Graphs

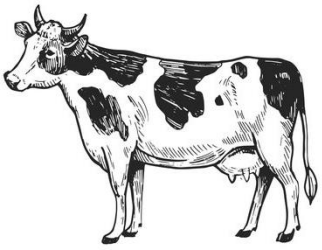
NOTES & ACTIVITIES

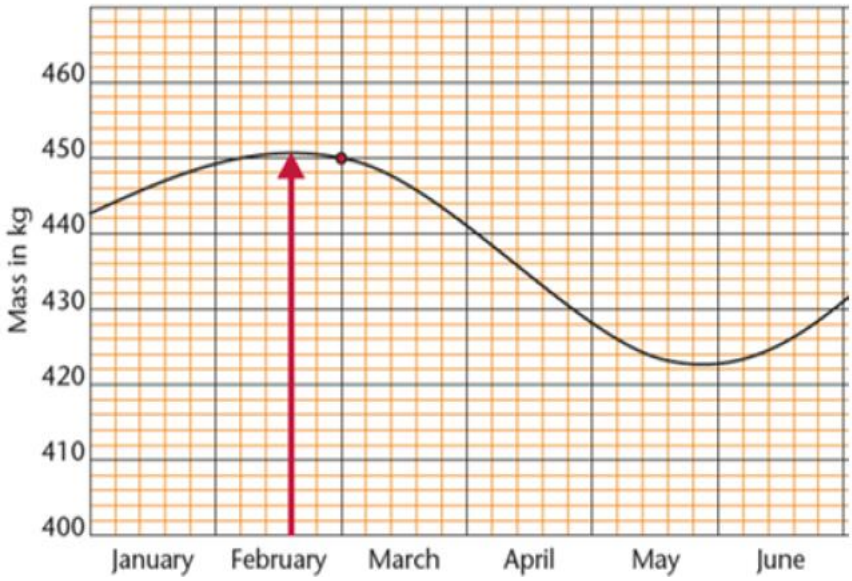
GRADE 8

Name and surname: _____

Example 1:

Mrs. Malan is a dairy farmer. She cares for her cows and weighs all of them daily. Here is a graph of one cow's mass in kilograms over a period of 6 months. At the end of February, the mass of the cow was 450 kg, as shown by the dot below.



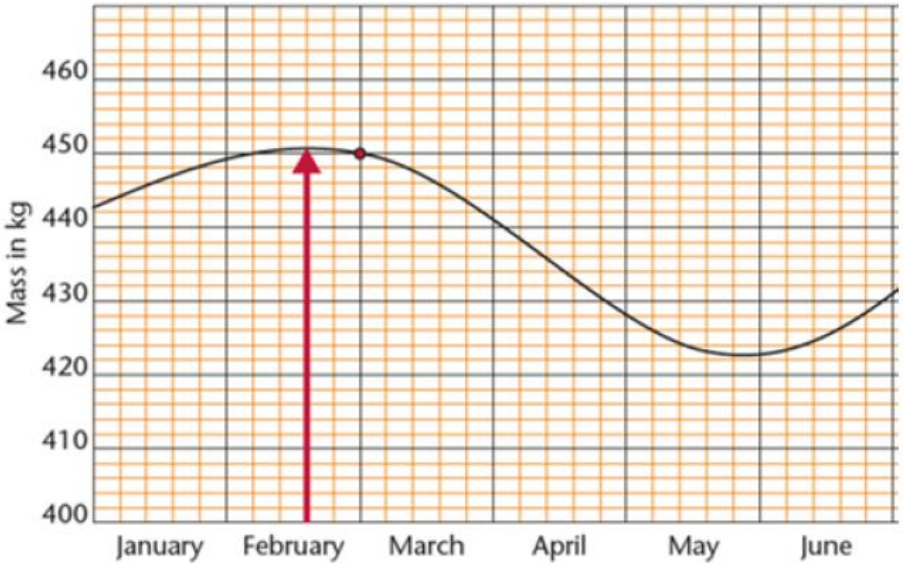


1.1.1) The mass (weight) of the cow reached a maximum a few days after the middle of February, as shown by the arrow on the graph. When, in the period shown on the graph, did the cow's mass reach a minimum?

_____

1.1.2) During most of February the cow weighed slightly more than 450 kg. During which month did the cow weigh less than 430 kg, for the whole month?

_____



1.1.3) Throughout the month of June, the mass of the cow increased.
During which other month did the mass of the cow also increase, throughout the month?

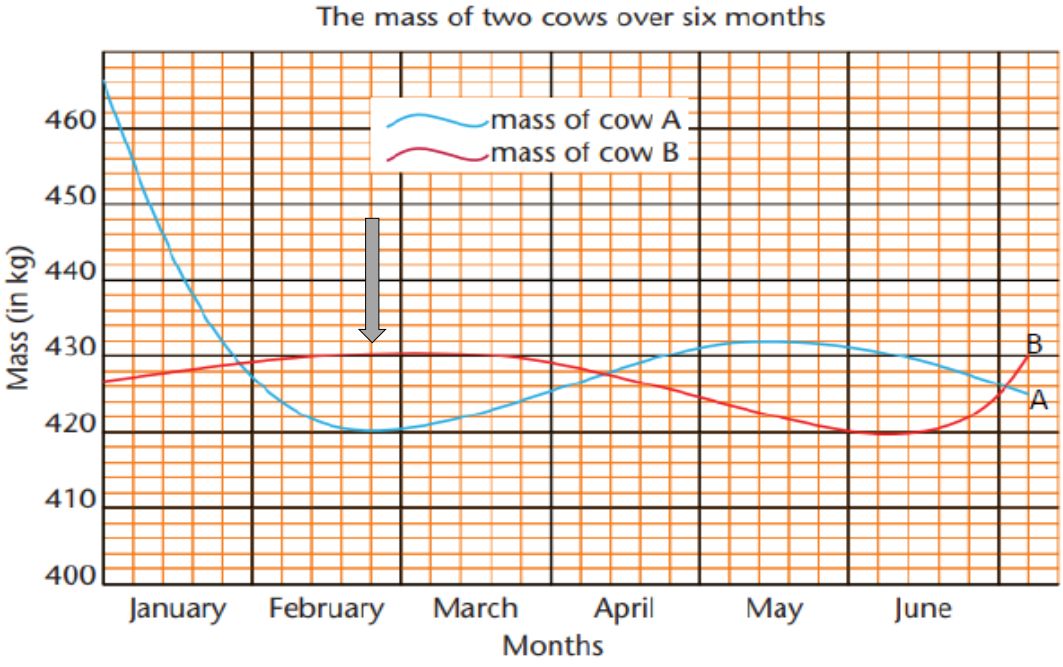
_____

1.1.4) During which month(s) did the mass of the cow decrease throughout the month?

_____

Class activity 1:

The blue and red curves below are graphs that show how the mass of two cows varied over the same period.



1.1) Which cow was the heaviest at the end of February?

_____

1.2) When was cow B heavier than cow A?

_____

1.3 During which months did the mass of cow A decrease for the whole month?

_____

1.4) Give one possible reason why cow A dropped almost 40kg in one month?

_____

1.5) When did cow A's mass start to increase again?

_____

1.6) During which month did cow B's mass begin to decrease while cow A's mass increased for that whole month?

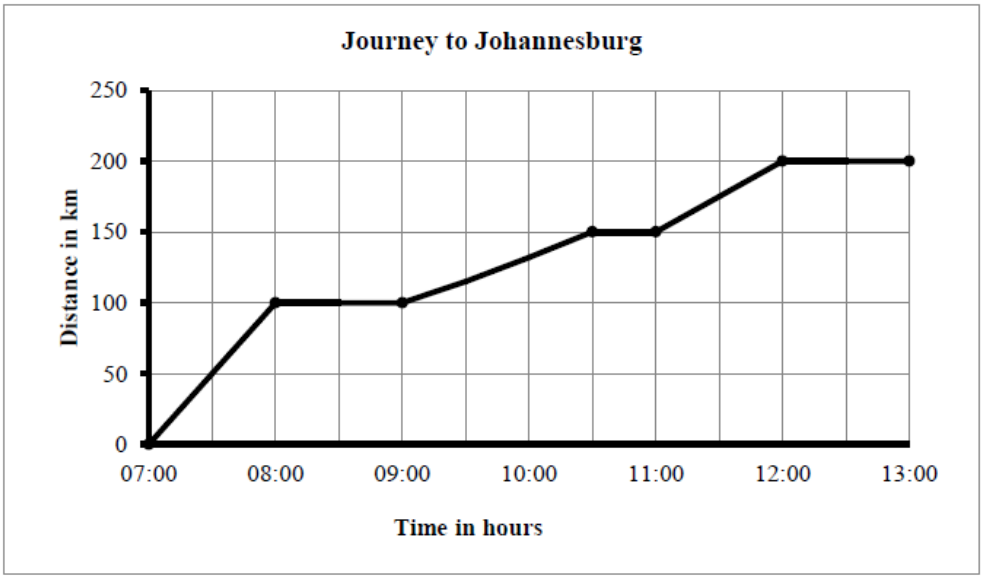
_____

1.7) During which months did cow A and cow B weigh the same?

_____

Class Activity 2:

The graph shows a journey that Denver and his father made from Vaalwater to Johannesburg. They arrived in Johannesburg at 12:00.



1) At what time did they start the journey? _____

2) What happened between 08:00 and 09:00?

_____

3) How many times did Denver and his Dad stop during the journey? _____

4) How far was the journey between Vaalwater and Johannesburg? _____

5) What was the average speed they travelled at?

_____

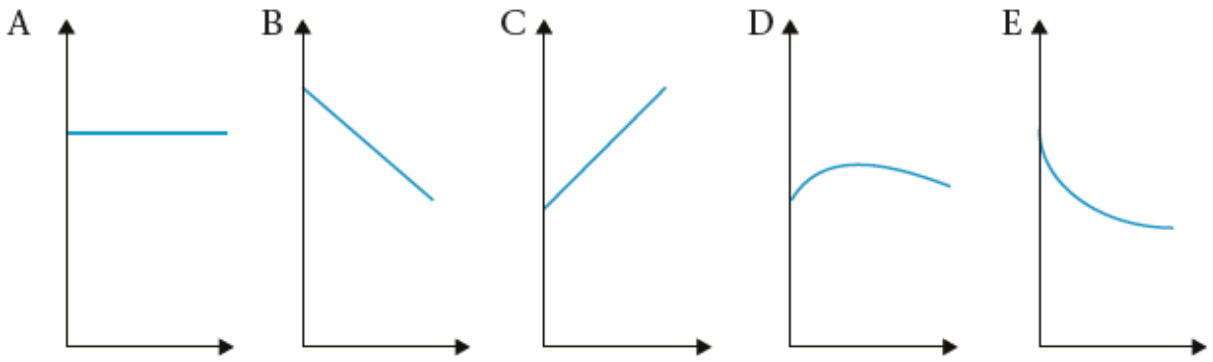
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Class Activity 3:

Graph analysing- use the following given graphs to determine what information they are representing.

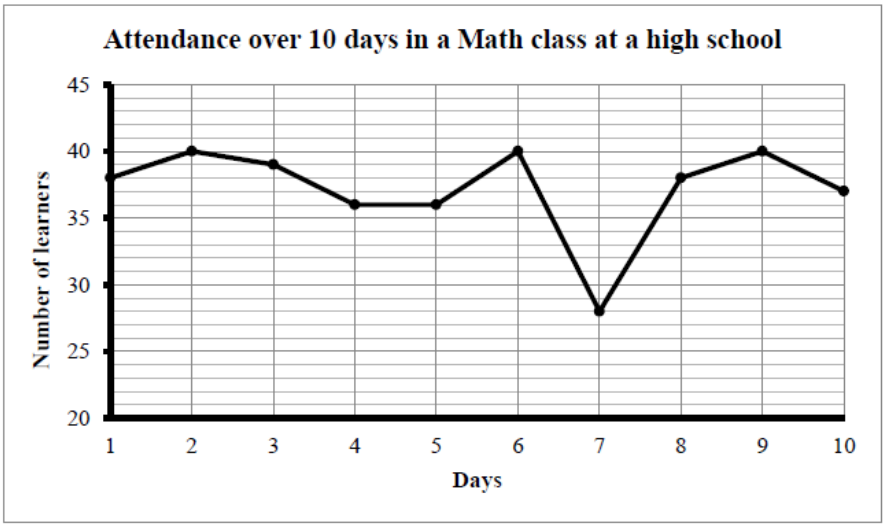
Reminder: we read a graph form left to right



Graph	Represents a linear or non-linear relation	Constant; Increasing; Decreasing
A		
B		
C		
D		
E		

Class Activity 1

The graph below shows the attendance of learners in a Gr 8 Mathematics class at a high school. Use the graph to answer the questions that follow.





1) On the following days, the max number (total) of learners were recorded. Complete the following table:

Days	**2**	**6**	**9**
Total			

2) Complete the following table to show the learners attendance on certain days. (**No** learners were absent on day 2,6 and 9.)

Day	**3**	**5**	**8**	**10**
Number of learners present				

3) How many learners in total are in the Mathematics class? _____

4) How many learners were absent on day 4? _____

5) Do you think that the attendance of the Mathematics learners over the 10 days was good? Give a reason for your answer.

_____

_____

6) Give one reason why the attendance was lower on day 7?

_____

Class Activity 2

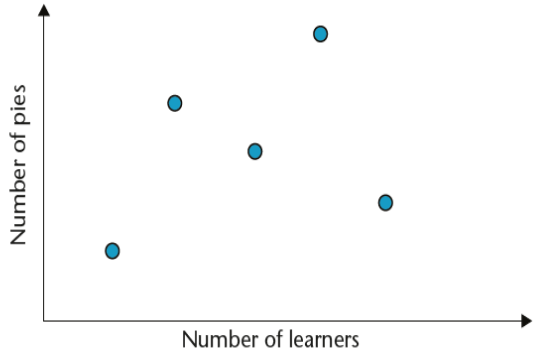
DISCRETE AND CONTINUOUS DATA

When we draw graphs of **continuous** data, it is a solid line or curve.

The graph of **discrete** data is a set of distinct points.

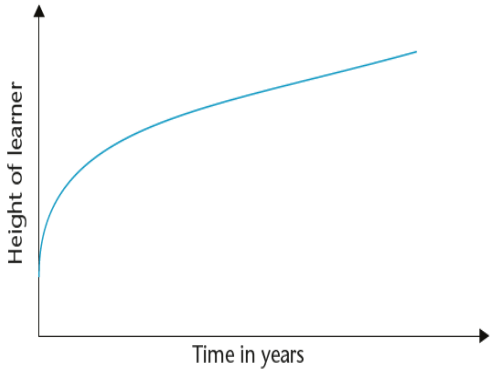
Situation 1

Number of pies bought by learners during a school week



Situation 2

Graph showing the height of a learner over a period of time



1) What type of data is represented in situation 1.

_____

2) What type of data is represented in situation 2.

_____

3) Why do you think the graph in situation 2 is a continuous graph?

_____

4) Why are the points in situation 1 not joined.

_____

5) Identify if the following is discrete or continuous?

a) Your height from year 1 to year 20 _____

b) Rainfall during a particular month _____

c) The temperature on a particular day _____

d)Votes cast in during the election -per district _____

Class Activity 1:

Study the following data received from the weather service for the first 8 days for the month of August:

Date	1	2	3	4	5	6	7	8
Rain (mm)	3	6	2	8	4	10	0	7



1) Plot the information captured on the graph.

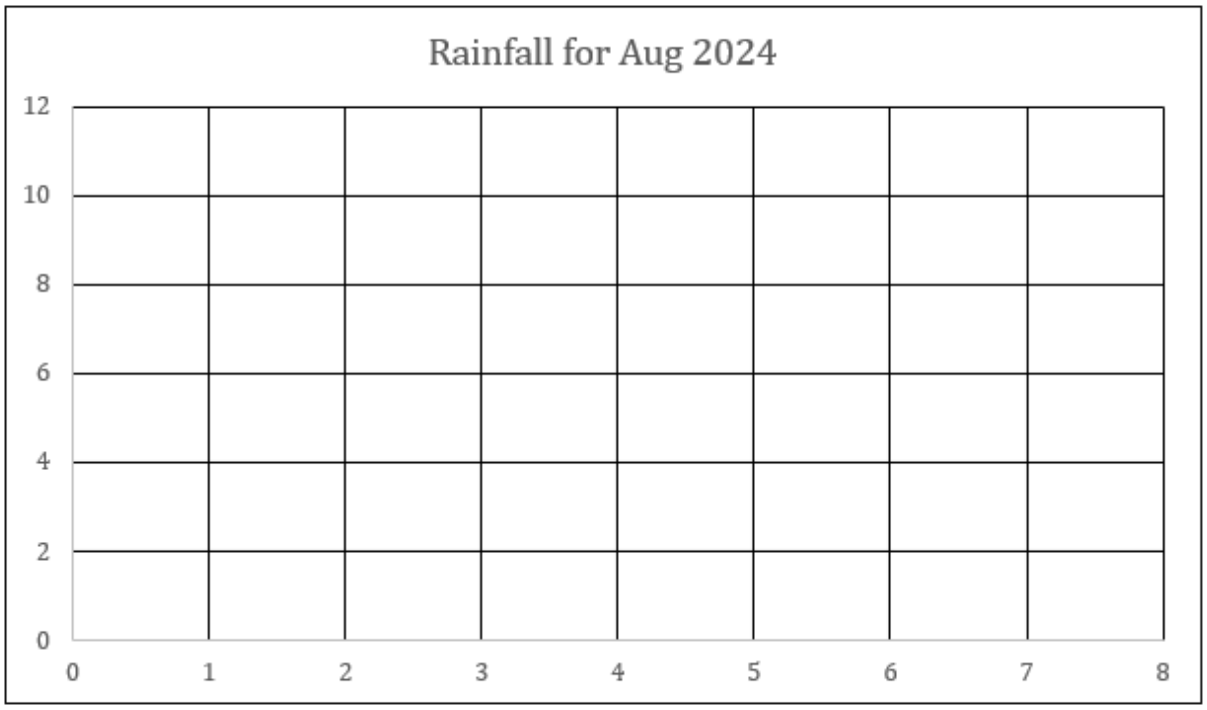
2) Which day had the:

   Most rain: _____

   Least amount of rain: _____

3) Identify the type of graph represented, linear or non-linear. _____

4) Is this information discrete or continuous? _____



Class Activity 2:

To raise money for her school's rugby tour, Maria decides to sell hot chips at R9 per packet.

1) Complete the table below to show the amount collected for selling a certain number of packets of hot chips.

Hot chips (n)	1	2	5	7	8	11
Amount (R)	9	18		63		

2) Use the information in the table and draw a graph.

- Show the amount in Rand on the vertical axis.
- Show the number of packets of hot chips on the horizontal axis.
- Give a relevant title to the graph.
- Plot the points on the system of axes.
- Connect the points plotted.

3.1) Is the graph increasing or decreasing? _____

3.2) How much will Maria have collected if she sold 10 packets of hot chips? Use the graph to assist finding the answer.

_____

3.3) Write down a formula, to determine the amount (Rands) collected for the sales of the hot chips.

_____

3.4) Maria paid R54 for all the ingredients (cost price) of making the hot chips. How many units of hot chips must she sell before making a profit?

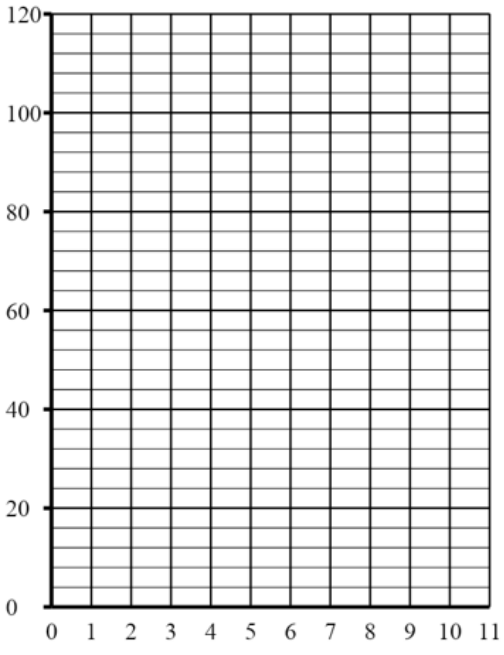
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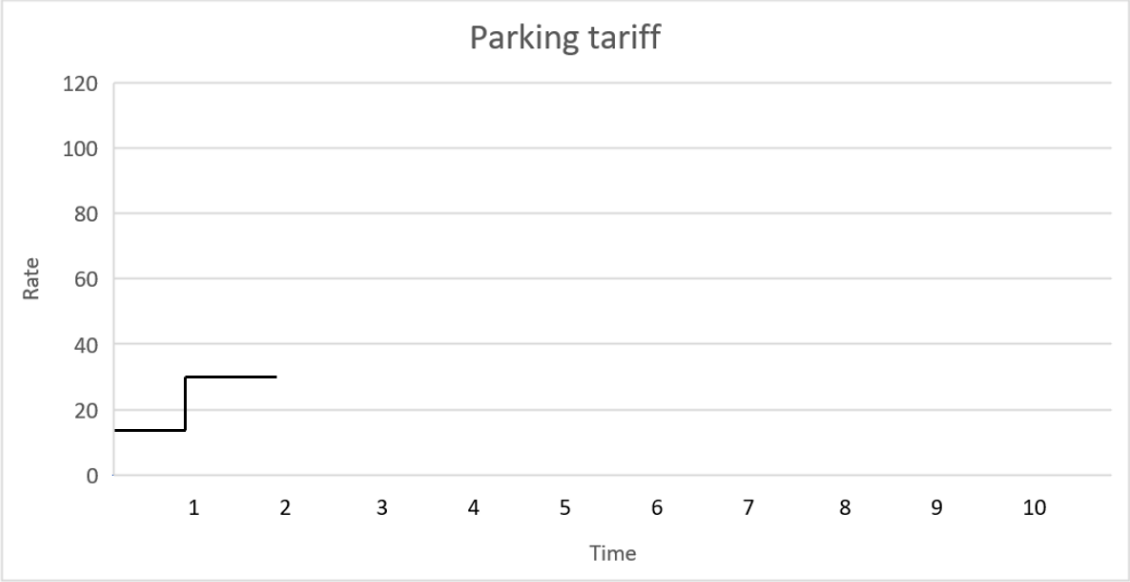




Class Activity 3:

Use the following table to answer the questions that follow:

1) Use the information provided on the parking tariff notice to complete the following graph.



2) If you parked in the garage for 20min, how much would you pay?

_____

3) If you parked in the garage for 6h and 30min,how much would you pay?

_____

4) How much would you pay if you arrived at 19H00 and leave at 05H00.

_____

5) How much would you pay if you lost your parking ticket?

_____

Day Parking Tariffs

Hours	Rate
0 - 1 hr	R 15.00
1 - 2 hrs	R 30.00
2 - 3 hrs	R 40.00
3 - 4 hrs	R 50.00
4 - 5 hrs	R 60.00
5 - 6 hrs	R 70.00
6 - 7 hrs	R 80.00
7 - 8 hrs	R 90.00
8 - 9 hrs	R 100.00
9 + hrs	R 110.00
Lost ticket	R 150.00

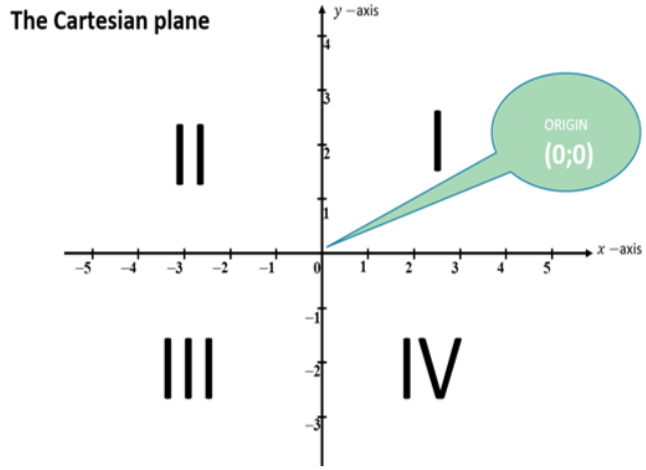
Night Parking Tariff

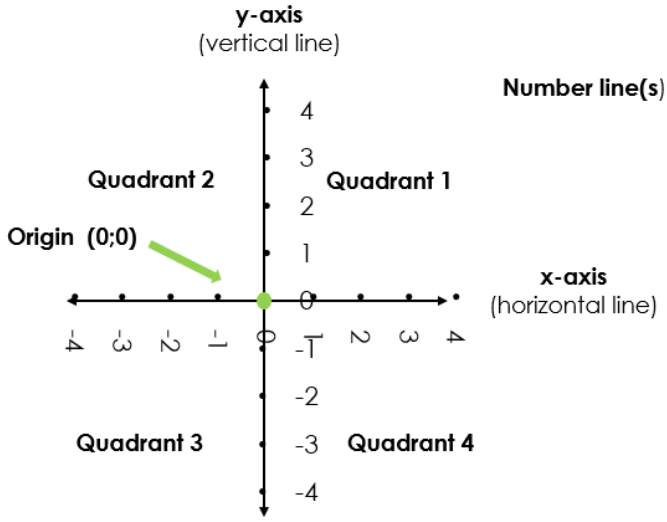
Ure	Tarief
0 - 1 hrs	R 15.00
Flat night Rate	**R 35.00**
Hours	18H00 - 06H00
Weekend	Sat 14H00 - Ma 06H00



Class Activity 1:

Cartesian plane





Ordered pair: $(x\,;y)$

*hint – left to right, *x is before y in the alphabet.*

LET'S PRACTISE OUR VOCABULARLY

Complete the sentences below by using the following vocabulary:

Origin; x-coordinate; y-coordinate; x-axis; y-axis; Ordered pair; quadrants

1) The four regions on the coordinate plane are called _____.

2) The _____ corresponds to a number on the y-axis.

3) The _____ corresponds to a number on the x – axis.

4) The vertical number line is called the _____.

5) The point where the number lines intersect is called the _____.

6) The horizontal number line is called the _____.

7) A _____ is the set of numbers used to locate a point on the coordinate plane.

Class activity 2 : Plotting (ordered pairs)

A) Plot the following co-ordinates and answer questions:

1) $(2;5)$ 2) $(1;8)$

3) What do you notice about the *x* and *y* values?

x: _____ y: _____

4) What quadrant were they plotted in?

_____

B) Plot the following co-ordinates and answer questions

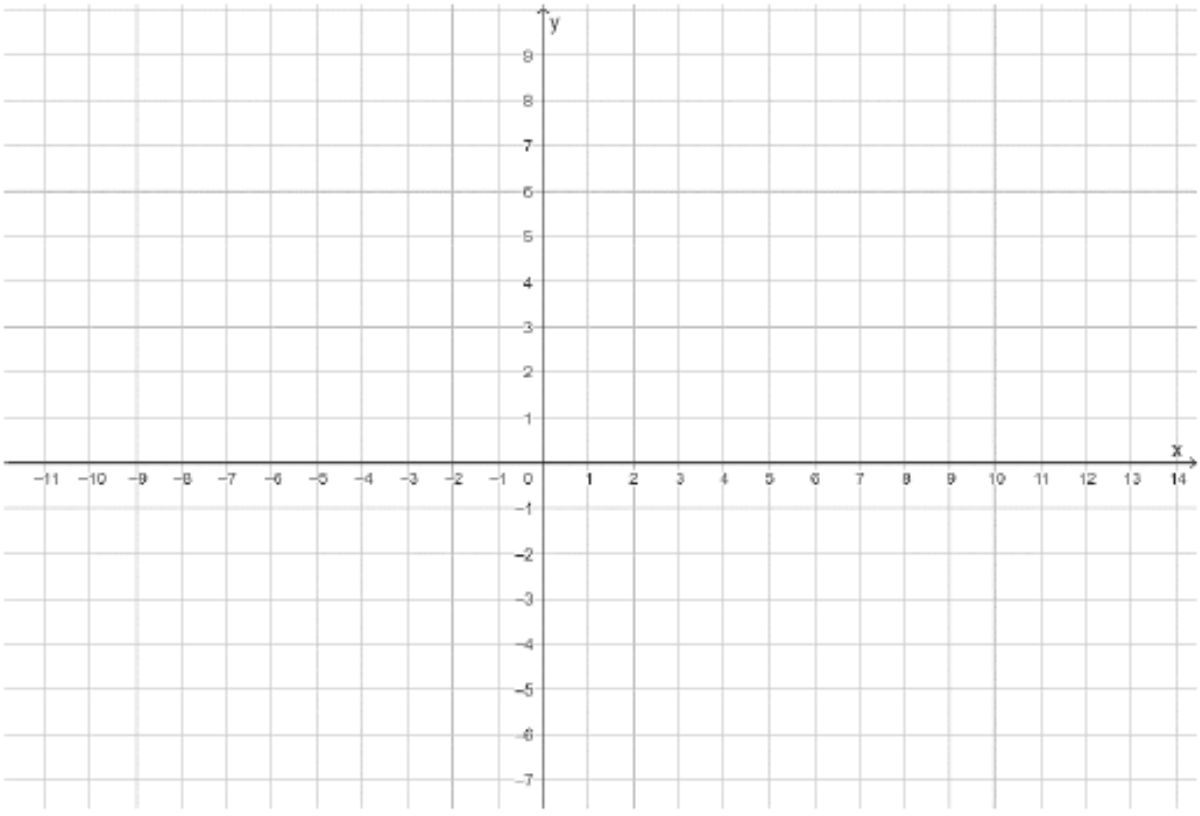
1) $(-3;-7)$ 2) $(-11;-3)$

3) What do you notice about the *x* and *y* values?

x: _____ y: _____

4) What quadrant were they plotted in?

_____



C) Plot the following co-ordinates and answer questions:

1) $(2;-5)$ 2) $(9;-6)$

3) What do you notice about the *x* and *y* values?

x: _____ y: _____

4) What quadrant were they plotted in?

_____

C) Plot the following co-ordinates and answer questions:

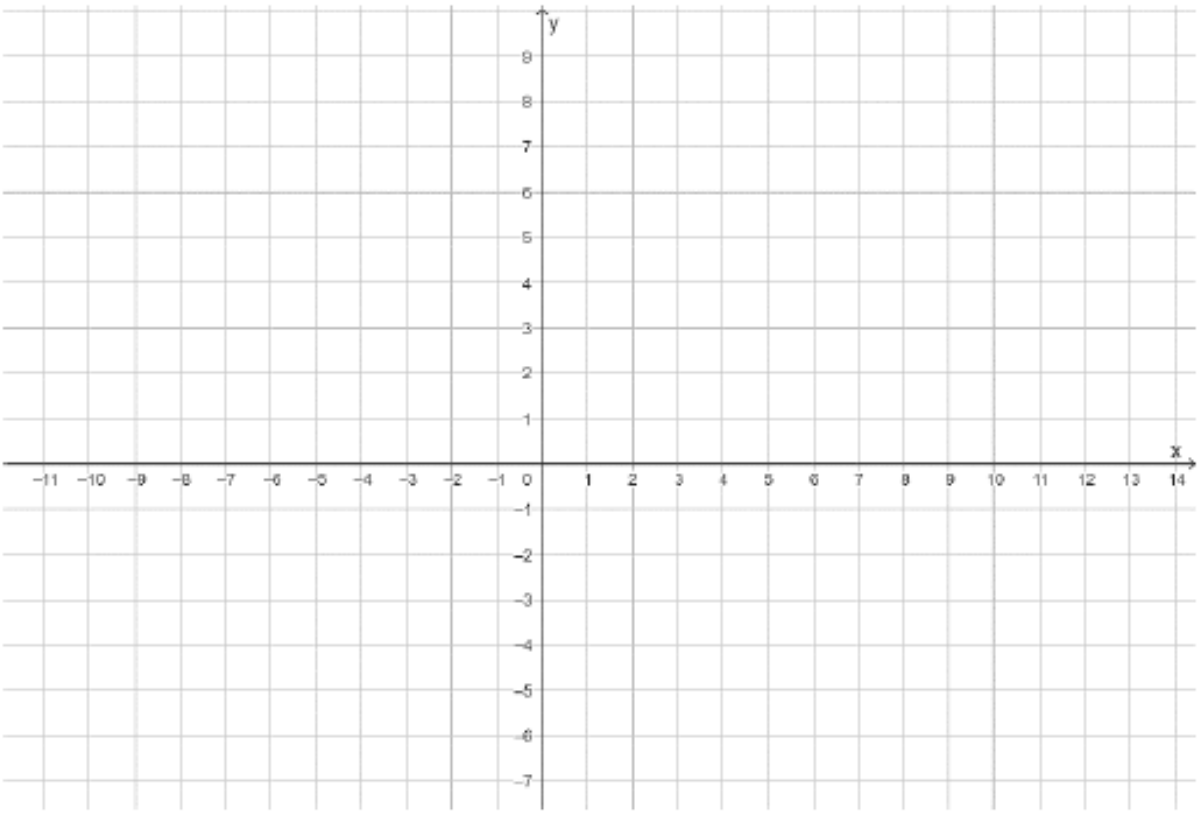
1) $(-10;3)$ 2) $(-13;1)$

3) What do you notice about the *x* and *y* values?

x: _____ y: _____

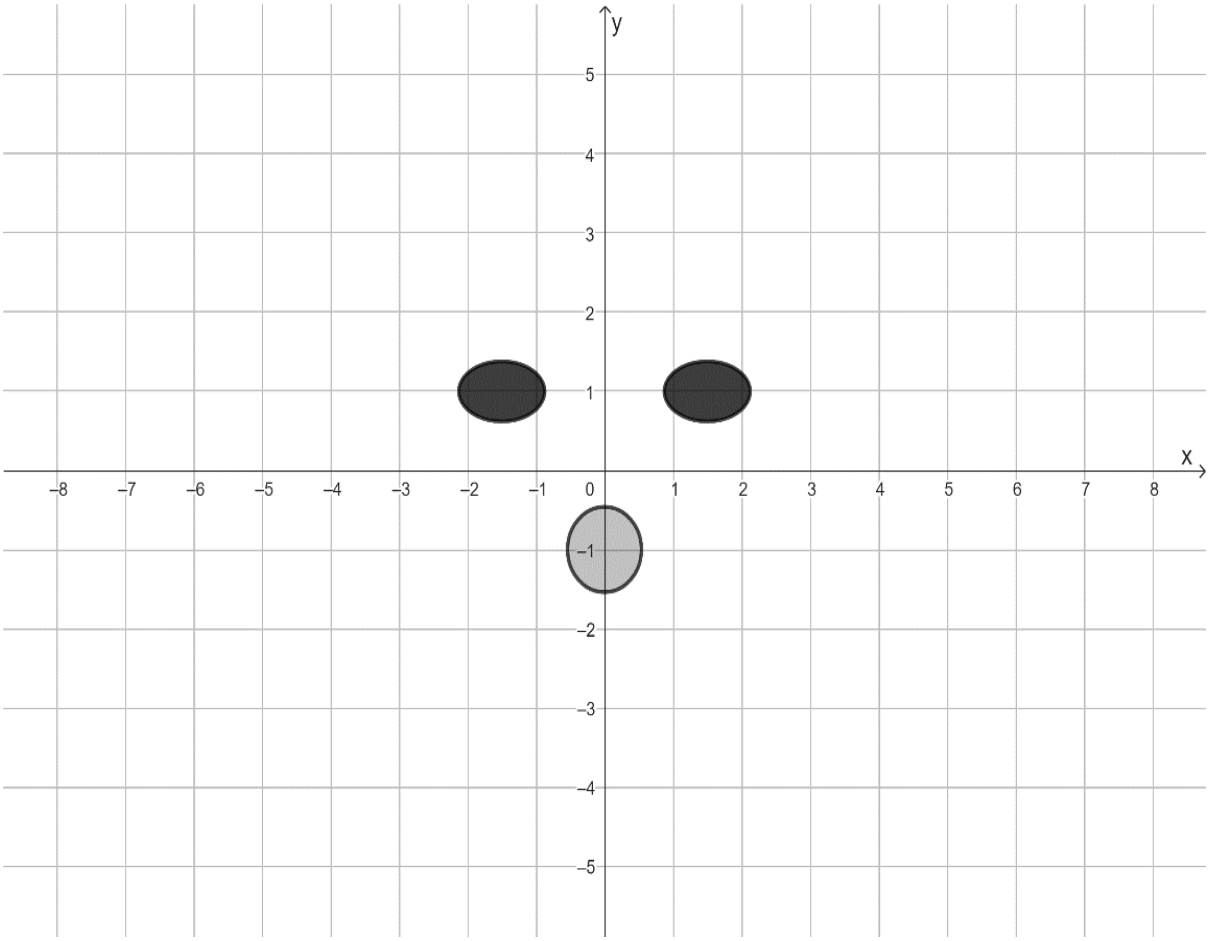
4) What quadrant were they plotted in?

_____



E) Plot each point on the coordinate plane. Label with the corresponding letter and then connect your coordinates in alphabetical order.

A	(2;5)	**G**	(-3;-1)
B	(4;4)	**H**	(-3;2)
C	(3;2)	**I**	(-4;4)
D	(3;-1)	**J**	(-2;5)
E	(1;-3)	**K**	(-1;4)
F	(-1;-3)	**L**	(1;4)



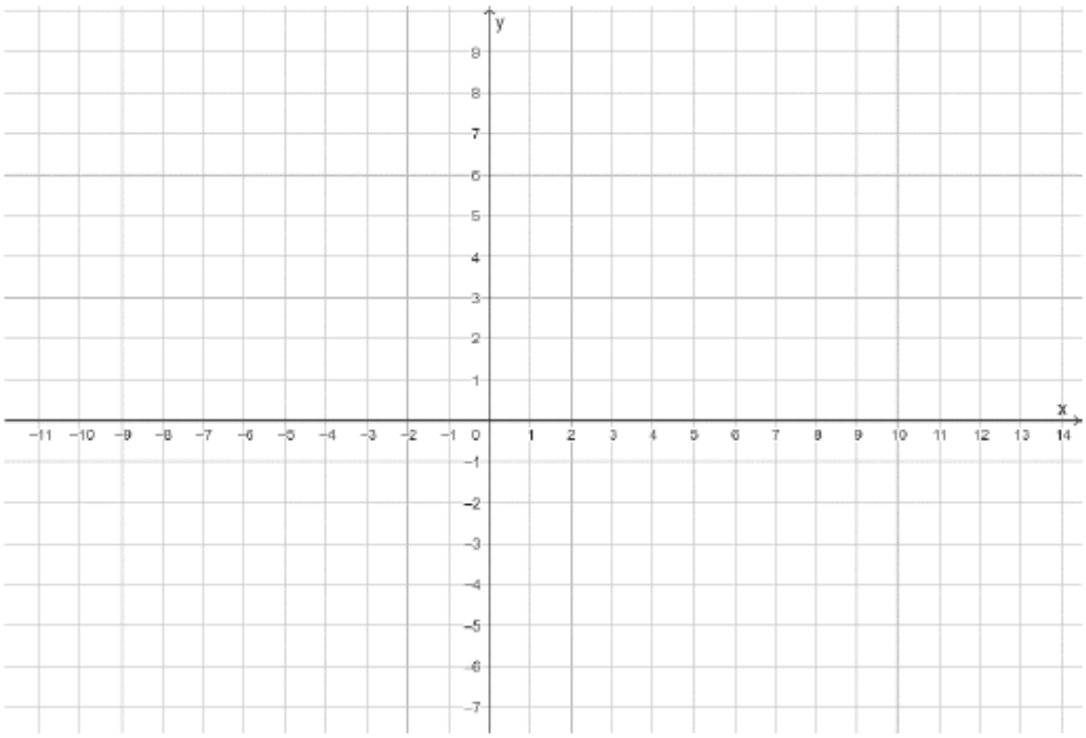
Example 1

GRAPHS FROM TABLES

1.1) Complete the table for $y = x + 3$

x	-4	-3	-2	-1	0	1	2	3	4
y			(-2;1)					(3;6)	
Oredered pairs									

1.2) Plot the ordered pairs on the given coordinate system.



1.3) Join the points to form a graph.

1.4) Is the graph linear or non-linear? _____

1.5) Is the graph increasing or decreasing? _____

1.6) The ordered pair (1;6) is not on the graph because when we substitute the value of x $(x = 1)$ in the formula $y = x + 3$ we get 4 instead of 6.
Is the ordered pair (100;103) on the graph? Explain:

_____

_____

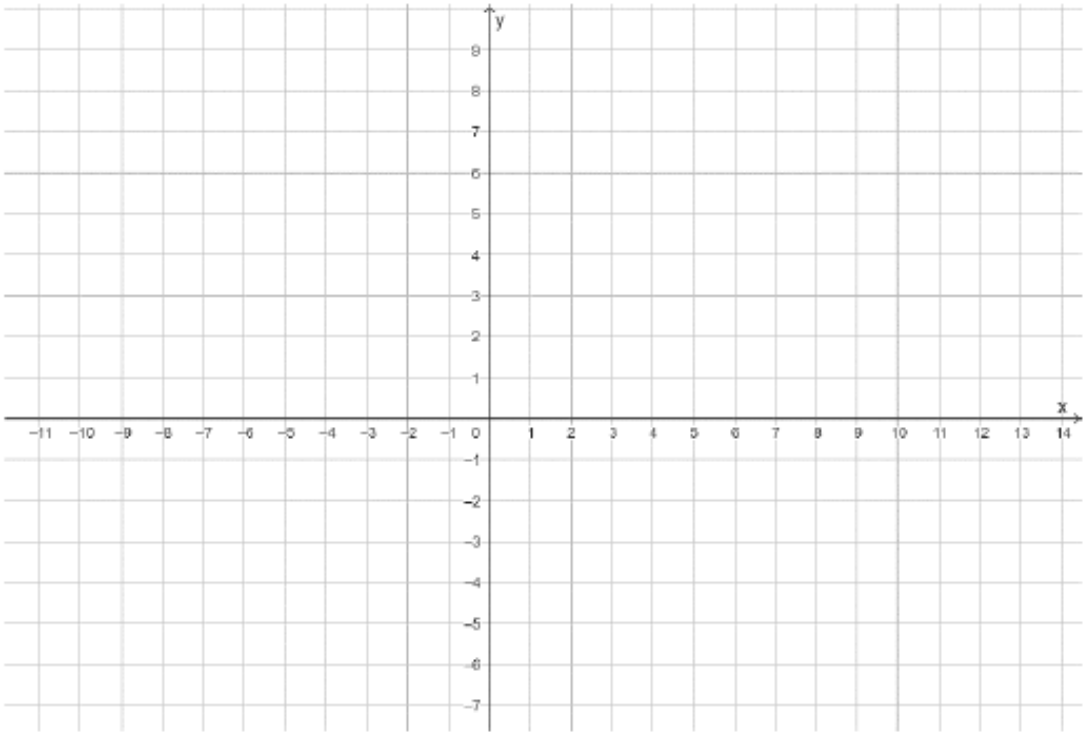
Class Activity 1:

GRAPHS FROM TABLES

1) Complete the table for $y = -x + 3$

x	-4	-3	-2	-1	0	1	2	3	4
y			(-2;5)					(3;0)	
Ordered pairs									

2) Plot the ordered pairs on the given coordinate system.



3) Join the points to form a graph.

4) Is the graph linear or non-linear? _____

5) Is the graph increasing or decreasing? _____

6) The ordered pair (1;2) is on the graph because when we substitute the value of x ($x = 1$) in the formula $y = -x + 3$ we get 2.
Is the ordered pair (15;18) on the graph? Explain:

_____

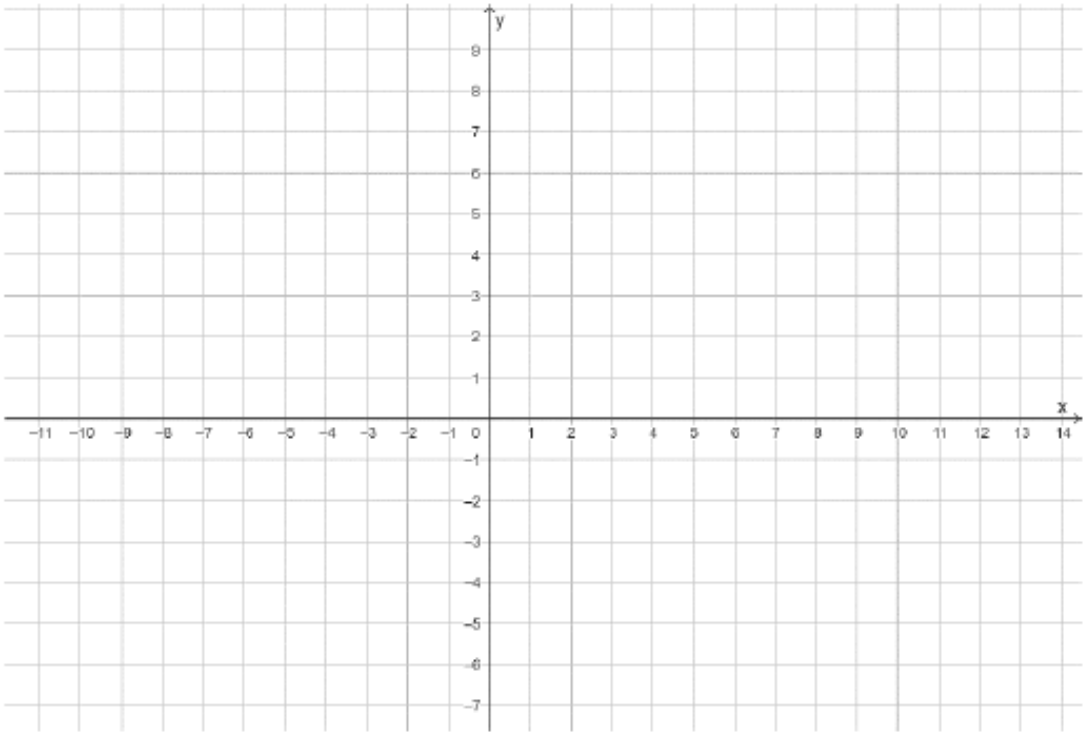
_____

Class activity 2:

1) Complete the table below for the formula $y = x^2$

x	-4	-3	-2	-1	0	1	2	3	4
y			(-2;4)					(3;6)	
Ordered pairs									

2) Plot the ordered pairs on the given coordinate system.



3) Join the points to form a graph.

4) Is the ordered pair (-5;25) on the graph? Explain.

_____

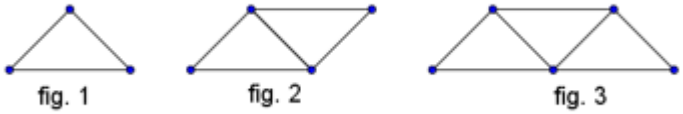
_____

5) Is the graph linear or non-linear? _____

6) Is the graph increasing or decreasing? _____

Class activity 3:

Study the following figure:



1) Complete the following table:

	fig. 1	fig. 2	fig. 3	fig. 4	fig. 5
Number of lines					

2) Determine a rule for the number of lines.

_____

_____

3) Write down the ordered pairs from the table above:

_____

4) Plot the ordered pairs on the given cartesian plane.

5) Join the points in pencil to form a graph.

