ALBERTA DISTANCE LEARNING CENTRE
Mathematics 10C
MAT1791
Workbook 6.3

Student's Questions and Comments

FOR STUDENT USE ONLY

Student Name:

_____

FOR ADLC USE ONLY

Assigned to

_____

Marked by

_____

Date received

_____

Summary

	Marks Earned	Total Possible Marks	Percent
6.3 Practice – III	**I have _____ /8 and _____ %.**		
Lesson 6.3 Assignment		22	

Teacher's Comments:

_____

Teacher's Signature

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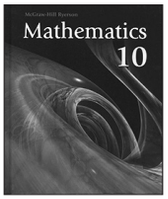

Mathematics 10

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Practice Assessment

The *Practice* section provides exercise questions and allows you to self-reflect on your conceptual understanding of the *Lesson* skills. You will mark your *Practice* work in each *Workbook* according to the following rubric.

Category	Strategy and Procedures	Response to Questions
	I have…	*I have…*
4	• used efficient and effective strategies to solve the problem(s)	• provided detailed explanations and followed directions appropriately to complete all questions
3	• used effective strategies to solve the problem(s)	• provided clear explanations and followed directions adequately to complete most questions
2	• used effective strategies inconsistently to solve the problem(s)	• provided incomplete explanations and followed some directions to complete a few questions
1	• used ineffective strategies to solve the problem(s)	• provided incomplete explanations and have not followed directions to complete some questions

Complete *Practice* exercises using your best work, showing all relevant steps needed to arrive at your solution. Refer to the *Module* to review lesson instructions. Contact your teacher for assistance or clarification as needed, or to investigate the topic further.

Check and correct your work using the solutions provided in *Appendix* in the *Module*.

Practice is worth 8 marks.

After you have assessed your work, reflect on your understanding of the concepts in the table provided at the end of each *Practice* section.

Lesson 6.3: Linear Relations

Complete the *Practice* below. When you have completed all the questions for *Lesson 6.3 Practice – III* with your best work, mark your work by first comparing your answers to the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

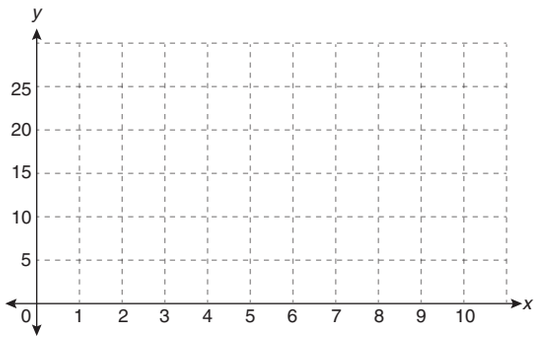
Practice – III

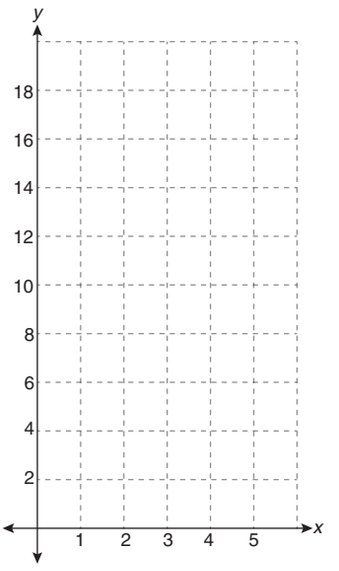
1. a. Given the following tables of values, determine the pattern in the values for each variable.

Table 1	
x	y
3	5
5	10
7	15
9	20

Table 2	
a	b
1	1
2	5
3	9
4	16

b. Graph the relation represented in each table of values.





c. Explain whether the relations are linear.

2. a. Determine the slope of the line that passes through the points

i. $B(4,-4)$ and $C(-3,10)$

ii. $D(5,-6)$ and $E(5,3)$

iii. $G(2,-4)$ and $H(-3,-4)$

b. Describe what each line will look like when graphed.

i. _____

_____

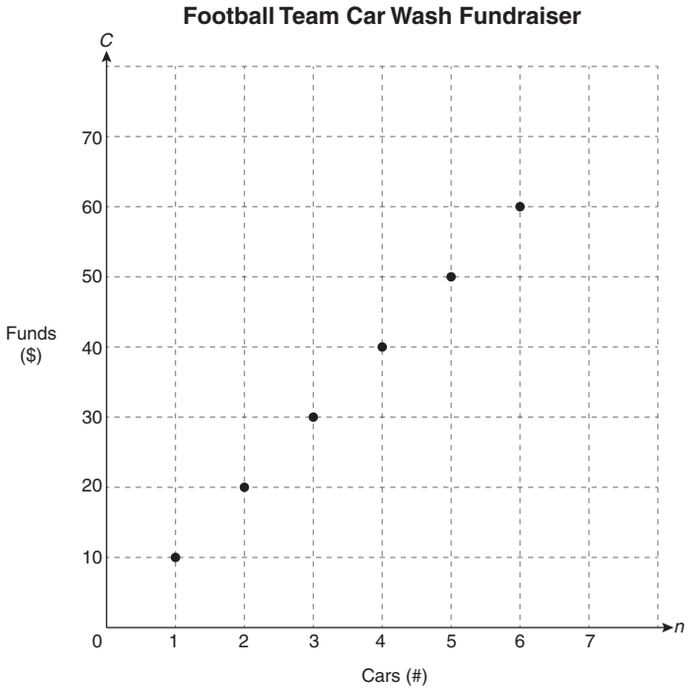
ii. _____

_____

iii. _____

_____

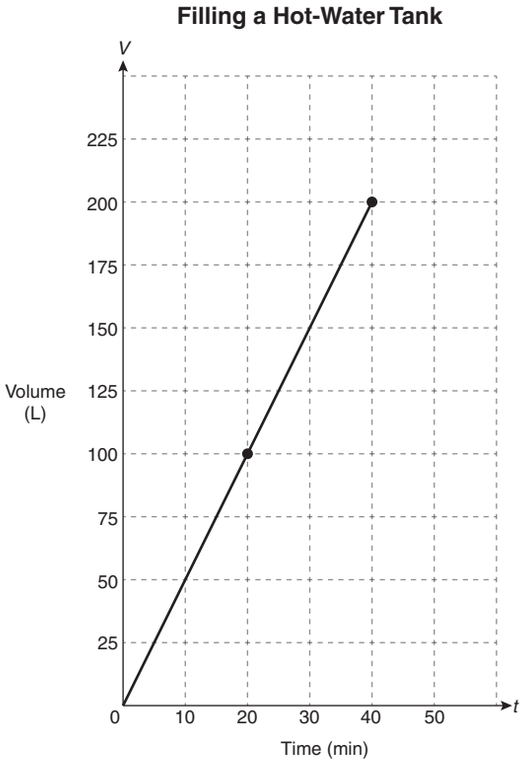
3. The graph shows the amount of money a high school football team made while hosting a car wash fundraiser.



a. Describe the pattern that indicates the graph represents a linear relation.

b. If the team earned $250, how many cars did they wash?

4. The relation representing a 200 L hot-water tank being filled at a constant rate is shown in the graph below. Determine the rate of change of the relation.

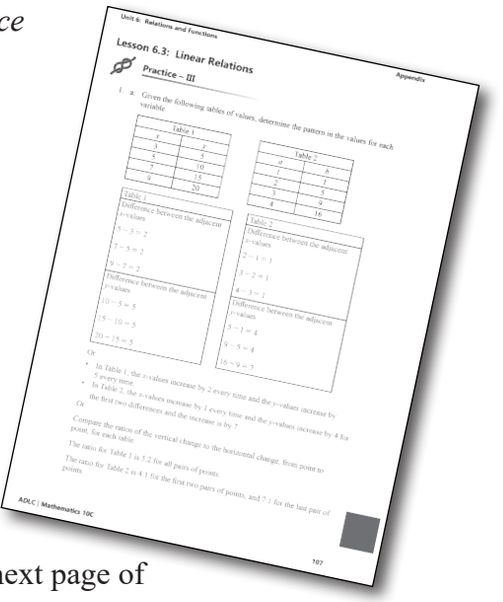


Mark your work for *Lesson 6.3 Practice – III* using the solutions provided in the *Appendix*. Then, apply the rubric found at the beginning of the *Workbook*.

Transfer your self-assessed mark to the front cover of the *Workbook*.

My self-assessed mark on *Lesson 6.3 Practice – III* is _____.

Reflect on your understanding of the concepts addressed in the *Practice* exercises in the table provided.


Unit 6: Relations and Functions

Lesson 6.3: Linear Relations

Practice – III

Appendix

1. a. Given the following tables of values, determine the pattern in the values for each variable.

Table 1

x	y
3	7
5	10
7	15
9	20

Table 2

x	y
1	1
2	4
3	9
4	16

Table 1
Difference between the adjacent x-values
$5-3=2$
$7-5=2$
$9-7=2$
Difference between the adjacent y-values
$10-5=5$
$15-10=5$
$20-15=5$

Table 2
Difference between the adjacent x-values
$2-1=1$
$3-2=1$
$4-3=1$
Difference between the adjacent y-values
$4-1=3$
$9-4=5$
$16-9=7$

Or

- In Table 1, the x-values increase by 2 every time and the y-values increase by 5 every time.
- In Table 2, the x-values increase by 1 every time and the y-values increase by 4 for the first two differences and the increase is by 7.

Or

Compute the ratios of the vertical change to the horizontal change, from point to point, for each table.

The ratio for Table 1 is 5:2 for all pairs of points.

The ratio for Table 2 is 4:1 for the first two pairs of points, and 7:1 for the last pair of points.

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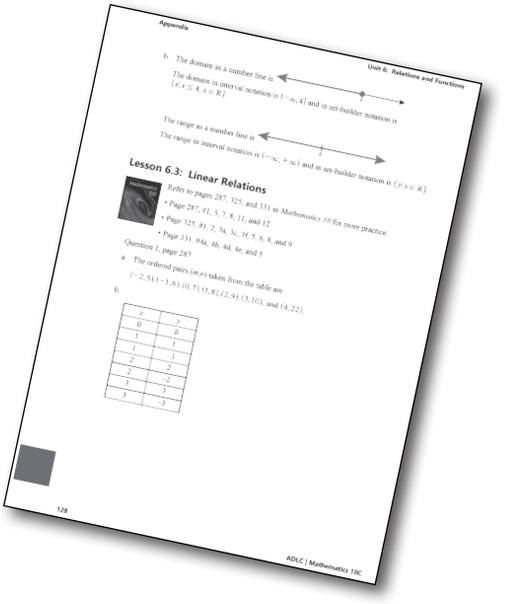
You may proceed to *Explore Your Understanding Assignment* on the next page of this *Workbook.*

Question Number	Got it!	Almost there…	Need to retry or ask for help.
1			
2			
3			
4			

Note: Before you complete *Explore Your Understanding*, you may review your skills and get more practice by completing the following problems in *Mathematics 10*.

- Page 287, #1, 5, 7, 8, 11, and 12
- Page 325, #1, 2, 3a, 3c, 3f, 5, 6, 8, and 9
- Page 331, #4a, 4b, 4d, 4e, and 5

Check your work in *Enhance Your Understanding*.


Appendix

Unit 6: Relations and Functions

b. The domain as a number line is

The domain in interval notation is $(-\infty, 4]$ and in set-builder notation is $\{x \mid x \leq 4, x \in \mathbb{R}\}$

The range as a number line is

The range in interval notation is $(-\infty, +\infty)$ and in set-builder notation is $\{y \mid y \in \mathbb{R}\}$

Lesson 6.3: Linear Relations

Refer to pages 287, 325, and 331 in *Mathematics 10* for more practice.

- Page 287, #1, 5, 7, 8, 11, and 12
- Page 325, #1, 2, 3a, 3c, 3f, 5, 6, 8, and 9
- Page 331, #4a, 4b, 4d, 4e, and 5

Question 1, page 287

a. The ordered pairs (m, n) taken from the table are

$\{-2, 5\}, \{-1, 6\}, \{0, 7\}, \{1, 8\}, \{2, 9\}, \{3, 10\}$, and $\{4, 22\}$.

b.

m	n
-2	5
-1	6
0	7
1	8
2	9
3	10
4	22

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Lesson 6.3: Linear Relations

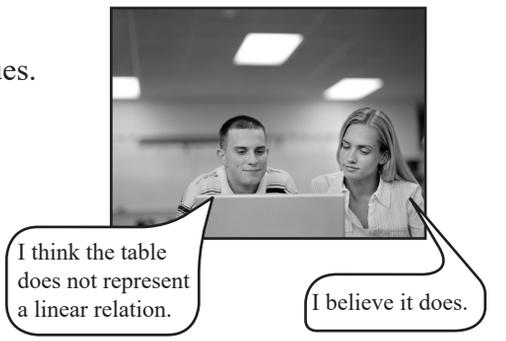
Explore Your Understanding Assignment

(2) 1. The relation represented in the table is linear. Which number would complete this table? Explain.

x	3	7	11	15	19
y	20	14	8		–4

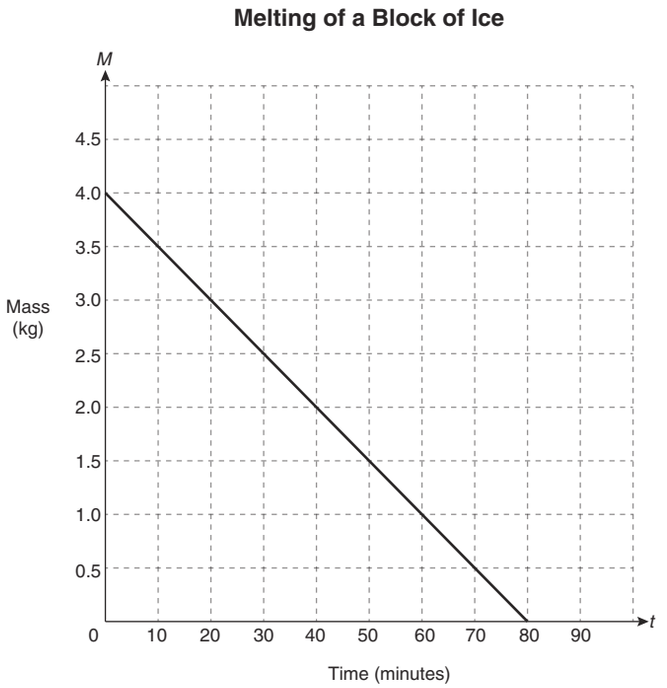
(2) 2. Larry and Laura are discussing the following table of values.

r	4	6	8	10
p	2	7	12	17



Who is correct? Explain.

3. A grade 10 science class does a controlled experiment involving a heat lamp and a block of ice on a black coloured plastic mat. This mat has a drain hole for the water and also sits on a kilogram weigh scale. This graph represents the time it takes to melt the 4.0 kg block of ice to nothing.



(1) a. Determine the mass of the block of ice after 35 minutes.

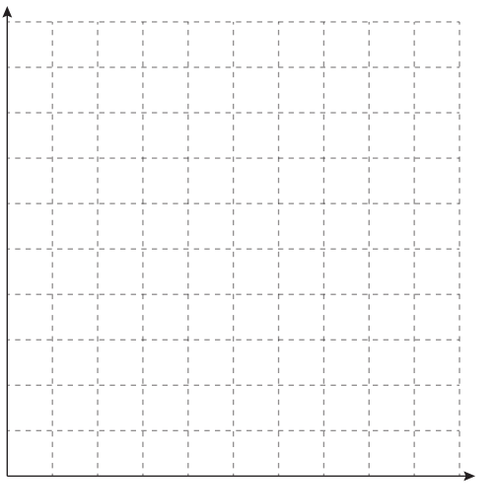
(2) b. Determine the rate of change of the mass of the ice-block per minute.

4. The table of values provided represents a linear relation.

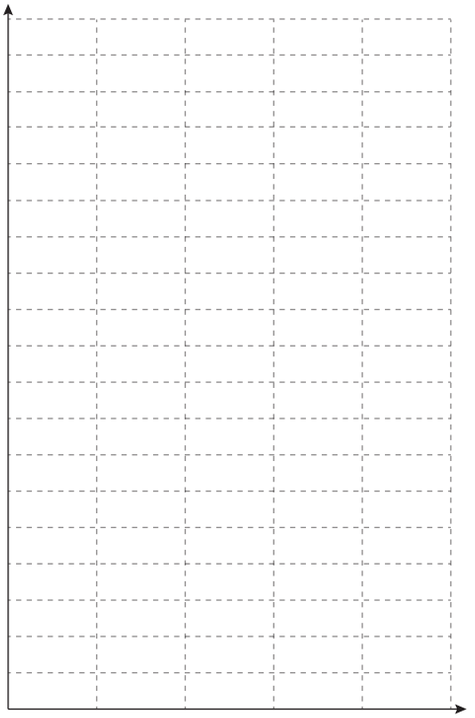
Time (s)	0	1	2	3	4
Distance (m)	0	5	10	15	20

(2) a. Determine the slope of the graph of the relation.

(3) b. Graph the relation.

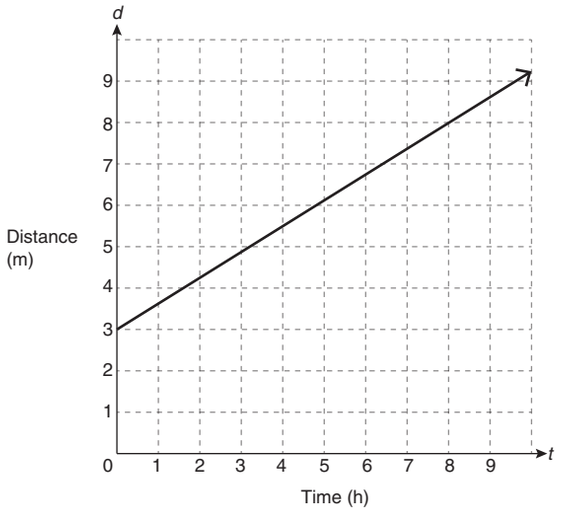


(3) 5. A snail begins its trek 3 m from home and continues travelling away from home at a rate of 4 m/h. Sketch a graph representing this scenario.

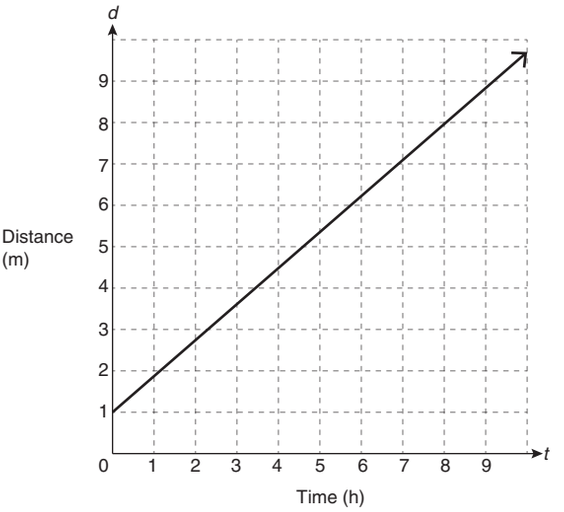


(1) 6. Which of the following graphs has a rate of change of 3 m/h and a starting point of 1 m?

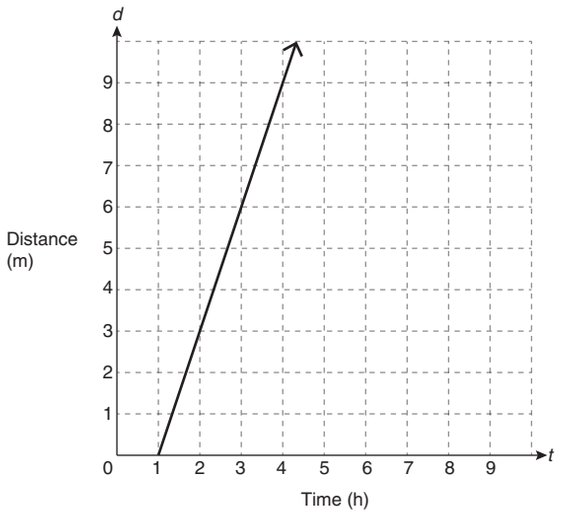
A.



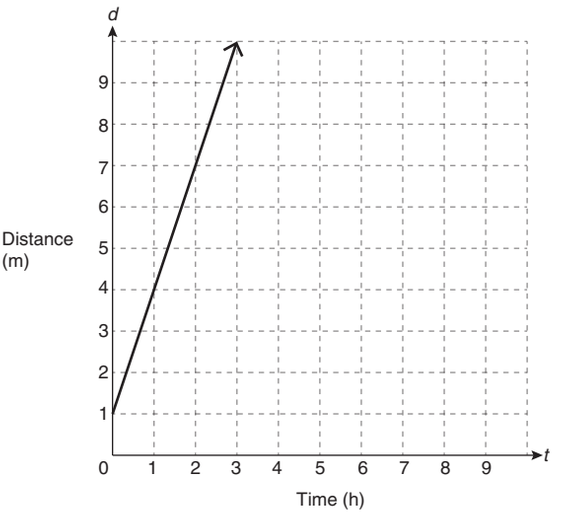
C.



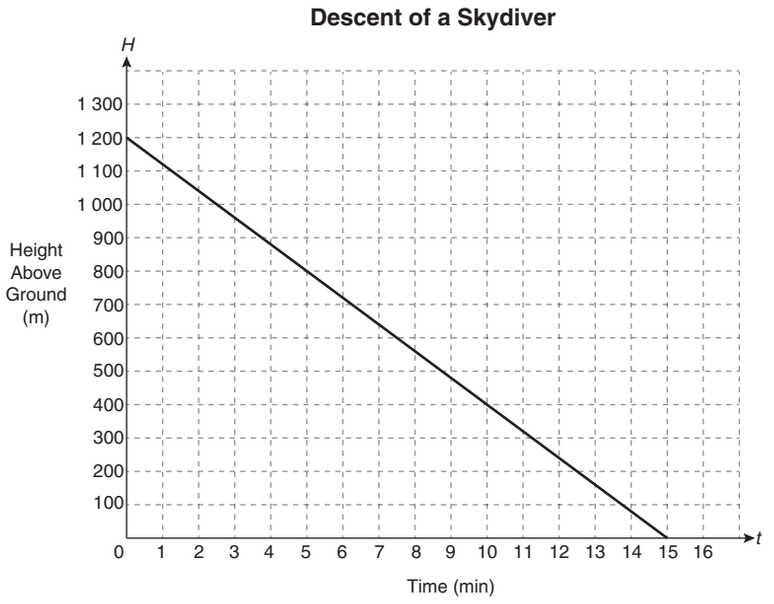
B.



D.



7. The graph below tracks the descent of a skydiver with an open parachute at 1200 m high. Ken made two attempts to determine the rate of change of the descent of the parachutist because his first attempt did not make sense to him.



Ken's first attempt at the rate of change:

$$m = \frac{\text{rise}}{\text{run}}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

STEP 1:

$$m = \frac{15 - 1\,200}{0 - 0}$$

STEP 2:

$$m = \frac{-1185}{0}$$

m = undefined

Ken's second attempt at the rate of change:

$$m = \frac{\text{rise}}{\text{run}}$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

STEP 1:

$$m = \frac{1\,200 - 0}{15 - 0}$$

STEP 2:

$$m = \frac{1\,200}{15}$$

$m = 80$ m/ min

(1) a. Explain why the first attempt did not make sense to Ken.

(1) b. Explain why the second attempt does not work out to be the correct rate of change either.

(2) c. Determine the correct rate of change.

(2) d. Explain what the rate of change means in terms of the skydiver's decent.

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