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UNIT 6: LINEAR RELATIONS

4.2: LINEAR RELATIONS

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MATH 9



WHAT'S THE POINT OF TODAY'S LESSON?

We will begin 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."

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

x	y
10	24
11	26
12	28
13	30
14	32

Handwritten red annotations: Arrows pointing down from x=10 to 11, 11 to 12, 12 to 13, and 13 to 14 are labeled '+1'. Arrows pointing down from y=24 to 26, 26 to 28, 28 to 30, and 30 to 32 are labeled '+2'.

EQUATION: $y = 2x + 4$



HOMEWORK QUESTIONS???

(PAGES 159 TO 162, #7, 9, 12, 14, 15, 16, 17 & 20)
c

$$7. \quad LS + 1 \quad RS + 1$$

$$S = L + 5 \quad \textcircled{c}$$

HOMWORK QUESTIONS???

(PAGES 159 TO 162, #7, 9, 12, 14, 15, 16, 17 & 20)

$$\begin{aligned} 12. c) \quad t &= 2n + 1 \\ t &= 2(45) + 1 \\ t &= 90 + 1 \\ t &= 91 \end{aligned}$$

HOMWORK QUESTIONS???

(PAGES 159 TO 162, #7, 9, 12, 14, 15, 16, 17 & 20)

$$14. a) \quad C = 1.25n + 250$$

$$b) \quad C = 1.25(2500) + 250$$

$$C = 3125 + 250$$

$$C = \$ 3375$$

$$c) \quad C = 1.25n + 250$$

$$625 = 1.25n + 250$$

$$375 = 1.25n$$

$$300 = n$$

brochures

HOMWORK QUESTIONS???

(PAGES 159 TO 162, #7, 9, 12, 14, 15, 16, 17 & 20)

17.

Size, s	stones, n
1	8
+1 ↙ 2	10 ↘ +2
+1 ↙ 3	12 ↘ +2
+1 ↙ 4	14 ↘ +2

$$n = 2s + 6$$

$$152 = 2s + 6$$

$$146 = 2s$$

$$73 = s$$

SECTION 4.2: LINEAR RELATIONS

For this section of the unit, we need to be familiar with some more VOCABULARY:

1. **DISCRETE DATA:** Data that does NOT have an infinite number of values between whole numbers; in graphs containing discrete data, points are NOT joined together to signify this. (Think NO fractions and NO decimals.)
examples: number of people, number of squares
2. **CONTINUOUS DATA:** Data that has an infinite number of values between whole numbers; in graphs containing continuous data, points are joined together to signify this. (Think fractions and decimals.)
examples: heights, distances, times, temperature, speed

VOCABULARY:

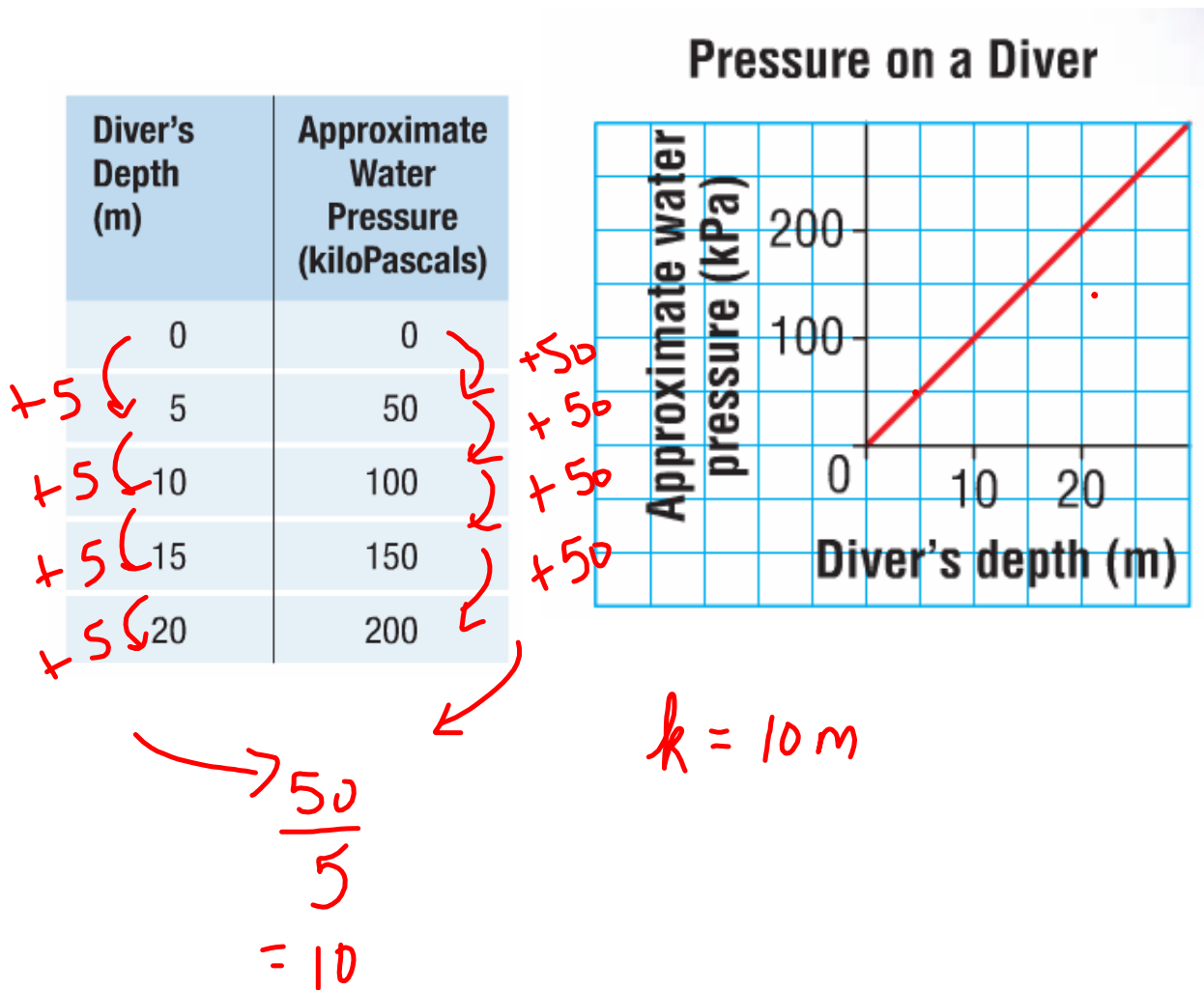
3. **DEPENDENT VARIABLE:** A variable whose value **depends** on the value of another (the *independent* variable). It is plotted on the y-axis of a graph.
4. **INDEPENDENT VARIABLE:** A variable whose value is **NOT** dependent on the value of another; it controls the relationship and determines the value of the other variable (the *dependent* variable). It is plotted on the x-axis of a graph.

5. **RELATION:** A rule that relates two quantities. When two variables are related, we have a relation.

6. **LINEAR RELATION:** A relation whose graph contains a straight line. In a linear relation, a constant change in one variable produces a constant change in the other.

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.



What pattern do you see in the table?

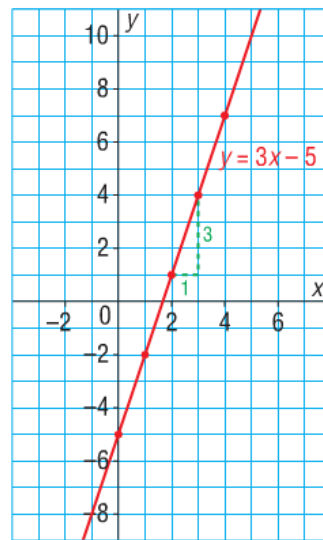
As the diver's depth increases by 5 m, the water pressure increases by 50 kPa.

What pattern do you see in the graph?

The same pattern as in the table.

Please look at the example on page 166 of *MMS9*.

	x	y	
	0	-5	
+1	→		← +3
	1	-2	
+1	→		← +3
	2	1	
+1	→		← +3
	3	4	
+1	→		← +3
	4	7	



$$y = 3x - 5$$

CONCEPT REINFORCEMENT:

MMS9:

PAGE 170: #4 and #5