ALBERTA DISTANCE LEARNING CENTRE
Mathematics 10C
MAT1791
Workbook 6.1

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
6.1 Practice – I	**I have _____ /8 and _____ %.**		
Lesson 6.1 Assignment		22	

Teacher's Comments:

_____

Teacher's Signature

REVISED February 2019

CANADIAN CATALOGUING IN PUBLICATION DATA

MAT1791
Mathematics 10C
ISBN: 978-1-927090-75-6
Workbook 6.1

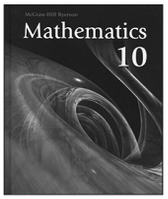
4601 - 63 Avenue
Barrhead, Alberta Canada T7N 1P4

Printed in Canada

Alberta Distance Learning Centre website:

http://www.adlc.ca

The Internet can be a valuable source of information. However, because publishing to the Internet is neither controlled nor censored, some content may be inaccurate or inappropriate. Students are encouraged to evaluate websites for validity and to consult multiple sources.



Mathematics 10

ADLC | Alberta Distance Learning Centre

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 6.1: Graphs of Relations

Complete the *Practice* below. When you have completed all the questions for *Lesson 6.1 Practice – I* 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 – I

1. The following families spent time camping in Kananaskis over the summer months:

Family	Days
The Jones	3
The McCartneys	5
The Taylors	12
The Browers	14

a. Describe the relation in words.

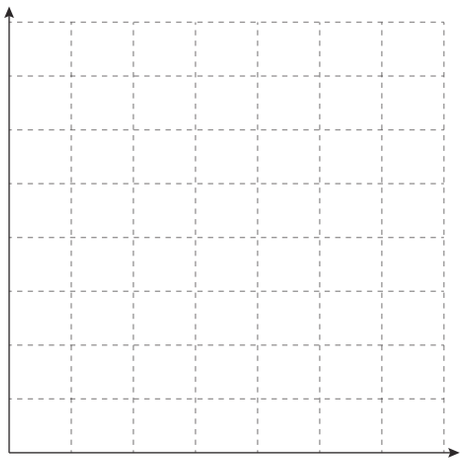
b. Represent the relation using a mapping diagram.

2. Consider the relation represented by the set of ordered pairs shown.
$\{(6,36),(7,42),(8,48),(9,54),(10,60)\}$

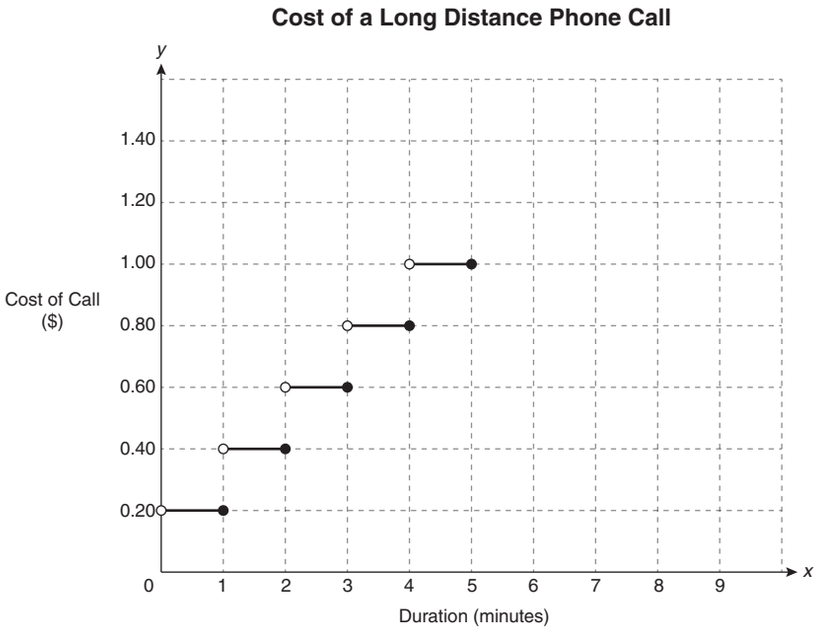
   Describe the relation in words.

3. Game pieces of various lengths are colour-coded. The length of each colour, in millimetres, is given in the table. Graphically represent the relation.

Colour	Measurement (mm)
Red	50
Black	70
Yellow	40
Green	70
White	50
Blue	30



4. The following graph shows how a cell phone company bills for air time on long distance calls.



The graph shows that the cell phone company charges \$0.20 per minute or portion thereof. For instance, a 30 second phone call and a 45 second phone call will each get billed the \$0.20 cost of a one minute call. The line segments on the graph are not connected because as each minute elapses there is an automatic cost increase to the call of \$0.20.

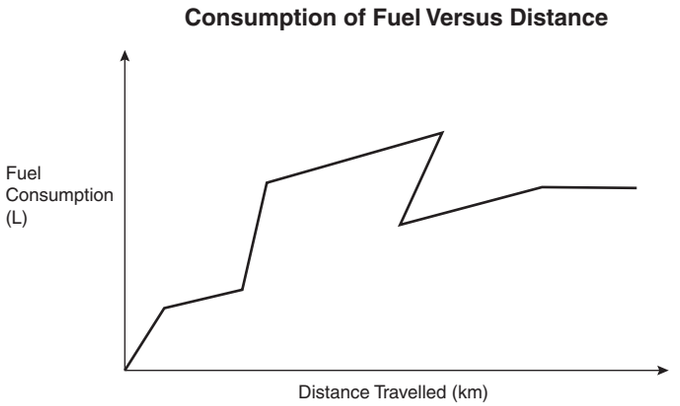
The open dot on the left side of each line segment indicates the exclusion of that value, while the closed dot on the right side of each line segment indicates the inclusion of that value.

For example, the open dot at $x = 1$ and $y = \$0.40$ means that any phone call that it is **more than** one minute, but less than and **including** two minutes is \$0.40.

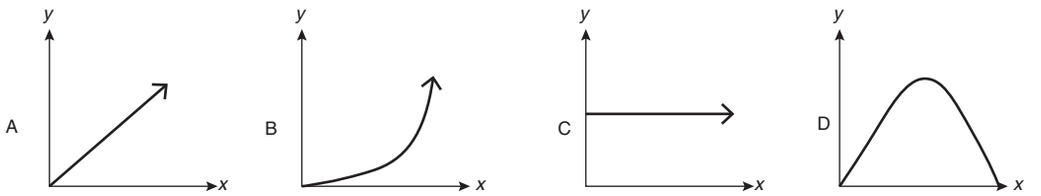
a. How much would it cost for a 4.25 minute long distance call?

b. How much would it cost for a 9.5 minute long distance call?

5. Explain why the graph below represents an impossible situation.



6. Match the graphs with the scenario statements below. Place the letter of the graph beside the most suitable description. Scenarios can match more than once.



_____ The distance a car travels at a constant speed.

_____ The number of bacteria if the colony's population doubles every two hours.

_____ The height of a ball when thrown into the air.

_____ One variable is changing at a constant rate in relation to the other variable.

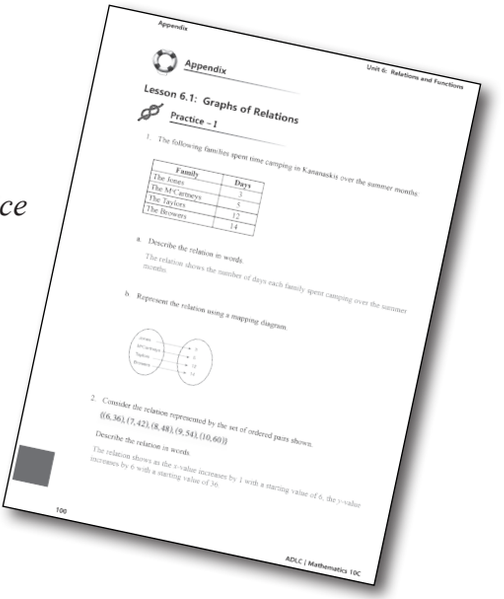
_____ One variable is not changing.

_____ The distance travelled while stuck in a snow bank.

Mark your work for *Lesson 6.1 Practice – I* 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 6.1 Practice – I* is _____.


Appendix

Unit 6: Relations and Functions

Appendix

Lesson 6.1: Graphs of Relations

Practice – 1

1. The following families spent time camping in Kananaskis over the summer months.

Family	Days
The Jones	5
The McCorneys	7
The Taylors	5
The Browns	12
	14

a. Describe the relation in words.

The relation shows the number of days each family spent camping over the summer months.

b. Represent the relation using a mapping diagram.

2. Consider the relation represented by the set of ordered pairs shown.

{(6,36),(7,42),(8,48),(9,54),(10,60)}

Describe the relation in words.

The relation shows as the x-value increases by 1 with a starting value of 6, the y-value increases by 6 with a starting value of 36.

100

ADLC | Mathematics 10C

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

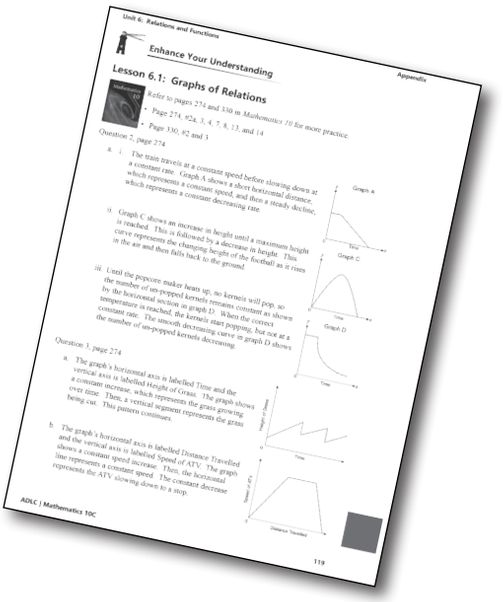
Question Number	Got it!	Almost there…	Need to retry or ask for help.
1			
2			
3			
4			
5			
6			

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

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 274, #2a, 3, 4, 7, 8, 13, and 14
- Page 330, #2 and 3

Check your work in *Enhance Your Understanding*.


Unit 6: Relations and Functions

Enhance Your Understanding

Appendix

Lesson 6.1: Graphs of Relations

Refer to pages 274 and 330 in *Mathematics 10* for more practice.

- Page 274, #2a, 3, 4, 7, 8, 13, and 14
- Page 330, #2 and 3

Question 2, page 274

a. i. The train travels at a constant speed before slowing down at a constant rate. Graph A shows a short horizontal distance, which represents a constant speed, and then a steady decline, which represents a constant decreasing rate.

Graph A

Time

ii. Graph C shows an increase in height until a maximum height is reached. This is followed by a decrease in height. This curve represents the changing height of the football as it rises in the air and then falls back to the ground.

Graph C

Time

iii. Until the popcorn maker heats up, no kernels will pop, so the number of un-popped kernels remains constant as shown by the horizontal section in graph D. When the correct temperature is reached, the kernels start popping, but not at a constant rate. The smooth decreasing curve in graph D shows the number of un-popped kernels decreasing.

Graph D

Time

Question 3, page 274

a. The graph's horizontal axis is labelled Time and the vertical axis is labelled Height of Grass. The graph shows a constant increase, which represents the grass growing over time. Then, a vertical segment represents the grass being cut. This pattern continues.

Height of Grass

Time

b. The graph's horizontal axis is labelled Distance Travelled and the vertical axis is labelled Speed of ATV. The graph shows a constant speed increase. Then, the horizontal line represents a constant speed. The constant decrease represents the ATV slowing down to a stop.

Speed of ATV

Distance Travelled

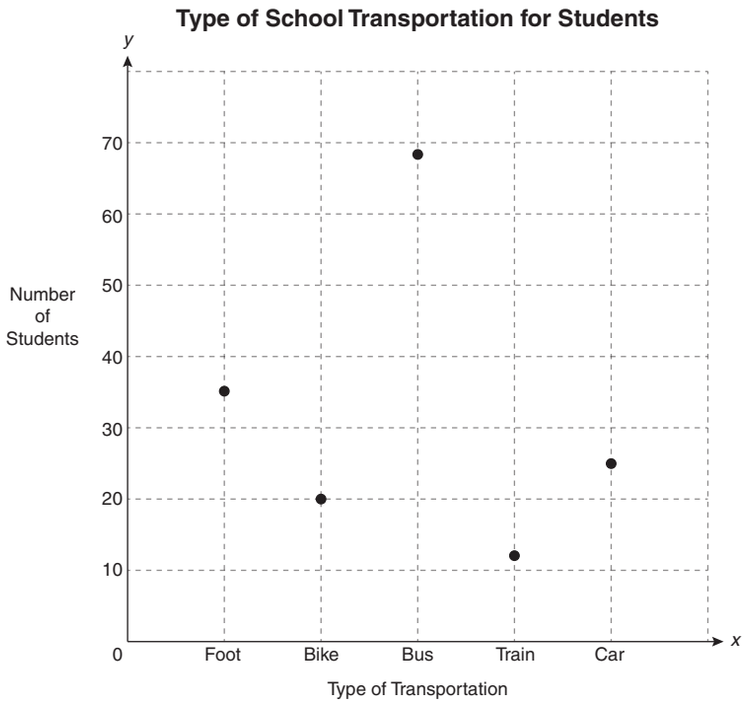
ADLC | Mathematics 10C

119

Lesson 6.1: Graphs of Relations

Explore Your Understanding Assignment

1. The graph shows the number of students taking each of five different types of transportation to get to school.



(1) a. Use the data in the graph to represent the relation as a set of ordered pairs.

(1) b. What do the horizontal and vertical axes represent?

(2) c. State two conclusions about the relation represented in the graph.

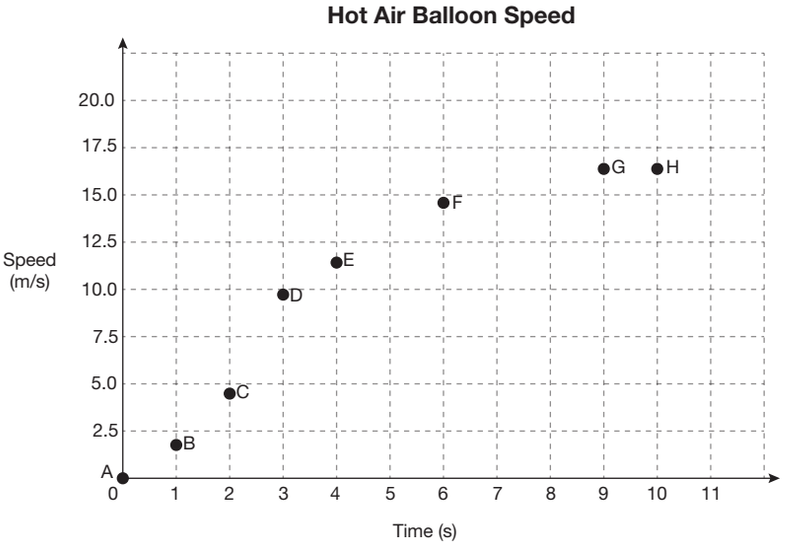
2. A relation is defined by the ordered pairs $\{(5,25),(6,30),(7,35),(8,40)\}$.

(2) a. State two relationships about the relation.

(1) b. Assuming the relation continues with the same relationship, state the two sets of ordered pairs that follow (8,40).

3. The table and graph provided show the speed of a hot air balloon at one second intervals from the time of lift-off.

Time, *t* (s)	Speed, *S* (m/s)
0	0
1	1.8
2	4.5
3	9.7
4	11.4
6	14.8
9	16.3
10	16.3



(1) a. What does point *A* represent on the graph?

(2) b. Interpolate the speed of the balloon half-way between points E and F. Explain.

(2) c. Extrapolate the speed of the balloon at 11 seconds of flight.

4. A graph representing Jason's distance from home, on a bike ride, is shown.

(1) a. During his trip, Jason stopped to play at the park with a friend. Which segment of the graph best represents this part of his trip? Explain.

(1) b. How much time did Jason spend at the park?

(1) c. Which statement best describes segment *DE*? Explain.

i. Jason spends time at the park.
ii. Jason leaves home.
iii. Jason cycles to the park.
iv. Jason returns home.

5. It takes 15 minutes for the interior temperature of an oven to rise from 20°C to 180°C. A cake is placed in the oven for 25 minutes. When the cake is removed, the oven is turned off. The interior temperature of the oven returns to 20°C after 15 minutes. The oven is then turned on again, 45 minutes later. It takes 10 minutes for the temperature to reach 165°C. Cookies are placed in the oven to bake for 20 minutes. When the cookies are removed, the oven is turned off. The interior temperature of the oven returns to 20°C after 10 minutes.

(4) a. Sketch a graph of the scenario.

(3) b. Label each section of the graph and explain what each one represents.

/22