!**

The first 4 rectangles in a pattern are shown below. The pattern continues. Each small square has a side length of 1 cm.



The perimeter ( $P$ ) of a rectangle is related to the rectangle number ( $n$ ). Working with your assigned group, represent this relationship using words, a table, a graph, and an equation.

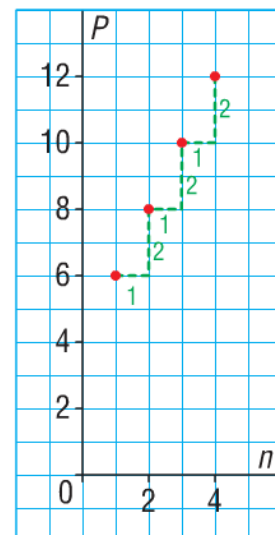
Please turn to pages 165 and 166 in *MMS9* to check your group's work.

In a Table

|    | Rectangle Number, $n$ | Perimeter, $P$ (cm) |    |
|----|-----------------------|---------------------|----|
|    | 1                     | $6 = 2(1) + 4$      |    |
| +1 | 2                     | $8 = 2(2) + 4$      | +2 |
| +1 | 3                     | $10 = 2(3) + 4$     | +2 |
| +1 | 4                     | $12 = 2(4) + 4$     | +2 |

$$P = 2n + 4$$

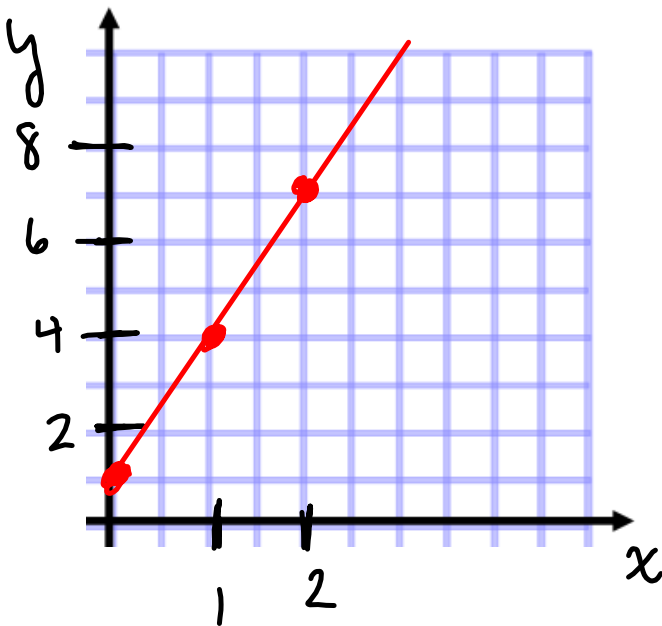
Graph of  $P$  against  $n$



As the rectangle number ( $n$ ) increases by 1, the perimeter ( $P$ ) increases by 2 cm.

$$y = 3x + 1$$

|    | $x$ | $y$ |      |
|----|-----|-----|------|
| +1 | 0   | 1   | ↙ +3 |
| +1 | 1   | 4   | ↙ +3 |
|    | 2   | 7   |      |



$$y = 3x + 1$$

$$y = 3(0) + 1$$

$$y = 0 + 1$$

$$y = 1$$

$$y = 3x + 1$$

$$y = 3(1) + 1$$

$$y = 3 + 1$$

$$y = 4$$

$$y = 3x + 1$$

$$y = 3(2) + 1$$

$$y = 6 + 1$$

$$y = 7$$