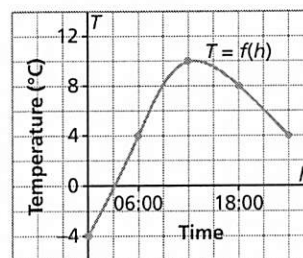


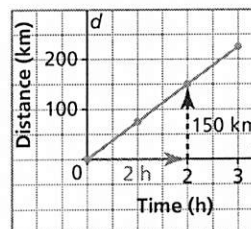
SKILLS SUMMARY

Skill	Description	Example
Determine the domain and range of a function. [5.2, 5.4, 5.5, 5.7]	The domain is the set of first elements of the ordered pairs. The range is the set of second elements. For a graph, the domain is the set of values of the independent variable. The range is the set of values of the dependent variable.	$\{(-1, 3), (0, 5), (1, 7), (2, 9), (3, 11)\}$ For this set of ordered pairs, the domain is: $\{-1, 0, 1, 2, 3\}$; the range is: $\{3, 5, 7, 9, 11\}$ For the graph below: The domain is all possible times in one day. The range is: $-4 \leq T \leq 10$



Determine the rate of change of the graph of a linear function. [5.6, 5.7]	The rate of change is: $\frac{\text{change in dependent variable}}{\text{change in independent variable}}$ The rate of change is positive when the graph goes up to the right. The rate of change is negative when the graph goes down to the right.
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Distance against Time



The rate of change is:
$$\frac{150 \text{ km}}{2 \text{ h}} = 75 \text{ km/h}$$

Determine the intercepts of the graph of a linear function. [5.7]	The x -intercept is the value of x when y or $f(x)$ is 0. The y -intercept is the value of y when x is 0.	For the linear function $f(x) = -2x + 5$, When $f(x) = 0$: $0 = -2x + 5$ $2x = 5$ $x = 2.5$ The x -intercept is 2.5. When $x = 0$: $f(0) = -2(0) + 5$ $f(0) = 5$ The y -intercept is 5.
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REVIEW

5.1

1. This table shows some Northwest Coast artists and their cultural heritage.

Artist	Heritage
Bob Dempsey	Tlingit
Dorothy Grant	Haida
Bill Helin	Tsimshian
John Joseph	Squamish
Judith P. Morgan	Gitxsan
Bill Reid	Haida
Susan Point	Salish

- a) Describe the relation in words.
 b) Represent this relation:
 i) as a set of ordered pairs
 ii) as an arrow diagram
2. Here is a list of some chemical elements and their atomic numbers:
 hydrogen (1), oxygen (8), iron (26), chlorine (17), carbon (6), silver (47)
 For each association below, use these data to represent a relation in different ways.
- a) has an atomic number of
 b) is the atomic number of

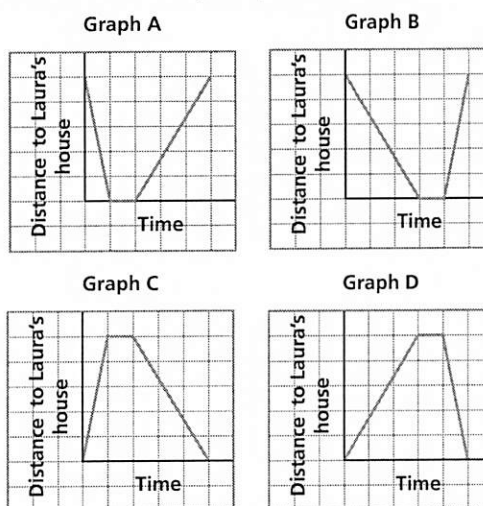
5.2

3. Which sets of ordered pairs represent functions? What strategies did you use to find out?
 a) $\{(4, 3), (4, 2), (4, 1), (4, 0)\}$
 b) $\{(2, 4), (-2, 4), (3, 9), (-3, 9)\}$
 c) $\{(2, 8), (3, 12), (4, 16), (5, 20)\}$
 d) $\{(5, 5), (5, -5), (-5, 5), (-5, -5)\}$
4. Write in function notation.
 a) $y = -4x + 9$ b) $C = 12n + 75$
 c) $D = -20t + 150$ d) $P = 4s$
5. The function $P(n) = 5n - 300$ describes the profit, P dollars, for a school dance when n students attend.

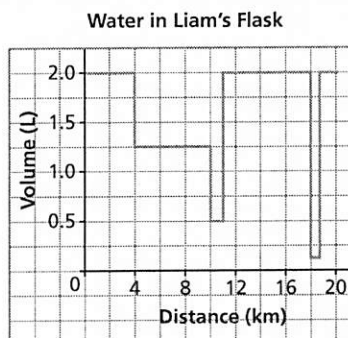
- a) Write the function as an equation in 2 variables.
 b) Identify the independent variable and the dependent variable. Justify your choices.
 c) Determine the value of $P(150)$. What does this number represent?
 d) Determine the value of n when $P(n) = 700$. What does this number represent?

5.3

6. a) Laura cycles home from school, then walks back to school. Which graph best matches this situation? Explain your choice.



- b) Choose one of the graphs in part a that did not describe Laura's journey. Describe a possible situation for the graph.
7. This graph shows the volume of water in Liam's flask as he hikes the Trans Canada trail.



- a) Describe what is happening for each line segment of the graph.
 b) How many times did Liam fill his flask?

- c) How much water was in Liam's flask at the start of his hike?
 d) Identify the dependent and independent variables.

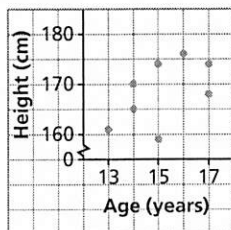
5.4

8. The data below show how the temperature of boiling water as it cools is related to time.
 a) Graph the data. Did you join the points? Why or why not?
 b) Does the graph represent a function? How can you tell?

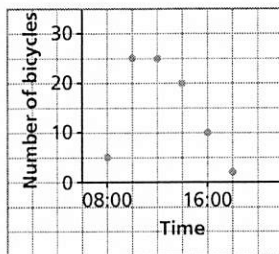
Time (min)	Temperature (°C)
0	89
5	78
10	69
15	62
20	57
25	53
30	50

5.5

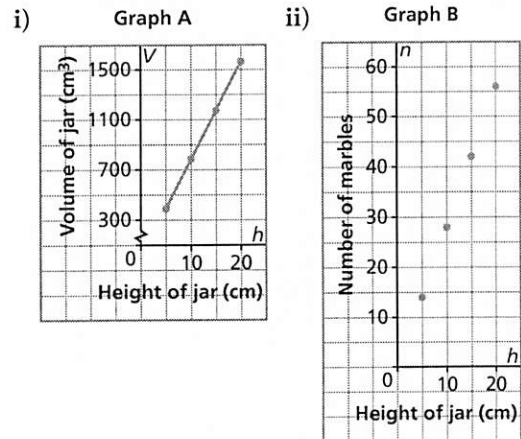
9. Which of these graphs represents a function? Justify your answer.
 Write the domain and range for each graph.
 a) Heights and Ages of 8 Students



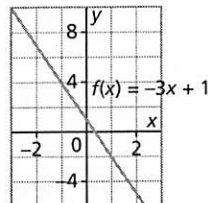
- b) Number of Bicycles at School



10. For the graphs below:
 a) What does each graph represent?
 b) Identify the independent and dependent variables.
 c) Write the domain and range for each graph. Estimate when necessary. Are there any restrictions on the domain and range? Explain.
 d) Why are the points joined on one graph but not on the other?



11. This is a graph of the function $f(x) = -3x + 1$.



- a) Determine the range value when the domain value is 1.
 b) Determine the domain value when the range value is 4.
 12. Sketch a graph of a function that has each domain and range.
 a) domain: $-1 \leq x \leq 5$; range: $0 \leq y \leq 3$
 b) domain: $x \leq 1$; range: $-2 \leq y \leq 2$

5.6

13. Which sets of ordered pairs represent linear relations? Explain your answers.
 a) $\{(1, 5), (5, 5), (9, 5), (13, 5)\}$
 b) $\{(1, 2), (1, 4), (1, 6), (1, 8)\}$
 c) $\{(-2, -3), (-1, -2), (2, 1), (4, -3)\}$

14. a) For each equation, create a table of values when necessary, then graph the relation.

- i) $x = 3$
- ii) $y = 2x^2 + 3$
- iii) $y = 2x + 3$
- iv) $y = 3$
- v) $y = 3x$
- vi) $x + y = 3$

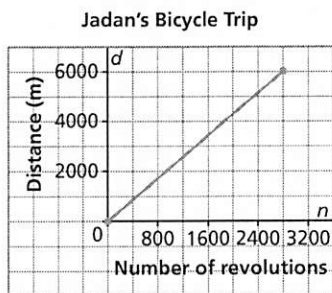
- b) Which equations in part a represent linear relations? How do you know?

15. Isabelle manages her diabetes by taking insulin to control her blood sugar. The number of units of insulin taken, N , is given by the equation $N = \frac{1}{15}g$, where g represents the number of grams of carbohydrates consumed.

- a) Explain why the equation represents a linear relation.
- b) State the rate of change. What does it represent?

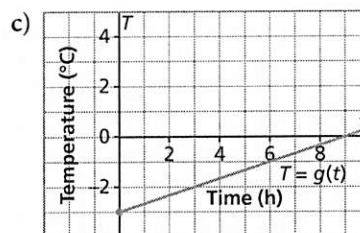
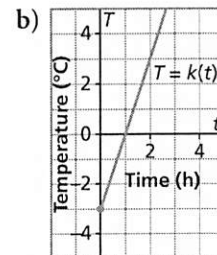
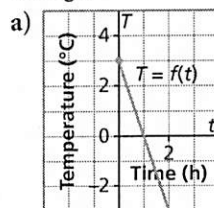
5.7

16. This graph shows the distance, d metres, travelled by Jadan on her bicycle as a function of the number of wheel revolutions, n , as she rode from Whitehorse to the Grey Mountain Road lookout in the Yukon.



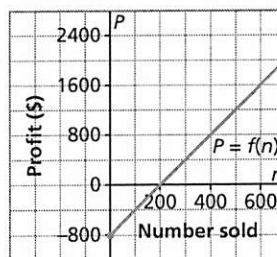
- a) How far was Jadan from the lookout when she started her bicycle trip?
- b) Write the domain and range.
- c) Determine the rate of change. What does it represent?
- d) Use your answer to part c to determine the diameter of a bicycle wheel.

17. These graphs show the temperature, T degrees Celsius, as a function of time, t hours. Match each graph with its vertical intercept and rate of change.



- i) $-3^{\circ}\text{C}; \frac{1}{3}^{\circ}\text{C}/\text{h}$
- ii) $3^{\circ}\text{C}; -3^{\circ}\text{C}/\text{h}$
- iii) $-3^{\circ}\text{C}; 3^{\circ}\text{C}/\text{h}$

18. This graph shows the profit, P dollars, on a company's sale of n baseball caps.



- a) How many baseball caps have to be sold before the company begins to make a profit?
- b) What is the profit on the sale of each baseball cap?
- c) How many caps have to be sold to make each profit?
 - i) \$600
 - ii) \$1200
- d) In part c, when the profit doubles why does the number of baseball caps sold not double?

PRACTICE TEST

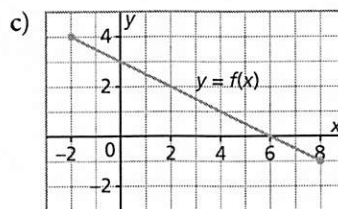
For questions 1 and 2, choose the correct answer: A, B, C, or D

- For the function $f(x) = 3 - 6x$, what is the value of $f(-3)$?
 A. 1 B. 21 C. -15 D. 0
- Which equation does *not* represent a linear function?
 A. $f(x) = 5$ B. $f(x) = 5x$ C. $f(x) = 5x^2$ D. $f(x) = -5$
- For each relation represented below:
 - State whether it is a function and how you know.
 - If the relation is a function:
 State its domain and range.
 Represent the function in a different way.
 State whether it is a linear function and how you know.
 - If the relation is a linear function:
 Identify the dependent and independent variables.
 Determine the rate of change.

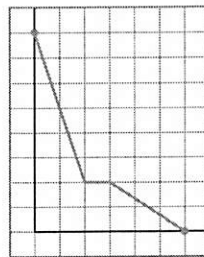
a) $\{(2, 5), (-3, 6), (1, 5), (-1, 4), (0, 2)\}$

b)

n	s
2	4
-1	1
1	1
-3	9



- Describe a possible situation for this graph.
 Label the axes and give the graph a title.
 Justify your description.



- This table of values shows how the time to cook a turkey is related to its mass.
 - Why is this relation a function?
 - Identify the dependent and the independent variables. Justify your choice.
 - Graph the data. Did you connect the points? Explain.
 - Determine the domain and range of the graph. Could you extend the graph?
 Identify and explain any restrictions on the domain and range. Explain.
 - Determine the rate of change for this function. What does it represent?
 - For how long should you cook a turkey with mass 7 kg?

Mass (kg)	Time (h)
4	2.5
6	3.0
8	3.5
10	4.0