Math 10-C Relations & Functions Assignment List **Name:** _____

C1&C2: Intro to Graphing / Graphing Relations

- Graphing Stories Video Graphs and Assignment
- Text pg. 115: 1 (Sketch instead of describe), 3ab, 9
- Graphing Relations Assignment
- C2 Quick Check - Graphing Relations

C3: Interpret Graphs

- Interpret Graphs Assignment
- C3 Quick Check - Interpret Graphs

C4: Domain & Range Notation

- Domain & Range Assignment
- Domain & Range Notation Assignment
- Text pg. 123: 4, 1

C5: Functions

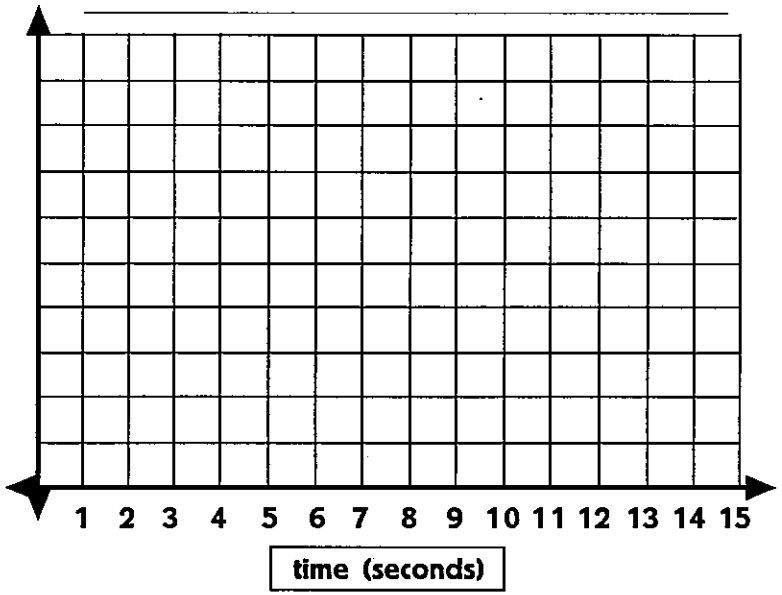
- Text pg. 128: 1
- Function Notation Assignment
- Text pg. 128: 2-8
- C5 Quick Check - Functions

Relations & Functions Quiz

GRAPHING STORIES

_____
(name)

1.



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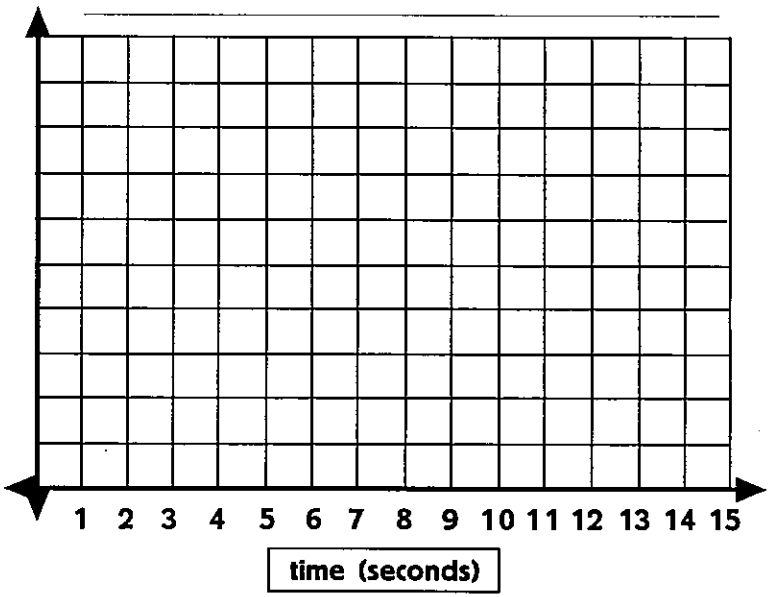

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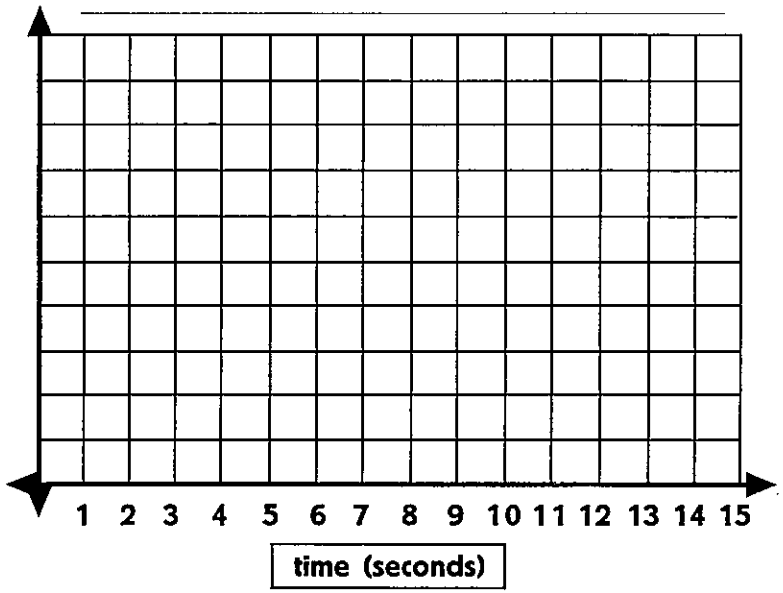

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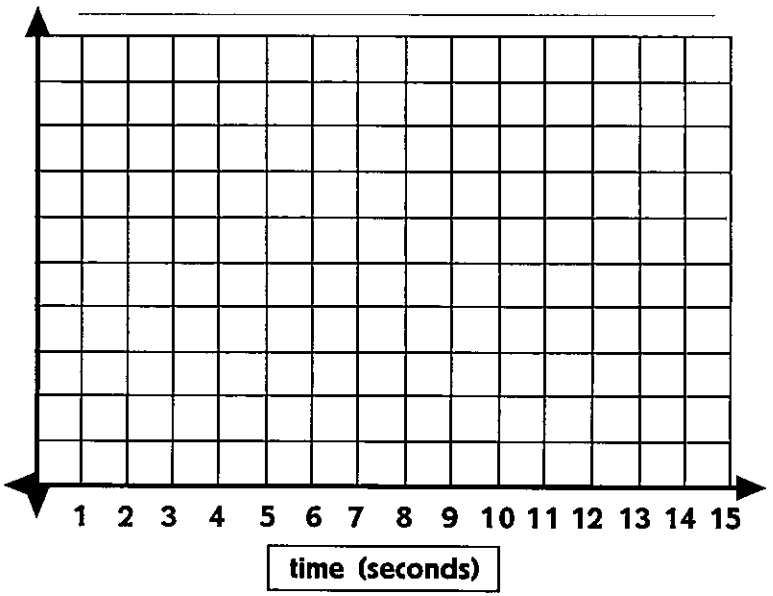
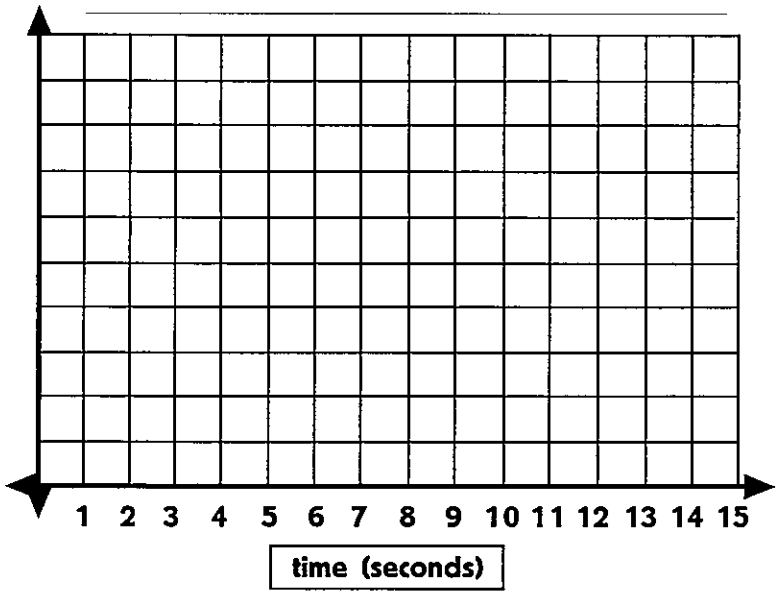


GRAPHING STORIES

_____
(name)

5.



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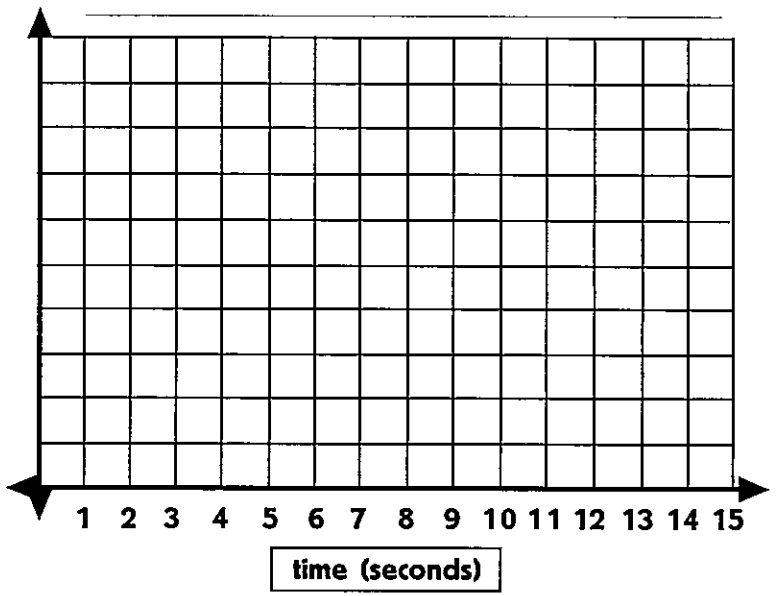

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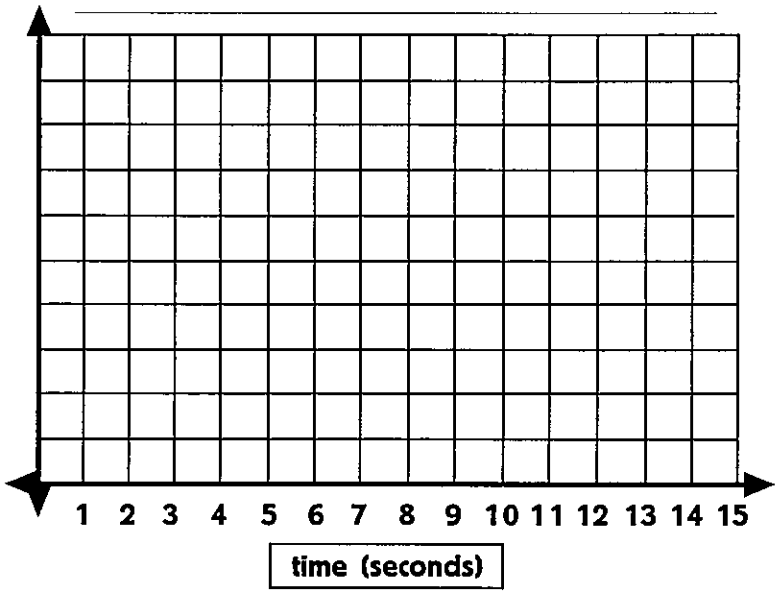

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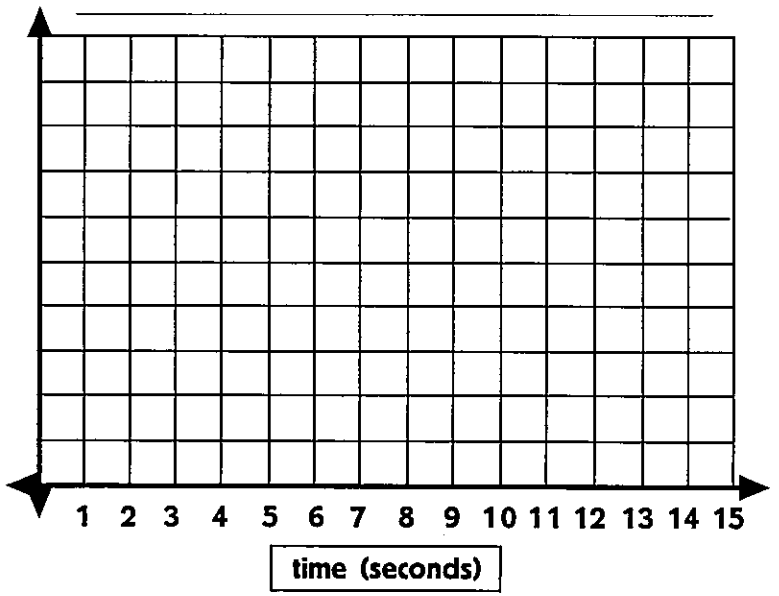
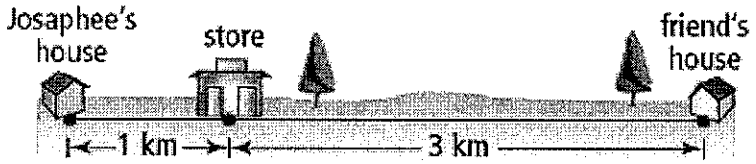


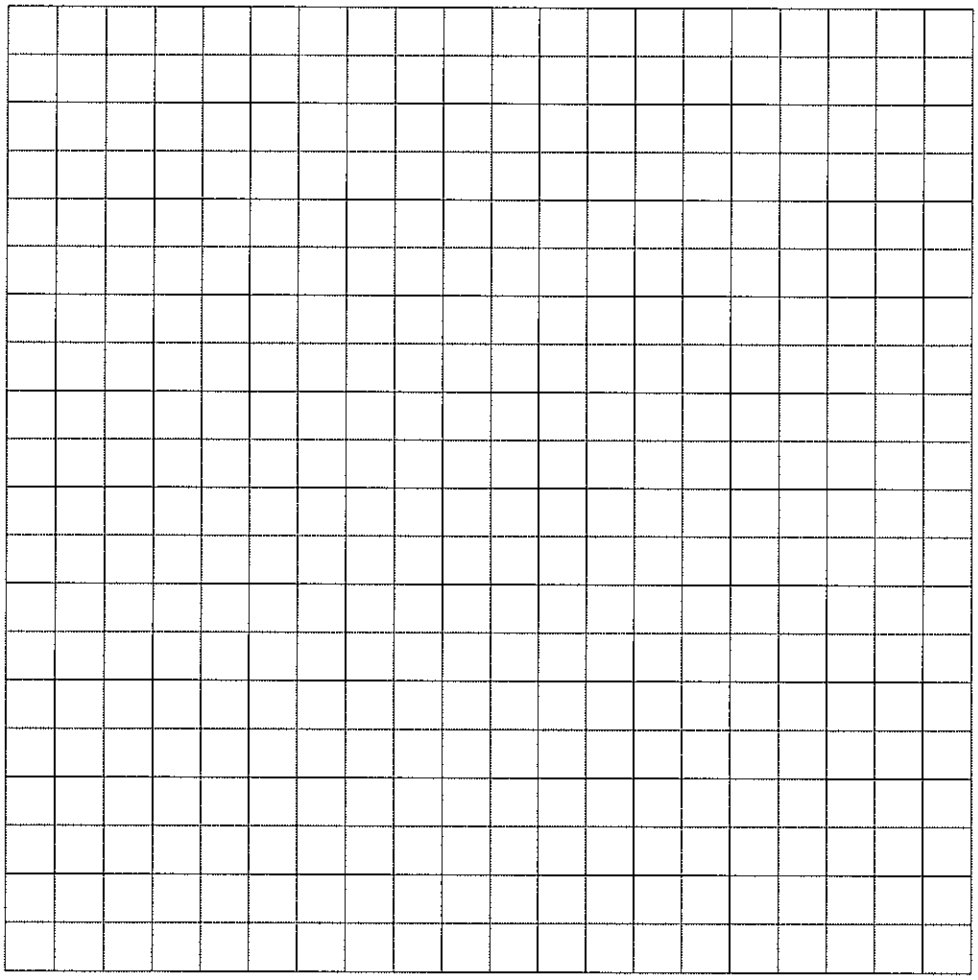
M10C – Graphing Stories Assignment Name: _____

1. Josaphee leaves her home and walks to the store. After buying a drink, she slowly jogs to her friend's house. Josaphee visits with her friend for a while and then runs directly home. Using the distances shown, draw a distance-time graph that shows Josaphee's distance from her house. Explain each section of your graph. (MHR M10C pg. 273)



2. Samuel went on a bicycle ride. He accelerated until he reached a speed of 20km/h, then he cycled for 30min at approximately 20km/h. Samuel arrived at the bottom of a hill, and his speed decreased to approximately 5km/h for 10min as he cycled up the hill. He stopped at the top of the hill for 10min.

   Sketch a graph of speed as a function of time. Label each section of the graph, and explain what it represents. (Pearson M10C pg. 280)



M10C Graphing Relations Assignment Name: _____

Answer the following questions on a separate sheet of paper.

1. You are emptying a full 500 mL pop bottle at a rate of 25mL/s. Express the relationship of the volume of pop in the bottle as time passes as an equation, a table of values, a set of ordered pairs and a graph.
   a. What is the independent variable?
   b. What is the dependent variable?
   c. Complete the statement: _____ depends on _____.
   d. What is the domain?
   e. What is the range?
   f. Is the data discrete or continuous?

2. You are an expert paper airplane maker and are selling paper airplanes for $1.50 each. You currently have eight paper airplanes constructed and ready for sale. Express the relationship of your revenue and the number of airplanes sold as an equation, a table of values, a set of ordered pairs and a graph.
   a. What is the independent variable?
   b. What is the dependent variable?
   c. Complete the statement: _____ depends on _____.
   d. What is the domain?
   e. What is the range?
   f. Is the data discrete or continuous?

3. The path of a football during a field goal attempt is modeled by the equation, $h = -4t^2 + 16t$, where h = height of football in meters and t = time in seconds. Express this relationship as a table of values, a set of ordered pairs and a graph.
   a. What is the independent variable?
   b. What is the dependent variable?
   c. Complete the statement: _____ depends on _____.
   d. What is the domain?
   e. What is the range?
   f. Is the data discrete or continuous?

M10C Quick Check C2 **/ 8** **Name:** _____

Graphing Relations

1. You are filling up a bath tub at a rate of 5.5 gallons / minute. The bath tub has a maximum volume of 44 gallons. Express the relationship of the volume of water in the bath tub, v, in gallons based on the time passed, t, in minutes as a table of values and a graph.

   Table of Values [1 mark] Graph [1 mark]

   a. What is the independent variable? _____

   b. What is the dependent variable? _____

   c. Complete the statement:

      _____ depends on _____.

   d. What is the domain?

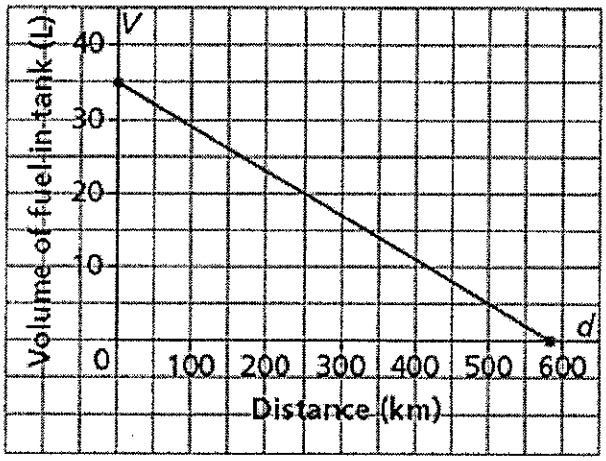
   e. What is the range?

   f. Is the data discrete or continuous? _____

Math 10-C Interpret Graphs Assignment

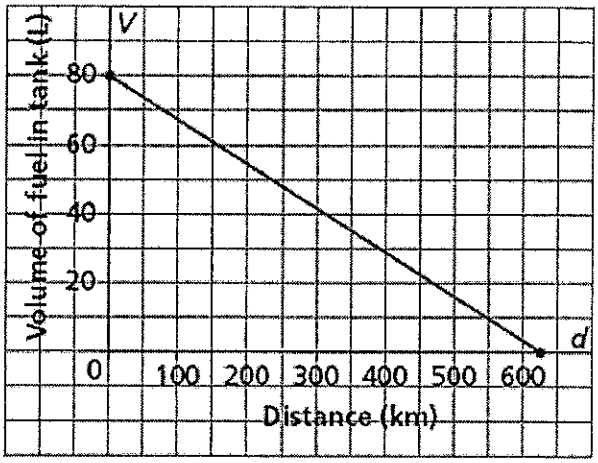
Name: _____

Fuel Consumption of a Smart Car



Pearson pg. 321

Fuel Consumption of an SUV



Pearson pg. 321

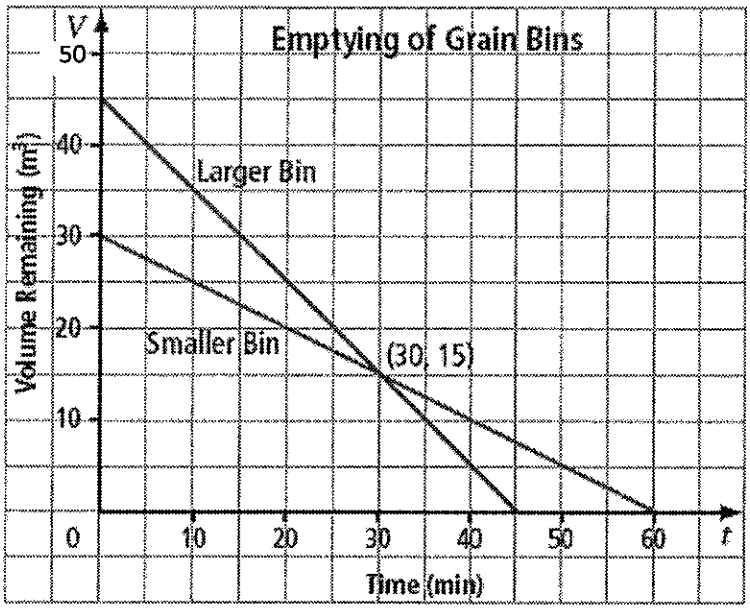
1. What is the d-intercept for the graph of the smart car and for the graph of the SUV. What do the d-intercepts mean in the context of the problem?

2. What is the V-intercept for the graph of the smart car and for the graph of the SUV. What do the V-intercepts mean in the context of the problem?

3. What is the domain and range for the graph of the smart car in words?

4. What is the domain and range for the graph of the SUV in words?

Math 10-C Rel & Func Quick Check C3 **/ 5** **Name:** _____



1. What is the V-intercept for the graph of the **larger bin** and what does it mean in the context of the problem?

2. What is the t-intercept for the graph of the **smaller bin** and what does it mean in the context of the problem?

3. Which bin emptied the fastest?

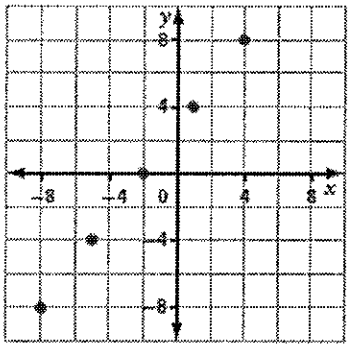
4. What is the domain of the **larger bin** in words?

5. What is the range of the **smaller bin** in words?

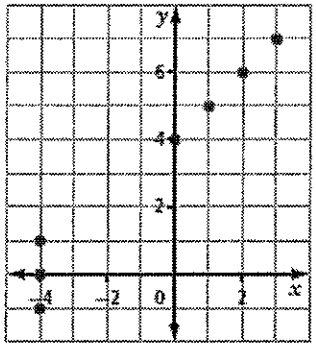
Relations & Functions **Name:** _____

C4 – Domain & Range Assignment

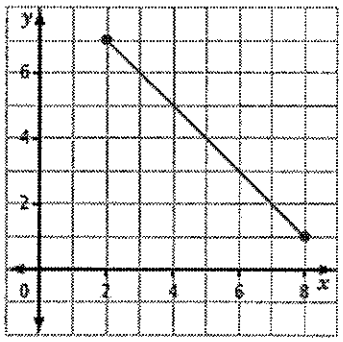
1. For each relation, state the domain and range in **List** notation.
   a) The cost for you and up to 5 of your friends to attend a concert at $40 per ticket.
   b) Buying less than 4 cans of soup that cost $0.50 each.
   c) $y = \sqrt{x}$, where x is the set of all perfect squares from 1 to 100.
   d)



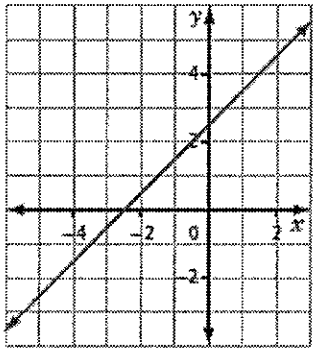
   e)



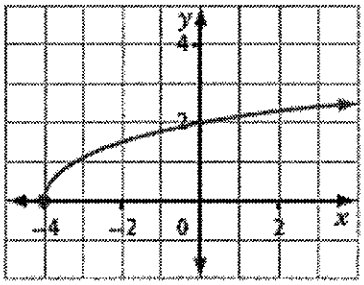
2. For each relation, state the domain and range in **Set** notation.
   a) The cost for driving in a taxi for up to 20 km when the taxi charges $2.00/km.
   b) The cost, C, of filling up a car with gasoline and buying an $8.00 car wash given by the equation $C = 0.92n + 8.00$, where n is the number of litres of gasoline purchased. The car has a gas tank capacity of 40L.
   c)



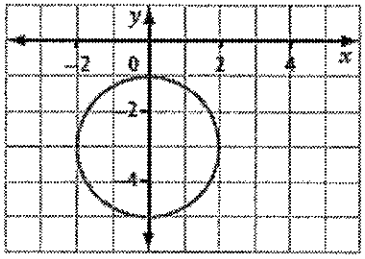
   d)



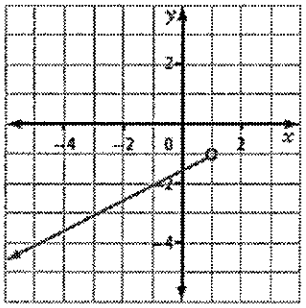
   e)



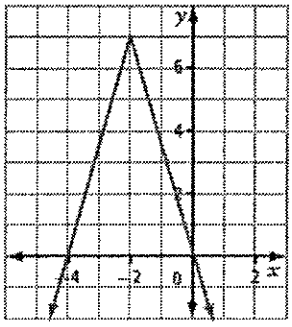
   f)



   g)



   h)



3. For each relation in #2, state the domain and range in **Interval** notation.

4. You are travelling from home at a rate of 100 km/h. Express the relationship of your distance from home, *d*, in km in relation to time, *t*, in hours as an equation, a table of values and a graph. The domain for this scenario is $\{t \mid 0 \le t \le 8, t \in R\}$
    a. What is the independent variable?
    b. What is the dependent variable?
    c. Complete the statement: _____ depends on _____.
    d. What is the domain?
    e. What is the range?
    f. Is the data discrete or continuous?

5. You are selling cookies for $0.50 each. Express the relationship of your revenue, *R*, and the number of airplanes sold, *n*, as an equation, a table of values and a graph. The domain for this scenario is $\{0,1,2,3,4,5,6\}$.
    a. What is the independent variable?
    b. What is the dependent variable?
    c. Complete the statement: _____ depends on _____.
    d. What is the domain?
    e. What is the range?
    f. Is the data discrete or continuous?

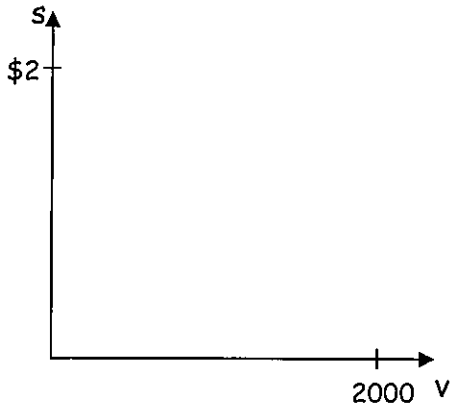
6. The area of a circle is given by $A = \pi r^2$ where *A* is the area of the circle and *r* is the radius of the circle in cm. Express this relationship as a table of values and a graph. The domain for this scenario is $[0,20]$.
    a. What is the independent variable?
    b. What is the dependent variable?
    c. Complete the statement: _____ depends on _____.
    d. What is the domain?
    e. What is the range?
    f. Is the data discrete or continuous?

7. For each problem, draw a graph of the situation using the indicated domain. Then state the range using the same notation used for the domain.

a) You are selling lemonade at a price of $0.25 / 250mL. Draw a graph of your sales revenue, s, based on the volume of lemonade sold, v, in mL.

Case #1

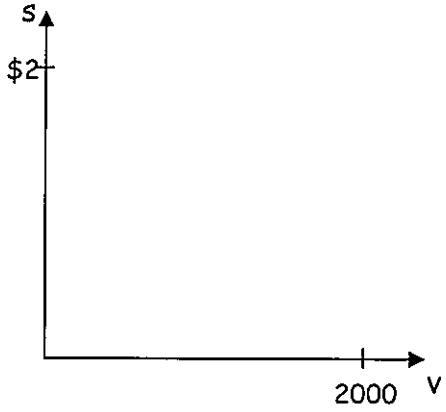
Domain: $\{v \mid 0 \le v \le 2000, v \in R\}$



Range: _____

Case #2

Domain: $\{v \mid v \ge 0, v \in R\}$

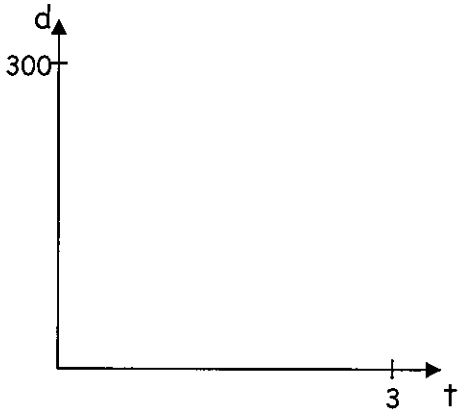


Range: _____

b) Calgary is about 300km from your house. You are driving home from Calgary at a speed of 100 km/h. Draw a graph of your distance from home, d, in km based on the time spent travelling, t, in hours.

First Part of Trip

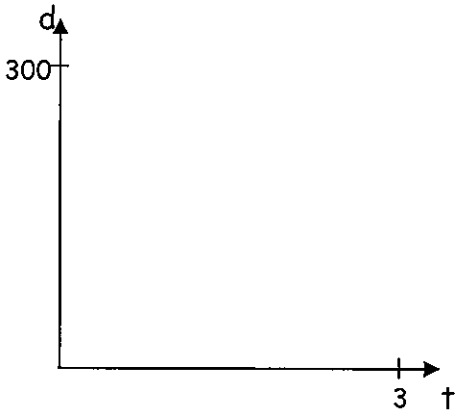
Domain: [0,1.5)



Range: _____

Second Part of Trip

Domain: [1.5,3]

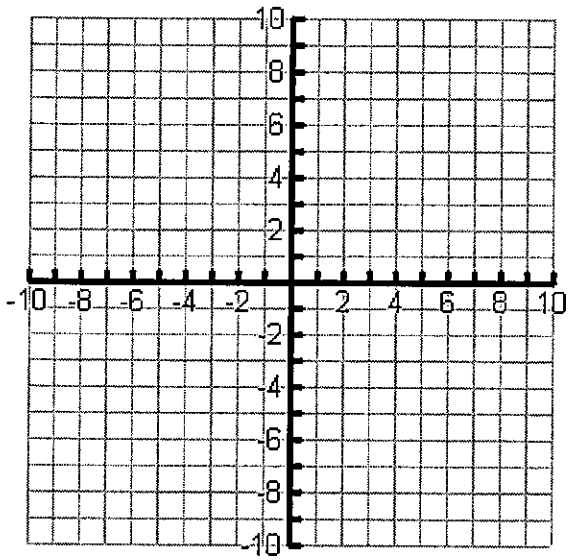


Range: _____

c) $y = 2x$

Case #1

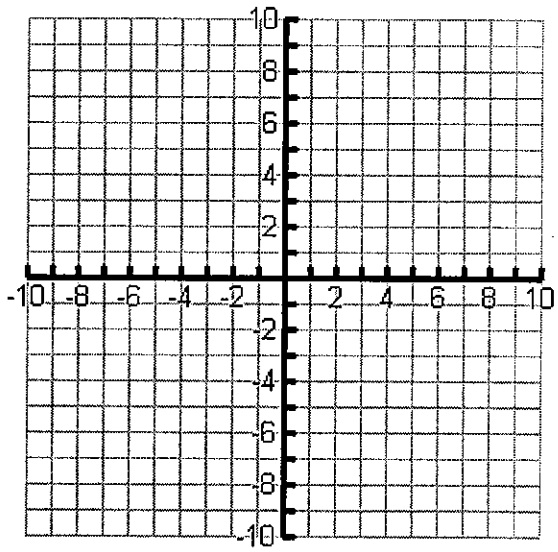
Domain: $\{x \mid x \in R\}$



Range: _____

Case #2

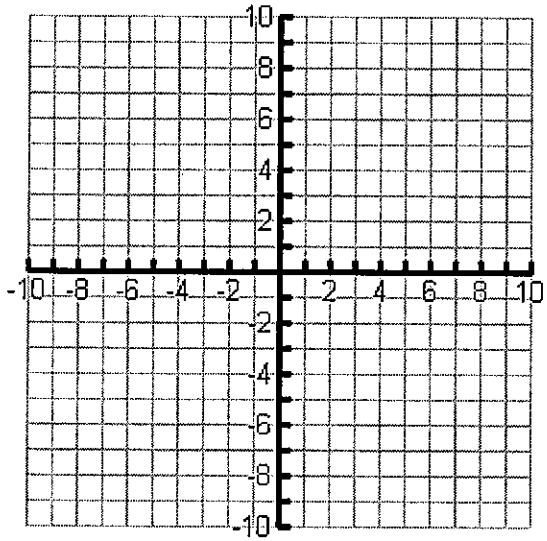
Domain: $[-2,5)$



Range: _____

Case #3

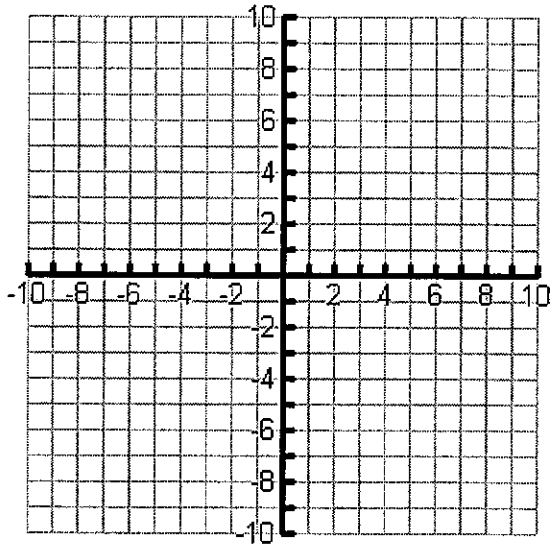
Domain: $[0,\infty)$



Range: _____

Case #4

Domain: $\{-3,-2,-1,\ 0,\ 1,\ 2,\ 3\}$



Range: _____

Math 10-C Domain & Range Notation Assignment Name: _____

Each table contains the domain for a graph expressed in words, set notation and interval notation. Complete each table. The first one has been done for you.

1. Words:	All real #'s greater than or equal to 4 and less than 8.
Set Notation:	$\{x \mid 4 \le x < 8, x \in R\}$
Interval Notation:	$[4,8)$

2. Words:	
Set Notation:	
Interval Notation:	$[-3,2]$

3. Words:	All real #'s greater than or equal to 3.
Set Notation:	
Interval Notation:	

4. Words:	
Set Notation:	$\{x \mid x < 5, x \in R\}$
Interval Notation:	

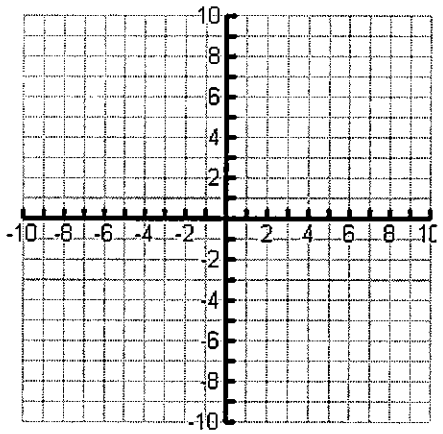
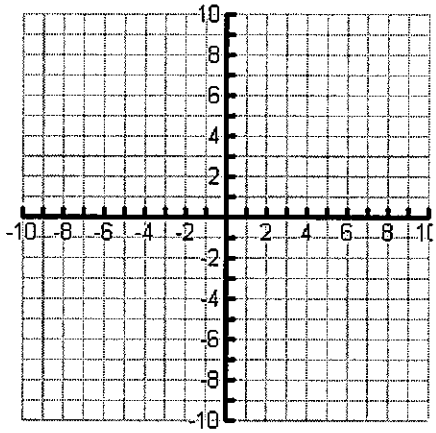
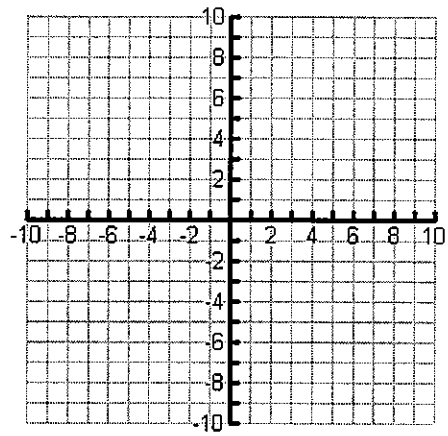
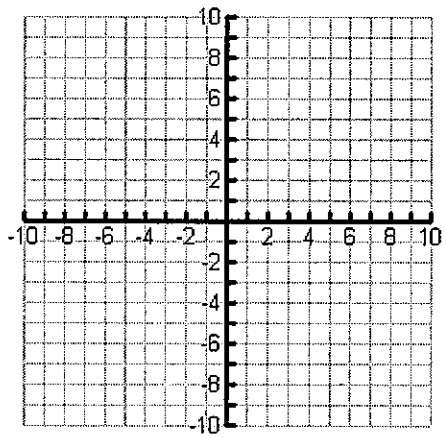
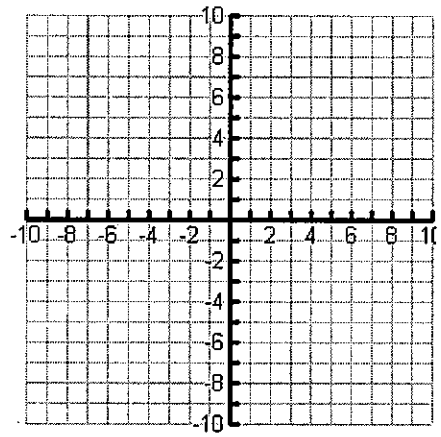
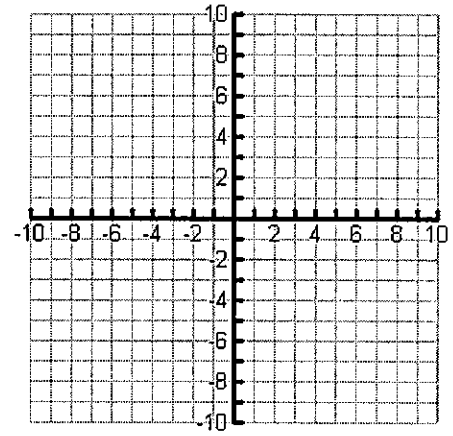
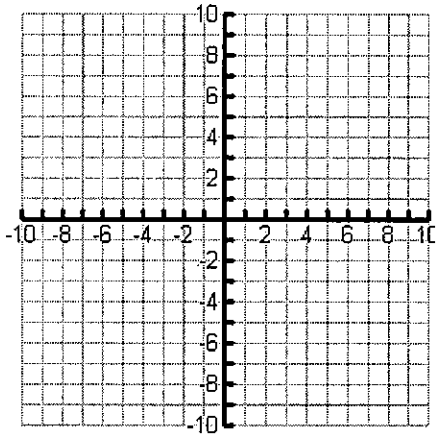
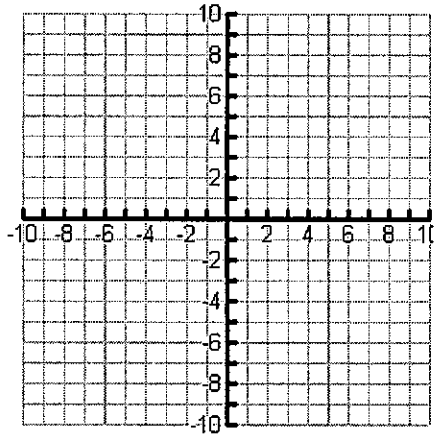
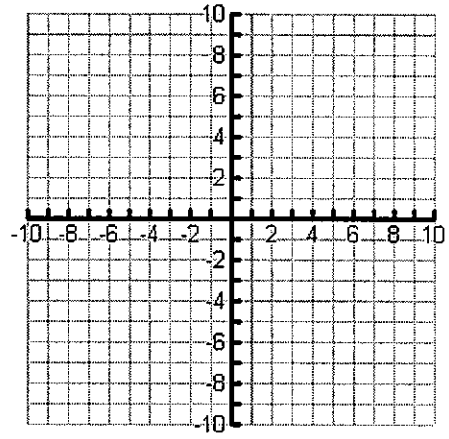
5. Words:	All real #'s greater than or equal to -6 and less than or equal to 6.
Set Notation:	
Interval Notation:	

6. Words:	
Set Notation:	$\{x \mid x \in R\}$
Interval Notation:	

7. Words:	All whole #'s greater than or equal to -3 and less than or equal to 4.
List:	

8. Words:	
List:	{0, 2, 4, 6, 8, 10}

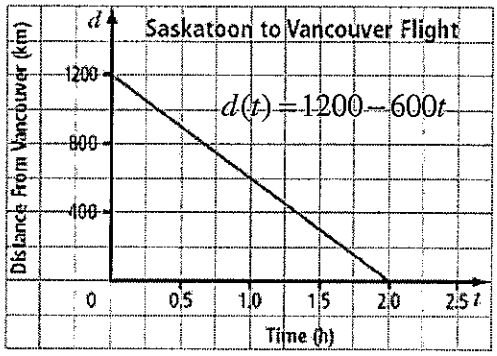
For each of the tables on the previous page, draw a graph that matches the given domain.

Math 10-C Function Notation Assignment Name: _____

C5 – Functions

1. An airplane flies directly from Saskatoon, SK, to Vancouver, BC. The graph shows the relationship between the distance from Vancouver, d, in kilometres, and the flying time, t, in hours.



MHR pg. 367

For each of the following, fill in the blanks and explain what the solution means in the context of the problem.

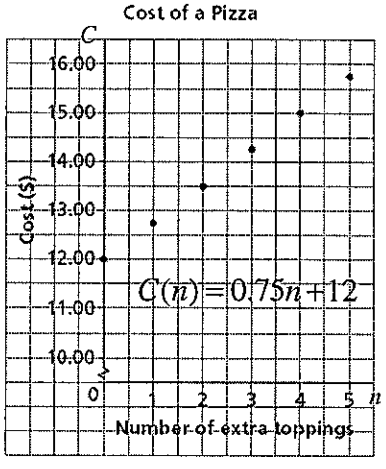
a) d(0) = _____

b) d(1) = _____

c) d(t) = 900, t = _____

d) d(t) = 0, t = _____

2. The cost of a pizza based on the number of extra toppings is given by the graph below. For each of the following, fill in the blanks and explain what the solution means in the context of the problem.



Pearson pg. 300

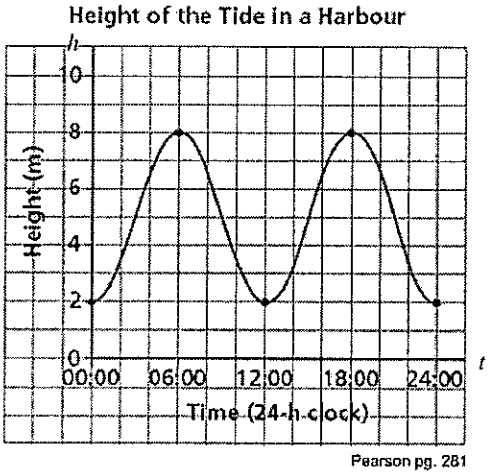
a) C(0) = _____

b) C(4) = _____

c) C(n) = $14.25, n = _____

d) C(n) = $15.75, n = _____

3. The height of tide in a harbor is shown by the graph below. For each of the following, fill in the blanks and explain what the solution means in the context of the problem.



Pearson pg. 281

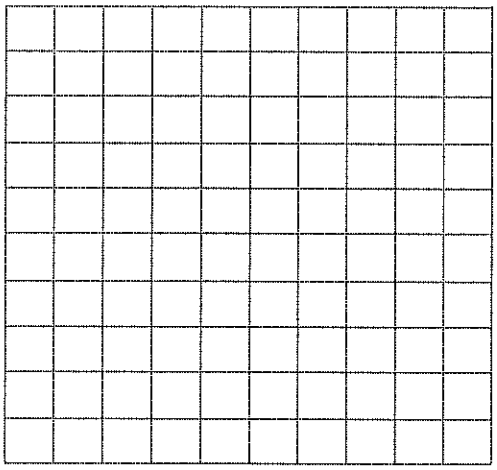
a) h(0) = _____

b) h(18) = _____

c) h(t) = 8, t = _____

d) h(t) = 5, t = _____

4. Create your own problem similar to #1-3. Sketch a graph of a scenario, create some questions involving function notation and solve them on a separate sheet of paper. Exchange with a partner to test each other.



Math 10-C Rel & Func Quick Check **/ 10** **Name:** _____

C5 – Functions

1. Determine whether each relation is a function (F) or is not a function (NF). For each question circle **F** if it is a function or **NF** if it is not a function. (MHR BLM 6.4)

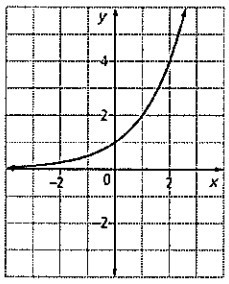
a) (4, 1), (5, -2), (6, -5), (7, -8), (6, -11), (5, -14), (4, -17) **F or NF**

b)

x	Y
–2	–2
–1	4
0	–8
1	16
2	–32

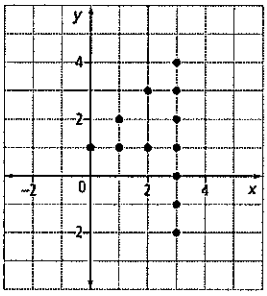
F or NF

c)



F or NF

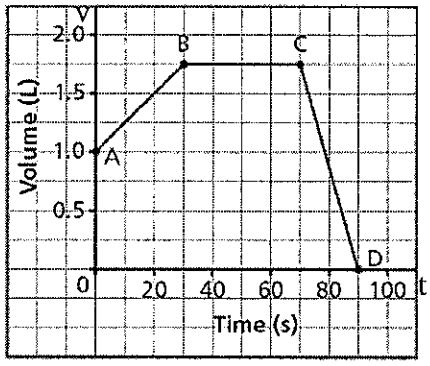
d)



F or NF

2. The volume of water in a watering can, V, in litres in relation to time, t, in seconds is shown by the graph below. Use the graph to fill in the blanks.

Volume of Water in a Watering Can



Pearson pg. 279

a) V(0) = _____

b) V(30) = _____

c) V(t) = 0, t = _____

d) V(t) = 1.25, t = _____

3. The function $C(n) = 25n$ describes the number of calories, C, in n crackers. Solve the following and explain what the solution means in the context of the problem.

a) $C(12) =$

b) Determine n when $C(n) = 475$

M10-C Relations and Functions **Name:** _____
Quiz C1-C5 **Date:** _____

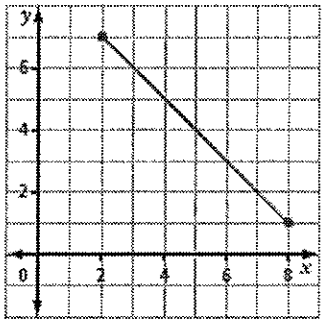
1. An oven is turned on at a room temperature of 20°C and it takes 10 min to reach a temperature of 190°C. A tray of cookies is placed in the oven to bake for 10 min. The oven is then turned off and returns to room temperature after 15 min.
   a. Sketch a graph of the temperature of the oven as a function of time. [2]

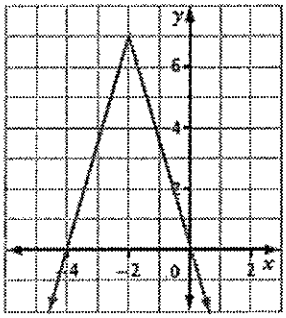
   b. What is the domain and range for this problem? [1]

2. For each relation, state the domain and range. [1 mark each]
   a. The cost for you and up to 4 of your friends to attend a concert at $10 a ticket.

   b. The distance you drive in 3 hours if you travel at an average speed of 60 km/h.

3. For each relation, state the domain and range. [1 mark each]

a. 

b. 

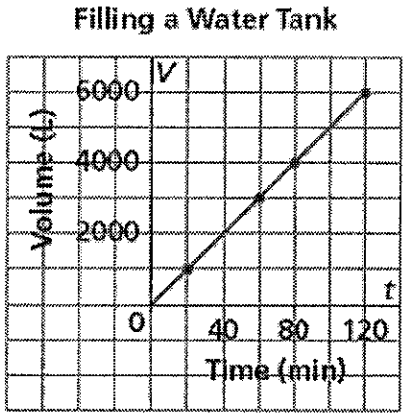
4. You are emptying a full pop bottle at a rate of 25 mL/s as given by the equation $V = 750 - 25t$, where V is the volume of pop in the bottle in mL and t is the amount of time passed in seconds. The domain for this scenario is $\{t \mid 0 \le t \le 30, t \in R\}$

   a. Express the relationship between the volume of pop in the bottle and the time passed as a table of values and a graph. [2]

   b. What is the domain and range for this problem? [1]

5. Draw a graph of a relation that is a function and a graph of a relation that is not a function. [2]

6. The following graph shows volume, *V*, as a function of time, *t*, when a water tank is being filled. This function may be modelled by the equation $V(t) = 50t$.



a. For the above function, the value of V(40) is _____ .

b. If V(*t*) = 6000 in the above graph, then the value of *t* is _____.

c. What is the domain and range of the above function?

7. For a single membership to WORKOUT Health Club, you pay a $35 initiation fee upon enrollment and then $25 a month. The cost of belonging to the club is represented by the function $C(m) = 25m + 35$.

a. Determine *C*(10). Explain what your solution means. [2]

b. Determine m if *C*(m) = $185. Show your work. [2]