ALBERTA DISTANCE LEARNING CENTRE
Mathematics 30-3 Online
MAT3793
Unit D Assignment

Student's Questions and Comments

FOR STUDENT USE ONLY

(if label is missing or incorrect)
Student ID:

_____

Please use the pre-printed label for this course and Assignment

Name

Address

City/Town **Province** **Postal Code**

Apply Assignment Label Here

FOR ADLC USE ONLY

Assigned to

_____

Marked by

_____

Date received

_____

Summary

	Marks Earned	Total Marks	Percent
Lesson 1		**20**	
Lesson 2		**19**	
Lesson 3 - Part B		**21**	
Lesson 4 - Part B		**15**	
Lesson 5		**30**	

Teacher's Comments:

_____

Teacher's Signature

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Unit D Assignment

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http://www.adlc.ca

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Mathematics 30-3 Online

Unit D Assignment

Graphing

Submission Instructions

You will submit your assignments online by uploading them to your course in Moodle. Once you log in to your course, you will find more detailed submission instructions provided by your teacher.

Go to this website to learn how to log in to Moodle:
http://quick.adlc.ca/login

If you have further questions about submitting your work, please contact your teacher.

Mathematics 30-3 Online

Unit D Assignment

Our Pledge to You:

Enrolling in this course is another step toward an Alberta High School Diploma. Everyone at Alberta Distance Learning Centre is committed to helping students achieve their educational goals. We welcome your contact in person or by phone, fax, e-mail, voice mail, or postal mail.

Advice:

Your achievement in this course is determined by your success in the assessments of each unit. Your responses to assignments indicate your understanding of outcomes established by Alberta Education.

- Before responding to the assigned questions, read all relevant directions for the Assignment and instruction in the course materials, including the appropriate Guide for Learning and any other resources provided.
- When you encounter difficulties, re-read the directions for the Assignment and review the relevant instruction in the Guide for Learning.
- If you require further clarification, contact your Alberta Distance Learning Centre teacher for assistance.

Notice:

You have one opportunity to submit each Assignment.

- Only under exceptional circumstances will your ADLC teacher re-assess your work. Therefore, apply significant effort to each Assignment.
- If your final exam mark is vastly different from your Quiz marks, your teacher may apply discretion in determining your course mark.

Format

You are encouraged to **handwrite** your written work.

If you type your work, be sure to follow these guidelines:

- Include your full name and student file number as a document header.
- Double-space your final copy.
- Staple your printed work to this Assignment.

ADLC Plagiarism Policy (ADLC Administrative Policy 60–1)

Plagiarism is the practice of representing someone else's work or ideas as one's own. It is an academically dishonest practice and is detrimental to a student's knowledge and skill development. ADLC takes a progressive approach to plagiarism to educate and correct the behaviour.

All incidents will be documented and are subject to the consequences outlined below:

First Incident	Second Incident	Third Incident
The student is given zero scores on any work suspected of being plagiarized and given the opportunity to resubmit original work.	The student is given zero scores on any work suspected of being plagiarized and is not given the opportunity to resubmit original work. A letter is sent by the principal to parents and school facilitators outlining this administrative practice and the consequences.	The student is removed from the course in which plagiarized work is suspected and notifications are put into the ADLC Student Information System, barring future registration to the course in question. A withdrawal letter is sent by the principal to parents and school facilitators.

Important

While removal from a course is limited to the course in which the third incident has occurred, the preceding steps can occur across different courses. A student who has been found plagiarizing in Course A and held to the First Incident consequences who then plagiarizes in Course B will move to the Second Incident consequences.

Any further occurrences after the Third Incident in any other courses will result in immediate removal from that course. Ongoing occurrences may result in removal from all courses and barring of registration with ADLC.

Sharing of ADLC Work (ADLC Administrative Policy 60–4)

Plagiarism is the practice of representing someone else's work or ideas as one's own. It is a dishonest practice and is damaging to a student's knowledge & skill development. Plagiarism is addressed in ADLC Administrative Policy 60-01.

The sharing of school work, especially after having been marked by ADLC, to students for the purposes of submitting plagiarized work (either paraphrasing or directly copying student work) is dishonest, and this sharing goes against the Alberta School Act's expectation of students to respect school rules and co-operate with how schools offer education to their students.

ADLC prefers to take a progressive approach to the sharing of work with other students, in order to educate and correct the behaviour.

If a student is currently enrolled in any ADLC course and found to be sharing school work, whether from their current course or another, to others, the following will happen:

First Incidence	Second Incidence
The student is informed that their work has been submitted as plagiarized work by another student; a warning is provided that further submissions of such work, from any course, will be grounds for removal from the current course(s).	The student is removed from all active ADLC courses.

If the student is not currently enrolled in any ADLC course and found to be sharing school work with others, they are informed that their work has been submitted as plagiarized work by another student and, as such, further registrations in any ADLC course will not be permitted. The incident will be recorded on the student's file.

Such actions do not limit ADLC to pursue other remedies (actions), either criminal or civil, for the distribution of its copyrighted materials.

Lesson 1 Assignment

Graphing Skills

Work slowly and carefully. If you are having difficulty, go back and review the appropriate *Lesson*.

For full marks, show all calculations, steps, and/or explain your answers.

Total marks: 20

(3) 1. The higher the temperature of the oven, the faster the cake will bake. Write the letter of the correct statement to finish the following sentences.

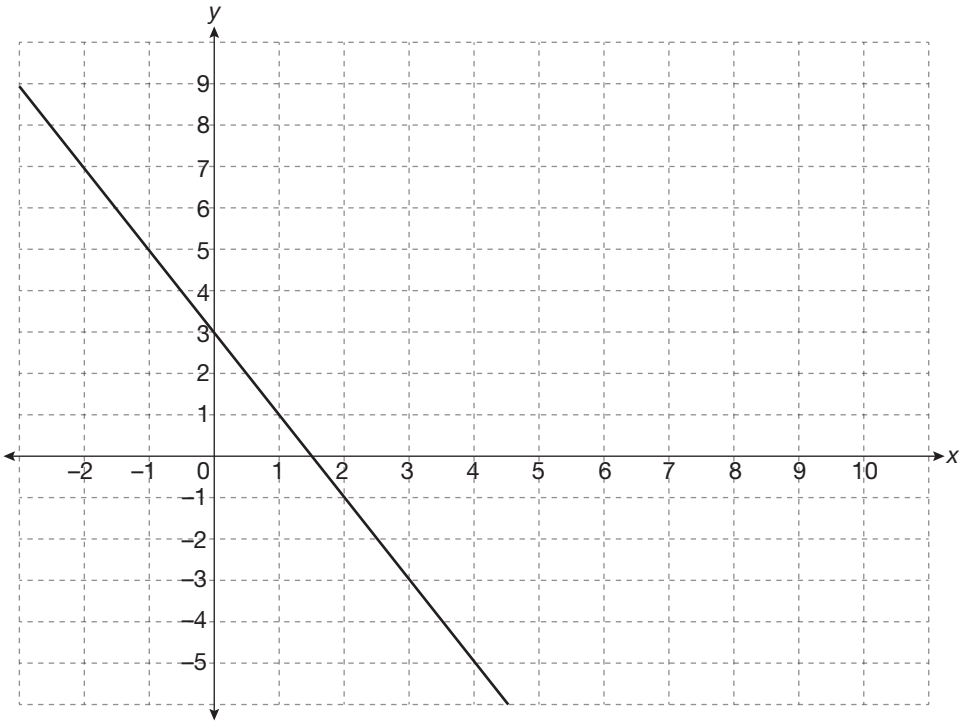
A – the dependent variable
B – the independent variable
C – neither

a. The temperature of the oven is _____.

b. The oven is _____.

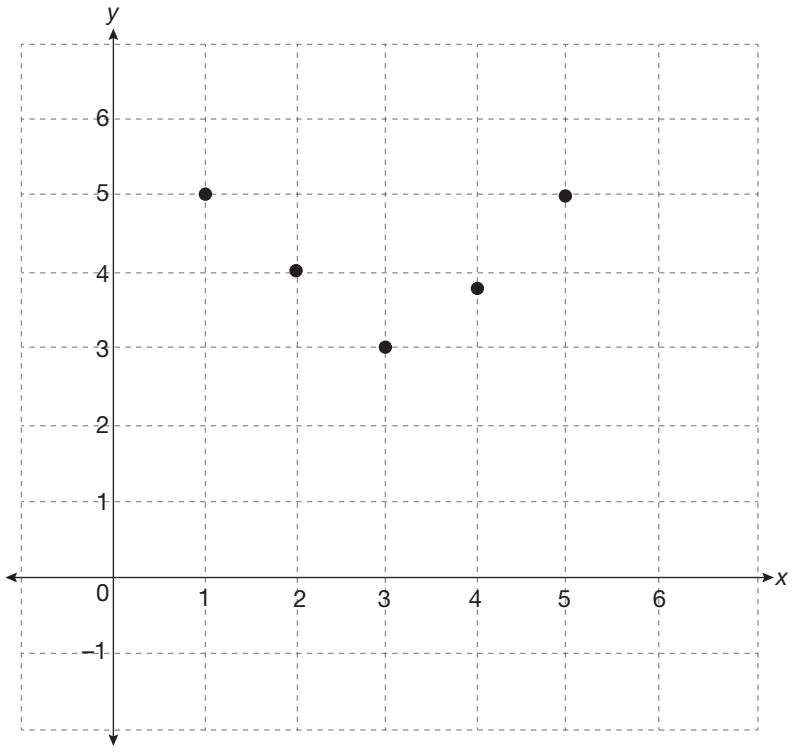
c. The baking time of the cake is _____.

(1) _____ 2. The graph below is an example of which of the following?



A. a linear relation and continuous data
B. a non-linear relation and continuous data
C. a linear relation and discrete data
D. a non-linear relation and discrete data

(1) _____ 3. The graph below is an example of which of the following?



A. a linear relation and continuous data
B. a non-linear relation and continuous data
C. a linear relation and discrete data
D. a non-linear relation and discrete data

(1) _____ 4. Students measured the temperature of water at different depths in Beaverhill Lake and found that the temperature varied according to the depth at which it was taken. The maximum depth of the lake is $7.5\ \text{ft}$. Which of the following best describes this data?

A.

dependent variable: temperature
independent variable: depth
continuous data

B.

dependent variable: temperature
independent variable: depth
discrete data

C.

dependent variable: depth
independent variable: temperature
continuous data

D.

dependent variable: depth
independent variable: temperature
discrete data

5. The amount of juice produced from oranges is displayed in the table of values.

Number of Oranges	3	4	5	6	7
Volume of Juice (mL)	175	300	500	625	800

(1) a. Identify the dependent variable and the independent variable.

(1) b. Is the data discrete or continuous? Explain.

(5) c. Graph the data.
Be sure to include
- an appropriate scale
- the labelled axes (including units)
- the dependent variable on the y-axis and the independent variable of the x-axis
- a title
- a line connecting points when applicable (continuous: yes, discrete: no)

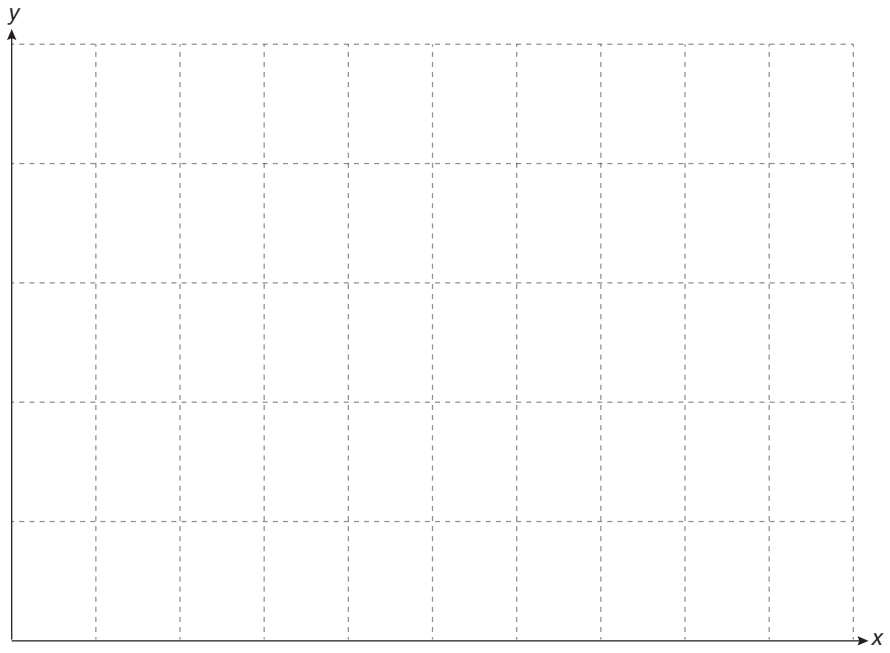
(1) d. Does the graph represent a linear relation? Justify.

6. Juanita owns an aluminum recycling company and purchases used aluminum cans for $\$0.50$ per pound.

(1) a. Complete the table of values.

Mass of Aluminum (lb)	Cost $(\$)$
10	
20	
30	
40	

(5) b. Graph the data.
Be sure to include
- an appropriate scale
- the labelled axes (including units)
- the dependent variable on the y-axis and the independent variable on the x-axis
- a title
- a line connecting points when applicable (continuous: yes; discrete: no)



Lesson 2 Assignment

Direct Variation

Work slowly and carefully. If you are having difficulty, go back and review the appropriate *Lesson*.

For full marks, show all calculations, steps, and/or explain your answers.

Total marks: 19

(1) _____ 1. Which statement is **not** true for a set of data that represents direct variation?

A. The rate of change is constant.
B. The graph passes through the ordered pair $(0, 0)$.
C. The slope varies.
D. The graph is a straight line.

(1) _____ 2. The origin is _____.

A. where the graph starts
B. the point $(0, 0)$
C. at the top of the graph
D. the label found on the y-axis

(1) _____ 3. In direct variation, the slope is always _____ the rate of change.

A. higher than
B. lower than
C. extrapolated to
D. equal to

(1) _____ 4. The equation represented by the table of values is:

x	y
0	0
15	1.5
30	3.0
45	4.5
60	6.0

A. $y = 10x$
B. $y = x$
C. $y = 15x$
D. $y = 0.1x$

(4) 5. Determine if the table of values represents direct variation. If yes, state the rate of change. If no, explain.

a.

x	y
0	1
1	2
2	3
3	4
4	5

b.

x	y
0	0
1	20
2	40
3	60
4	80

c.

x	y
0	0
11	66
22	132
33	198
44	264

d.

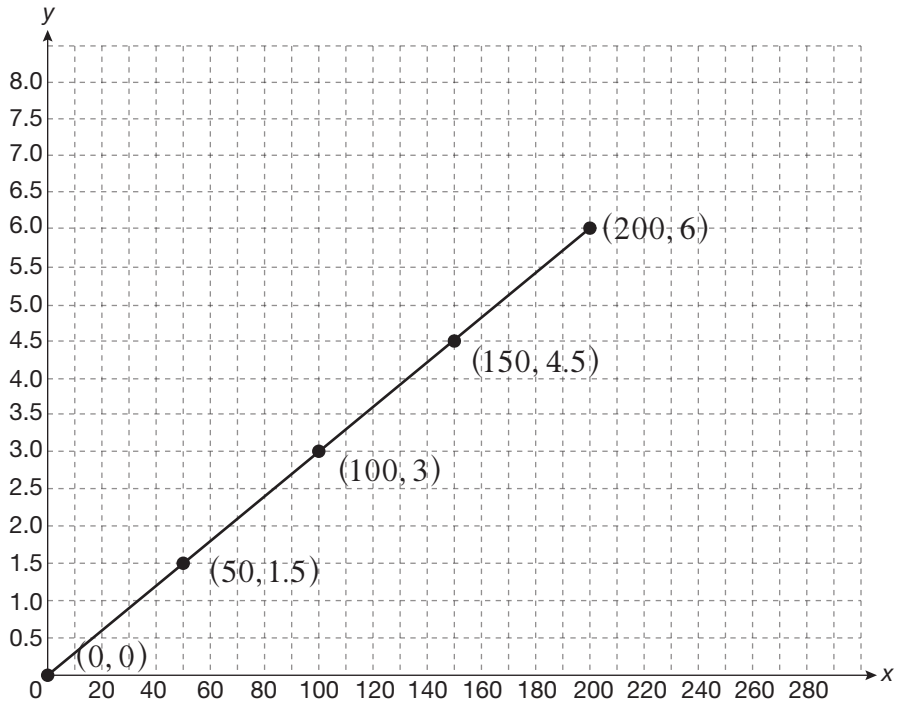
x	y
0	0
2	25
4	50
6	60
8	70

6. Determine the slope for each scenario below.

(1) a. Find the slope.

x	y
0	0
9	33.3
18	66.6
27	99.9
36	133.2

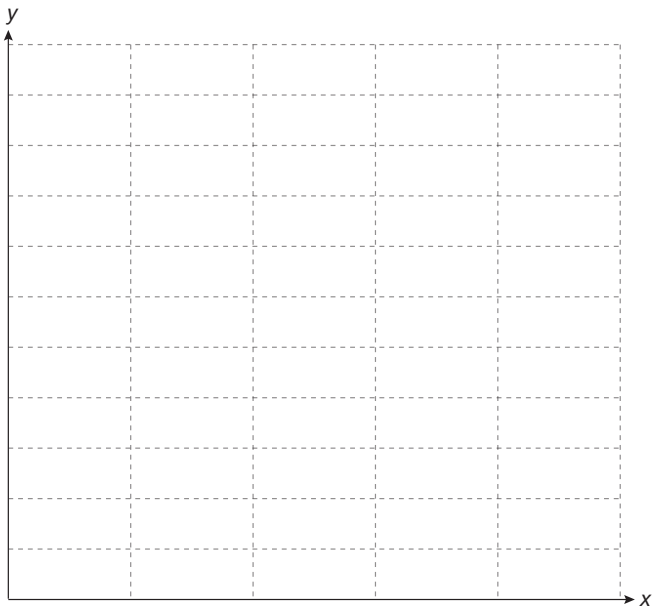
(1) b. Find the slope of the line.



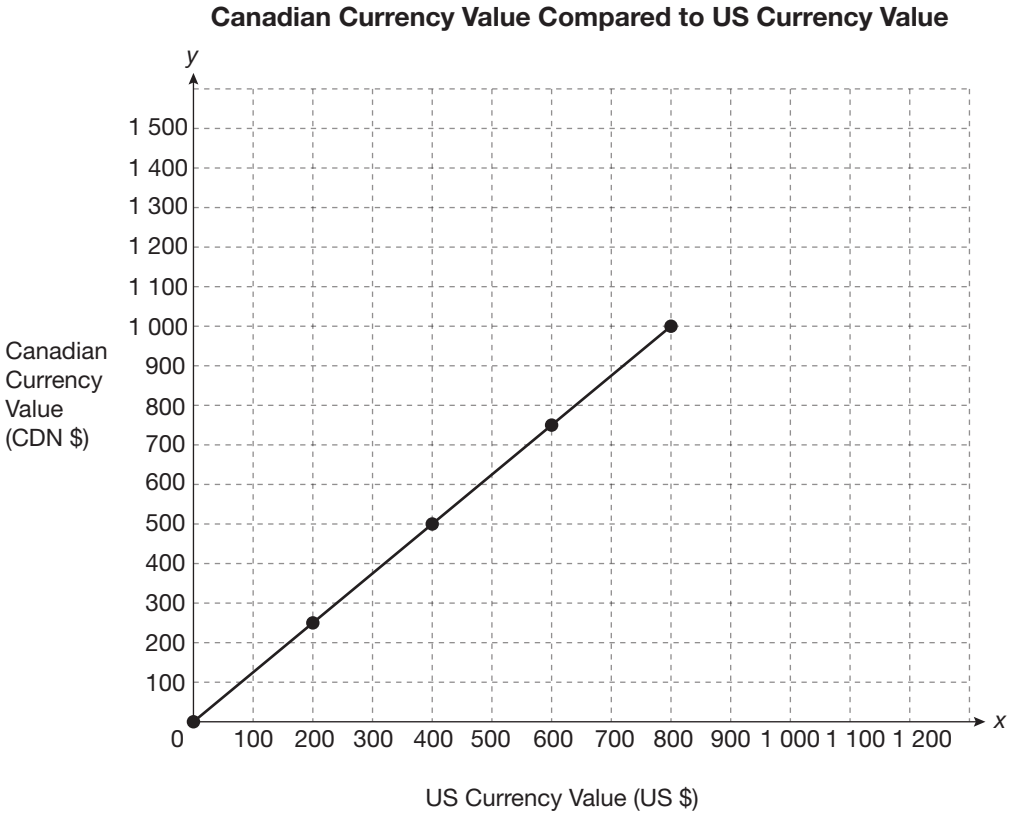
(1) c. Find the slope given the two points $A(3, 18)$ and $B(8, 48)$.

(1) 7. a. Create a table of values for the equation $y = 5x$. Use the values $x = 0, 1, 2, 3, 4$.

(1) b. Graph the equation $y = 5x$.



8. Use the graph to answer the following.



(2) a. State the equation of the line.

(2) b. Estimate the value of $\$500$ American in Canadian dollars. State which method—interpolation or extrapolation—is used to estimate the value.

(2)

c. Approximately how much is $\$1\,400$ Canadian worth in American dollars? State which method—interpolation or extrapolation—is used to estimate the value.

Lesson 3 Assignment

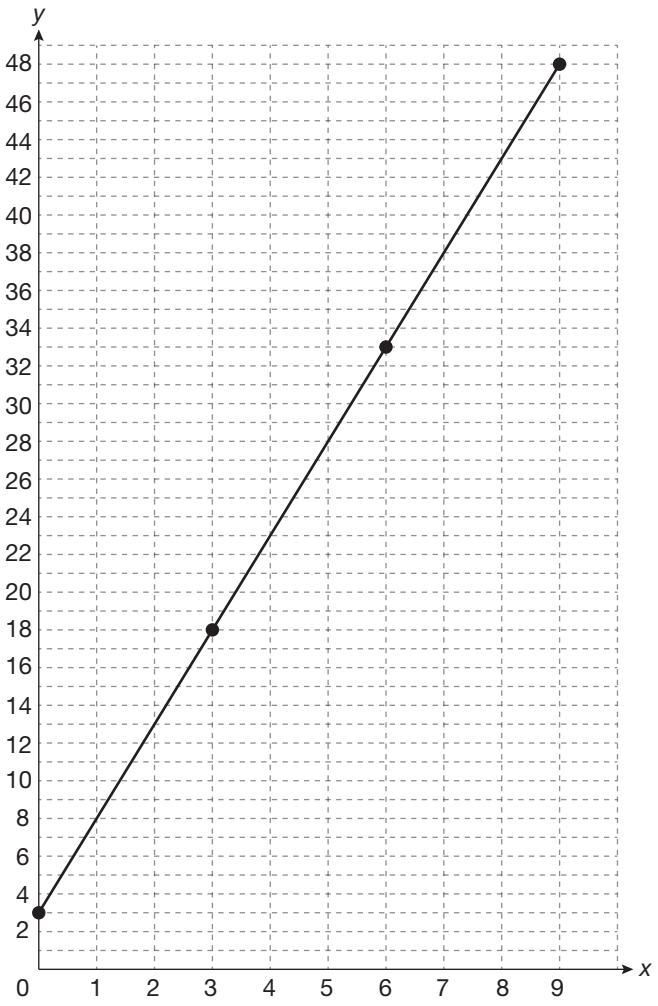
Partial Variation – Part B

Work slowly and carefully. If you are having difficulty, go back and review the appropriate *Lesson*.

For full marks, show all calculations, steps, and/or explain your answers.

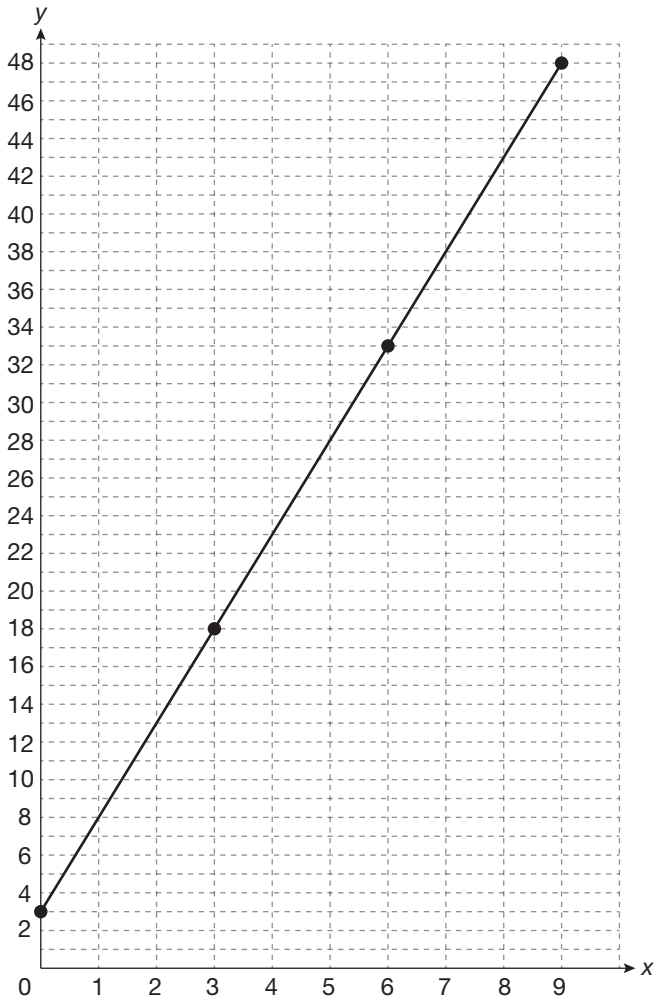
Total marks: 21

(1) _____ 11. Find the slope, m, of the line on the graph.



A. 0
B. 3
C. 5
D. 15

(1) _____ 12. Find the y-intercept, b, of the line on the graph.



A. 0
B. 3
C. 5
D. 15

13. Given the equation $y = 2x + 1$, complete the following.

(2) a. Create a table of values.

x	y

(2) b. Draw the graph.

14. Determine if the table of values represents direct variation, partial variation, or neither. If the table of values represents direct variation or partial variation, state the slope of the line. If not, explain why it does not represent direct variation or partial variation.

(2) a.

x	y
0	0
5	6
10	12
15	18

(2) b.

x	y
0	0
1	2
2	5
3	9

(2) c.

x	y
0	10
20	150
40	290
60	430

15. For each table of values given, complete the following.
    - Find the slope.
    - Find the y-intercept.
    - Determine the equation.

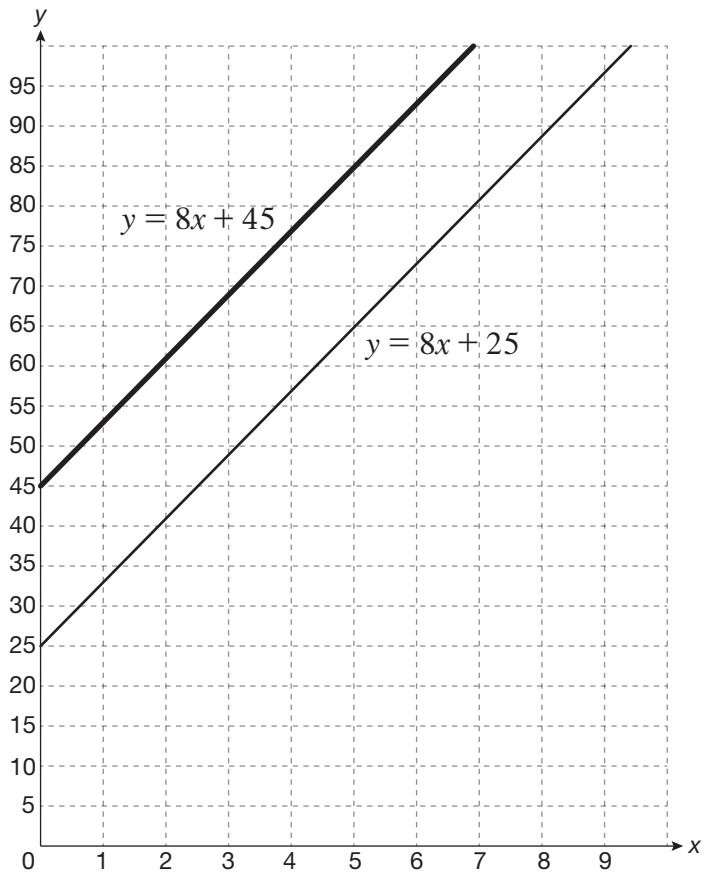
(3) a.

x	y
0	0
12	3
24	6
36	9

(3) b.

x	y
0	8
2	14
4	22
6	30

16. Compare the two equations.



Equation 1: $y = 8x + 25$
Equation 2: $y = 8x + 45$

(1) a. How are the two lines similar?

(1) b. How are the two equations different?

(1) c. How does the graph of equation 1 compare to equation 2?

Lesson 4 Assignment

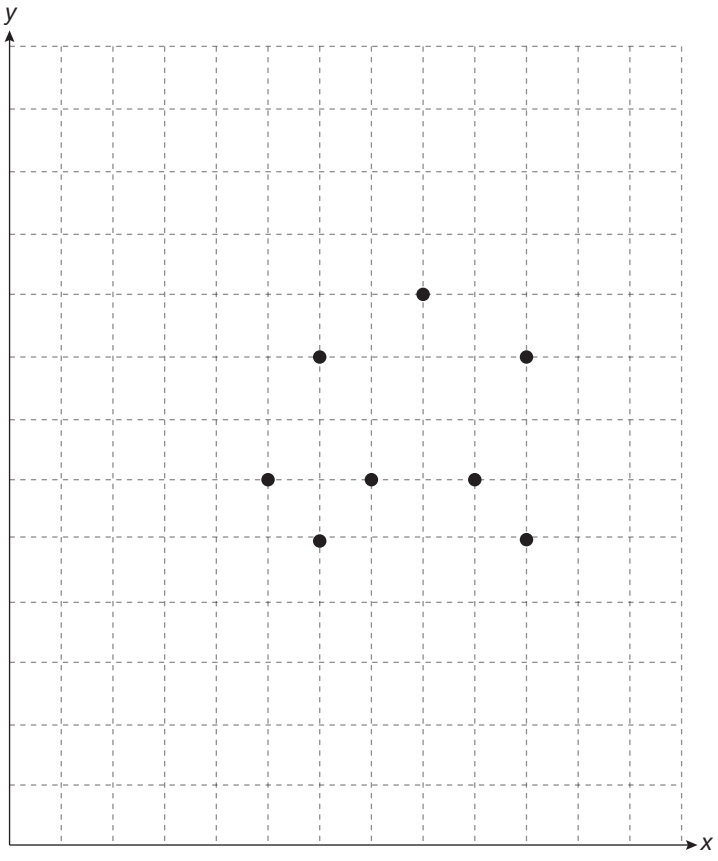
Understanding Linear Trends and Scatterplots – Part B

Work slowly and carefully. If you are having difficulty, go back and review the appropriate *Lesson*.

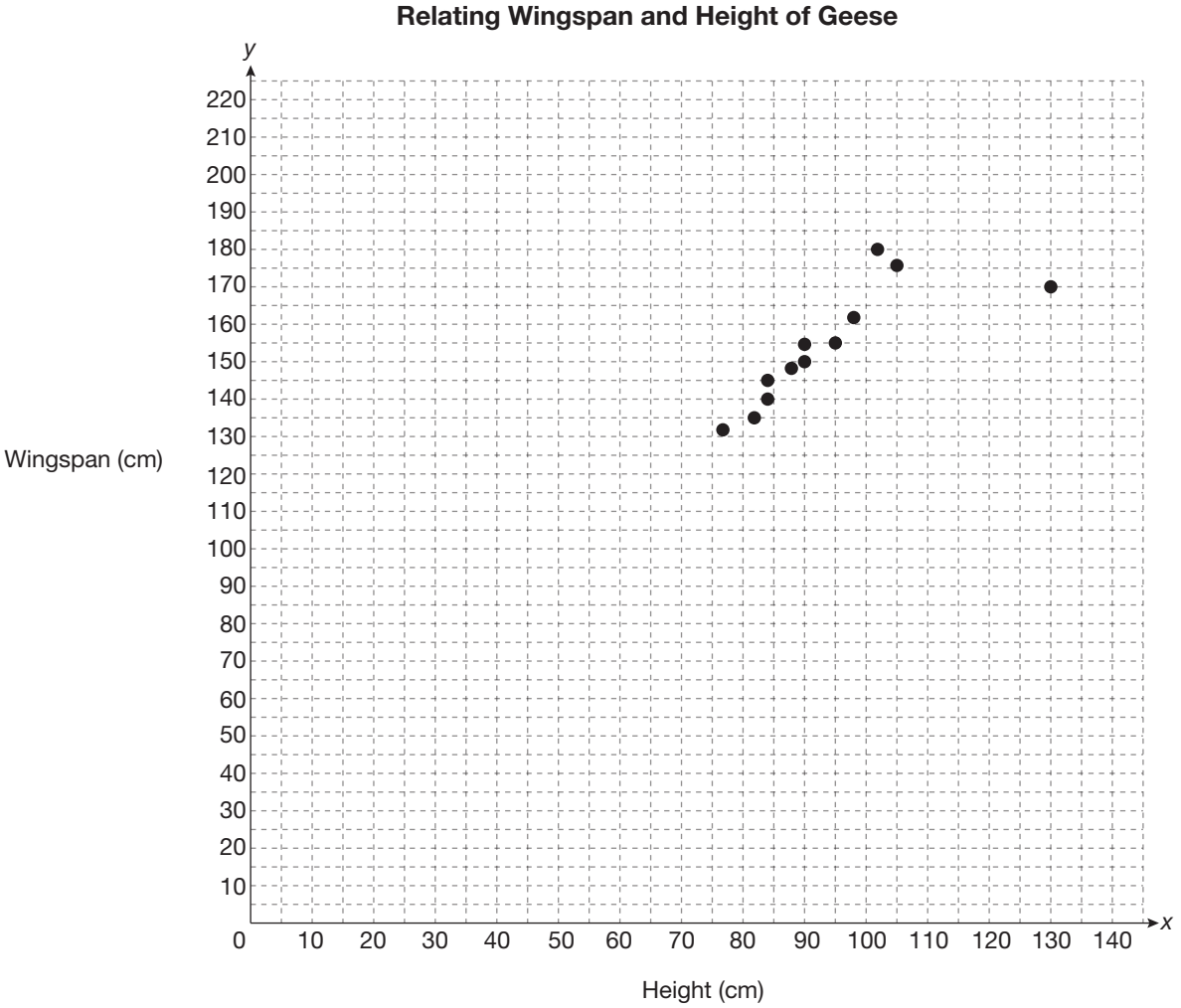
For full marks, show all calculations, steps, and/or explain your answers.

Total marks: 15

(1) 11. Draw a line of best fit for the graph if possible.



12. To observe growth patterns, scientists measure and tag birds as well as other animals. Maria measures the height and wingspan of 12 geese and creates a scatterplot of the data.

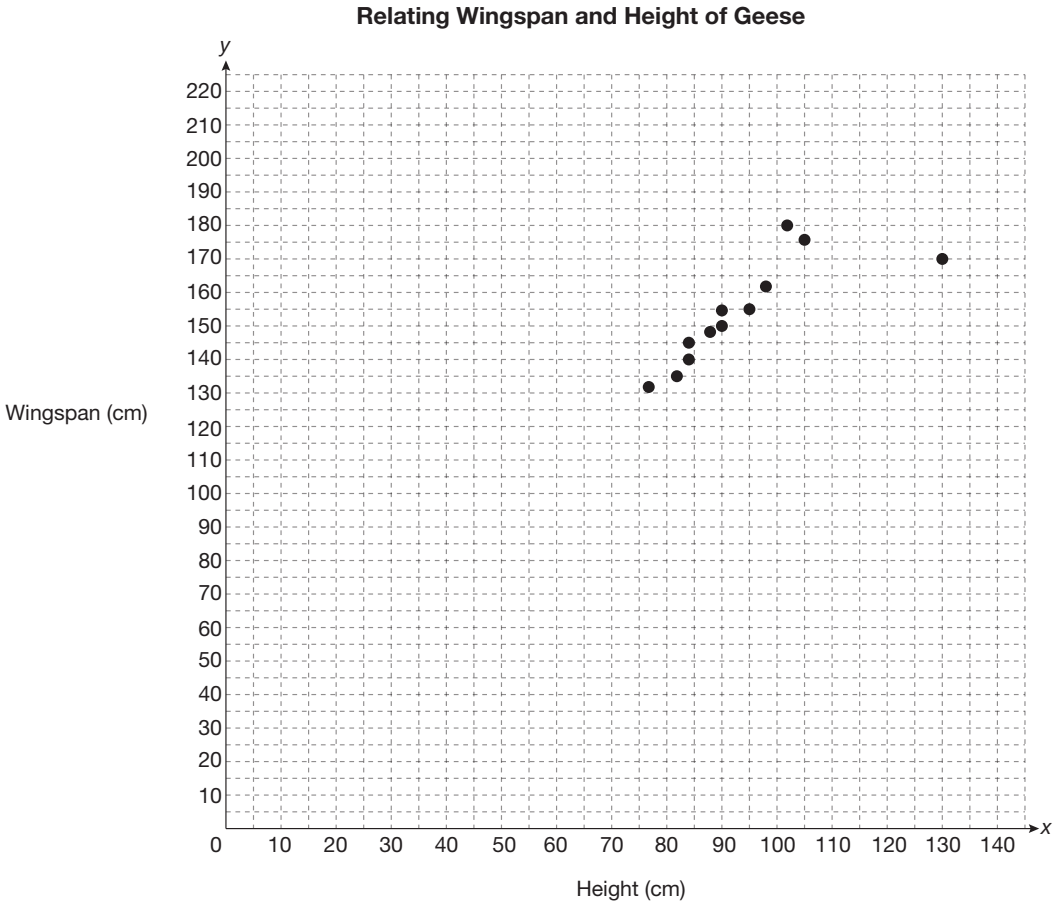


(1) a. Circle any outliers on the graph above.

(1) b. Does the scatterplot show positive correlation, negative correlation, or no correlation?

(1) c. What trend is seen in the scatterplot?

(1) d. Draw the line of best fit.



e. A goose has a height of $100\ \text{cm}$.

(1) i. What will be its wingspan?

(1) ii. Is interpolation or extrapolation use to solve this problem?

f. A gosling has a wingspan of $60\ \text{cm}$.

(1) i. What will be its height?

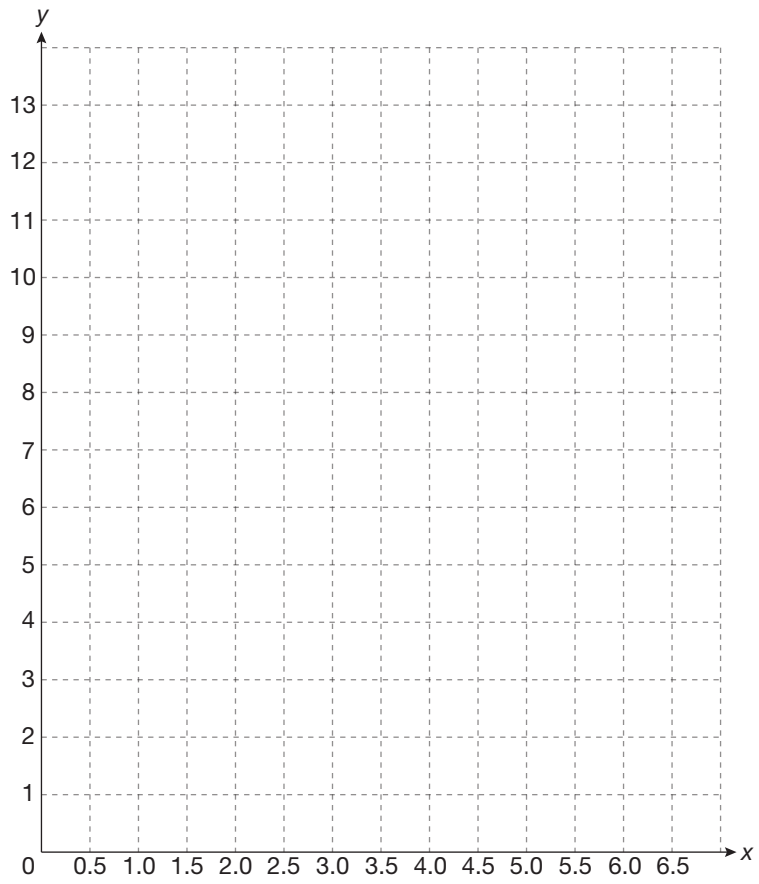
(1) ii. Is interpolation or extrapolation used to solve this problem?

13. A zoologist studied the relationship between the distance from a lake and the number of felines per 100 square kilometres. The data is recorded in the table of values below.

Distance from Lake (km)	Number of Felines $(\text{per } 100 \text{ km}^2)$
3	9
1	11
4	7
3.5	8
4.5	6
2.5	8
5	7
2	7
1.5	9

(1) a. Identify the dependent variable and the independent variable.

(2) b. Draw a scatterplot for the table of values.
Be sure to include
- the labelled axes (including units)
- the dependent variable of the y-axis and the independent variable on the x-axis
- a title



(1) c. Does the scatterplot display positive correlation, negative correlation, or no correlation?

(1) d. What trend is displayed in the scatterplot?

(1) e. Draw the line of best fit on the scatterplot in *part b*.

Lesson 5 Assignment

Applications

Work slowly and carefully. If you are having difficulty, go back and review the appropriate *Lesson*.

For full marks, show all calculations, steps, and/or explain your answers.

Total marks: 30

1. Hens tend to lay fewer eggs as they get older.

(2) a. State the dependent variable and the independent variable. Describe the relationship between the age of a hen and the number of eggs that are laid.

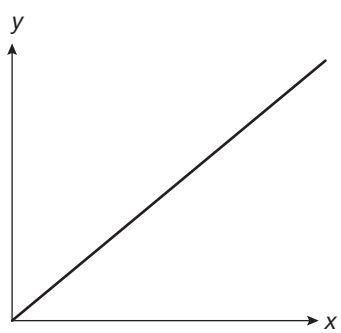
Dependent variable: _____

Independent variable: _____

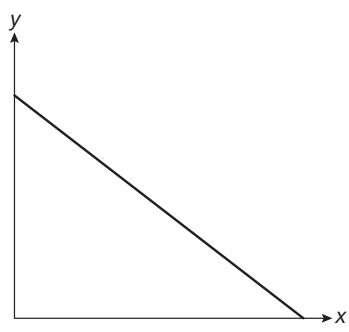
Relationship: _____

(1) b. Circle the graph that best displays the trend of the data.

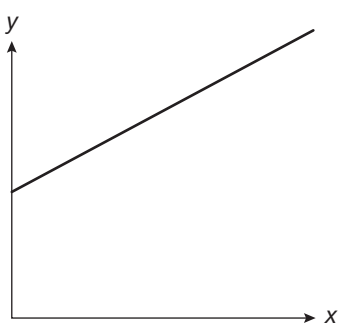
Graph i



Graph ii



Graph iii



2. Sarah owns a company that paints street signs. The time it takes to set up for painting is $200\ \text{min}$. The time needed to paint each sign is $25\ \text{min}$.

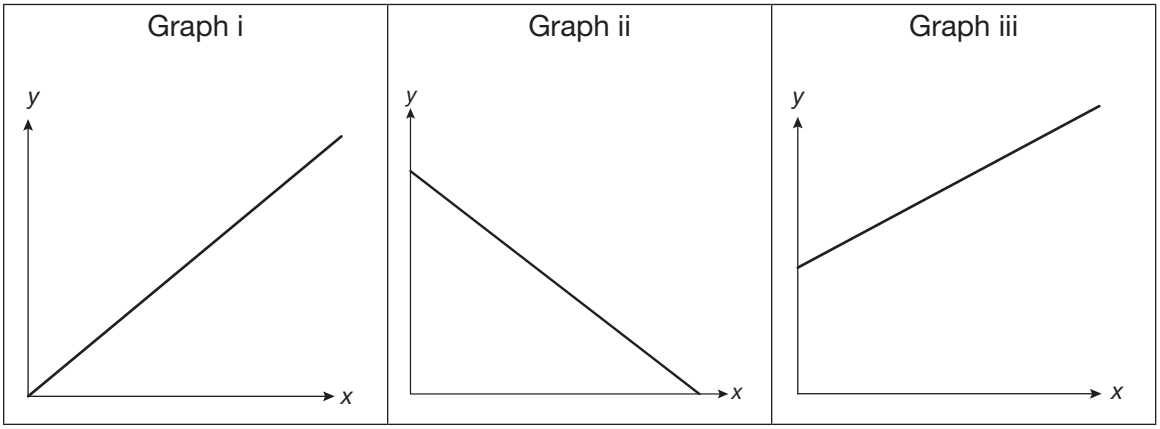
(2) a. State the dependent variable and the independent variable. Describe the relationship between the number of signs and the total amount of time it takes to paint them.

Dependent variable: _____

Independent variable: _____

Relationship: _____

(1) b. Circle the graph that best displays the trend of the data.

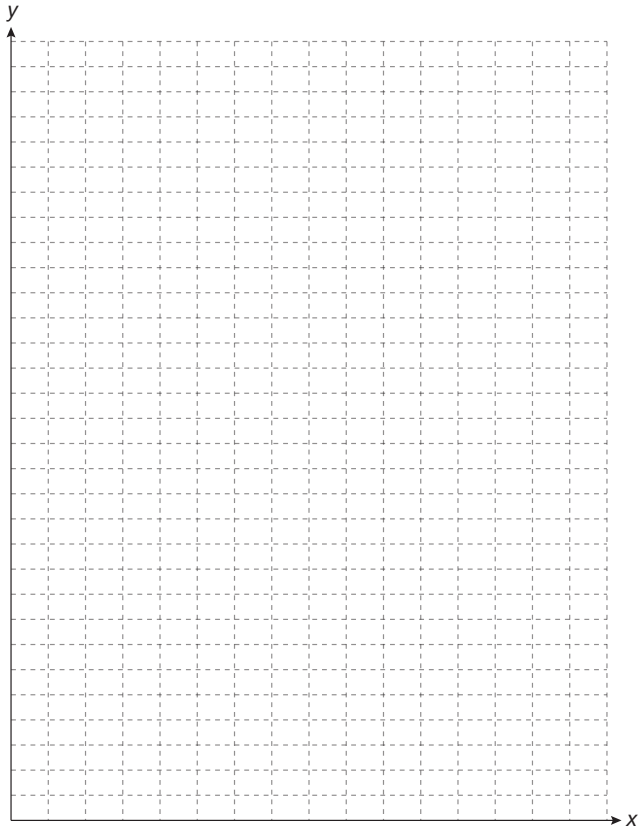


3. Eric drives non-stop from the Calgary airport to the Edmonton airport, a distance of $260\ \text{km}$. After 1.8 hours, Eric's friend Wanda, who is also travelling in the car, has recorded their distance travelled as $185\ \text{km}$.

(1) a. State the dependent variable and the independent variable.

(4)

b. Plot the points $(0, 0)$ and $(1.8, 185)$. Should the points be connected? Explain.



(2)

c. The average speed of a car is calculated using the following formula:

$$\begin{aligned}\text{speed} &= \frac{\text{rise}}{\text{run}} \\ &= \frac{\text{change in distance}}{\text{change in time}} \\ &= \frac{y_2 - y_1}{x_2 - x_1}\end{aligned}$$

Use the formula to calculate the slope of the line. Round the slope to the nearest whole number.

(1) d. Determine the equation of the line.

(1) e. How far did Eric and Wanda travel after 1.2 hours? Round to the nearest km.

(1) f. Use the graph in *part b* to estimate how long it will take Eric to travel to Edmonton airport, a distance of $260\ \text{km}$.

4. Hockey jerseys are priced at a fixed value plus a certain cost per letter. The equation that represents the cost of a jersey is $y = 1.5x + 20$, where x is the number of letters used and y is the cost of the jersey.

(1) a. Does the equation represent direct variation or partial variation?

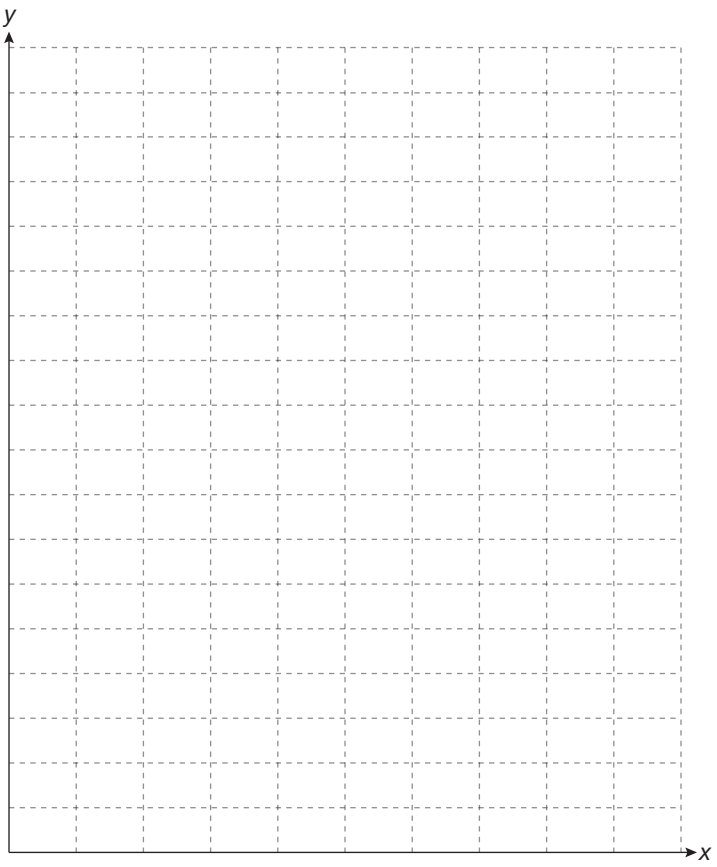
(1) b. What does the slope of the line represent in this scenario?

(1) c. What does the y-intercept represent in this scenario?

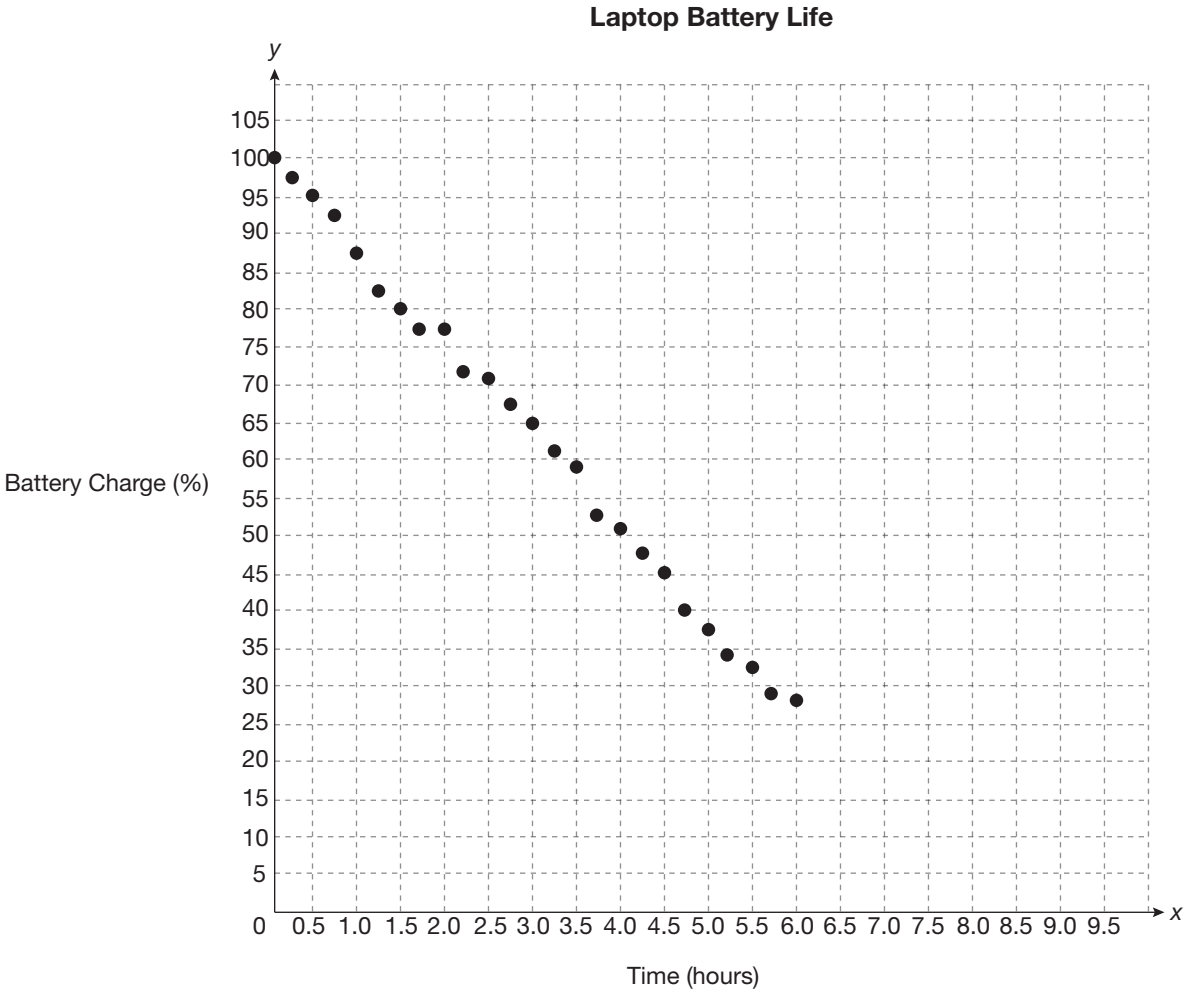
(1) d. How much will a hockey jersey cost if six letters are written on the back of the jersey?

(2) e. Set up a table of values for the cost of a hockey jersey. Include the values $0, 2, 4,$ and 6 to represent the number of letters on the jersey. Use the equation $y = 1.5x + 20$ to determine the cost.

4 f. Plot the points from the table of values. Should the points be connected? Explain.



5. Zena records her laptop's battery life every 15 minutes. The graph of the data is shown below.



(2) a. Does the scatterplot display positive correlation, negative correlation, or no correlation? Explain.

(1) b. Draw the line of best fit on the graph from *part a*.

(1) c. Use the line of best fit to estimate how long it will take Zena's battery to reach a charge of 0%.

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New September 2018