Mathematics
Grade 8

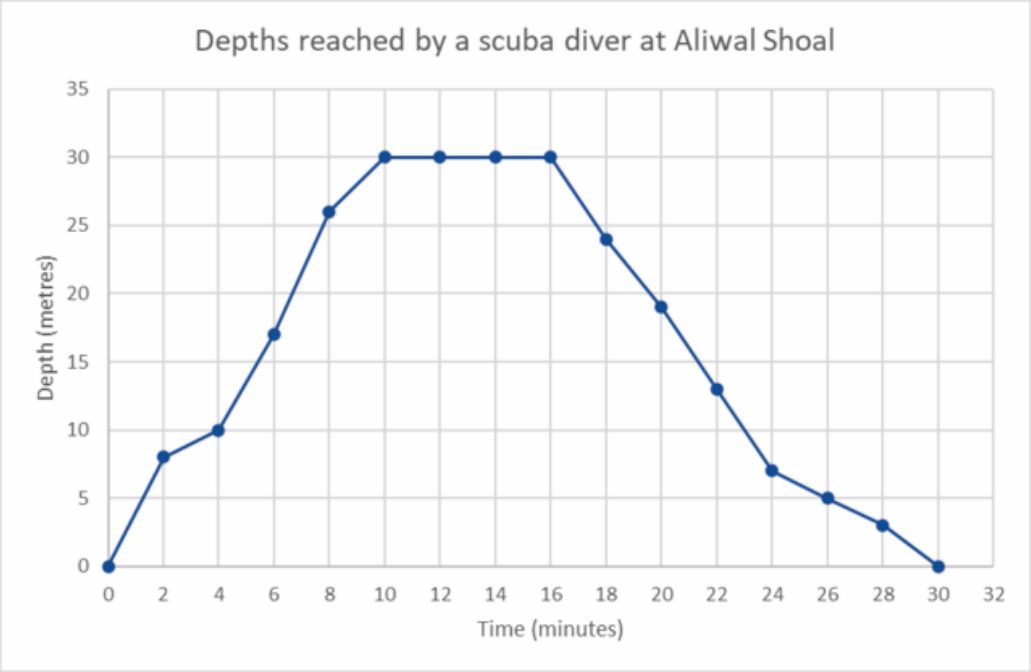
TOPIC:

Graphs

Analysing and interpreting global graphs

1. Aliwal Shoal in KwaZulu-Natal is one of the best scuba-diving spots in South Africa. The graph shows the depths that a scuba diver reached during a 30 minute dive.

   Use the graph to answer the questions.



   a) How long was the scuba diver under the water?

   b) What was the scuba diver's depth after 4 minutes?

   c) How long did the scuba diver spend at a depth of 30 metres?

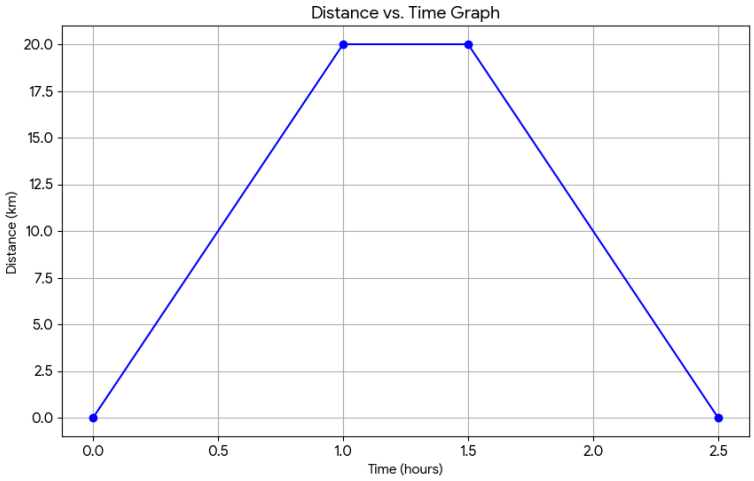
   d) Complete each sentence by filling in the missing words:

   Between 0 and 10 minutes the depth of the scuba diver is _____ .

   Between 10 and 16 minutes the depth of the scuba diver remains _____ .

   Between 16 and 30 minutes the depth of the scuba diver is _____ .

2. A cyclist goes for a ride. The graph shows the cyclist's distance from home over time.



a) Is this graph linear or non-linear?

b) How far did the cyclist travel from home?

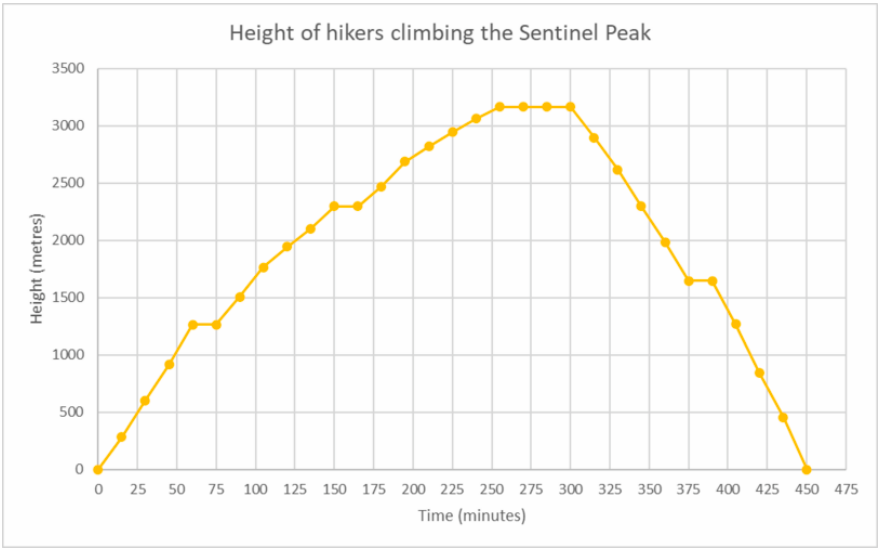
c) For how long did the cyclist stop?

d) Identify the **maximum** distance from home.

e) Was the cyclist traveling faster on the way to their destination or on the way back? Explain.

3. Two hikers climb the Sentinel Peak in the Ukhahlamba-Drakensberg mountains.

Use the diagram to answer the questions.:



a) Is the graph discrete or continuous?

b) List the intervals where the graph is increasing.

c) List intervals where the graph is decreasing.

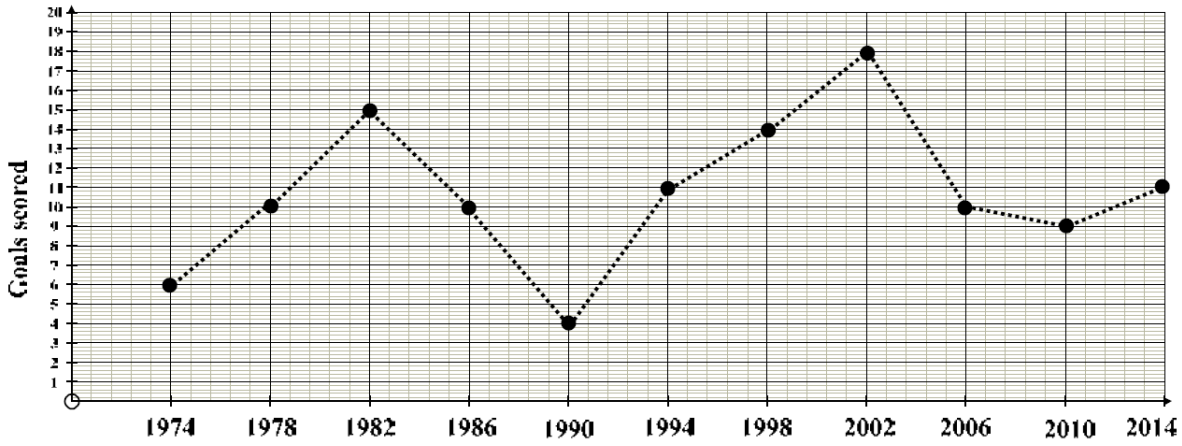
d) List intervals where the graph is constant.

e) What is the approximate height of the Sentinel Peak?

f) How long did it take the hikers to reach the top of the peak?

g) How many times during the hike did the hikers take a rest (stop hiking)?

4. The number of goals scored by Brazil in the past eleven FIFA World Cups is represented in the following global graph.



a) How many goals did Brazil score in 1978?

b) How many goals did Brazil score in 2010?

c) In which year did Brazil score the **maximum** number of goals?

d) In which year did Brazil score the **minimum** number of goals?

e) In which years did Brazil score the same number of goals?

f) Explain the trend of goal-scoring over the eleven World Cups.

g) Explain possible reasons for this trend.

Drawing graphs

5. Draw a graph for each description below. Label your axes and include important features.

a) Description: The number of students in a classroom over a school day.

- Starts at 0 students at 7:00 AM
- Increases to 30 students by 8:00 AM
- Stays constant at 30 until 10:00 AM (break time)
- Decreases to 0 at 10:15 AM
- Increases back to 30 at 10:30 AM
- Stays constant until 2:00 PM
- Decreases to 0 by 2:15 PM

b) Identify the following:

- Maximum value
- Is it discrete or continuous?

6. Use the table below to plot points and draw a graph on the grid.

Situation: The height of a plant over 6 weeks

Time (weeks)	0	1	2	3	4	5	6
Height (cm)	2	5	8	11	14	17	20

a) Plot the ordered pairs on the grid.

b) Draw the graph by connecting the points.

c) Is this graph linear or non-linear?

d) Is the graph increasing, decreasing, or constant?

e) Is the data discrete or continuous? Explain why.

f) Predict the height of the plant after 8 weeks if the pattern continues.

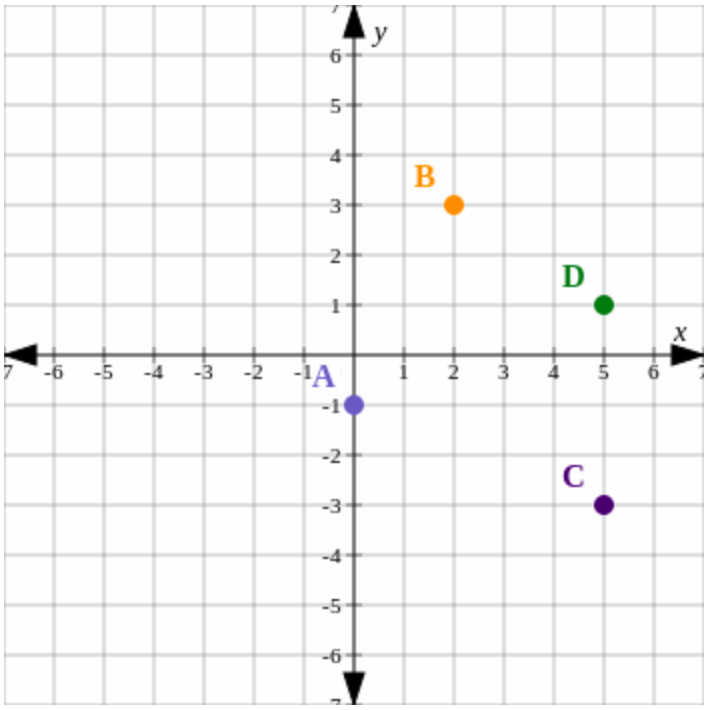
Cartesian plane

7. Plot the following coordinates on a Cartesian plane:

A(3 ;5)	B(2 ; - 6)	C(- 4 ;1)	D(-5 ;-6)
E(6 ;-4)	F(6 ; 0)	G(0 ;-4)	H(-3 ;0)
I(0 ;6)	J(-3 ;-3)	K(0 ;0)	L(0,5 ;-1,5)

8. The graph below shows the Cartesian plane and four points. The points are labelled A, B, C and D.

Write down the coordinates from A to D.



Drawing graphs on the Cartesian plane from a table of values

9. Given the table of values for the equation $y = x + 3$.

x	−3	−2	−1	0	1	2	3
y							
$(x;y)$							

a) Complete the table.

b) Plot the ordered pairs on the Cartesian plane.

c) Draw the straight-line graph.

d) Is the graph increasing or decreasing?

e) Does the point (5;8) lie on the graph? Use a calculation in your answer.

10. Given the table of values for the equation $y = -x + 2$.

x	−3	−2	−1	0	1	2	3
y							
$(x;y)$							

a) Complete the table.

b) Plot the ordered pairs on the Cartesian plane.

c) Draw the straight-line graph.

d) Is the graph increasing or decreasing?

CAPS CLARRIFICATION:

Interpreting graphs

- **Revise** the following done in Grade 7:
  - Analyse and interpret global graphs of problem situations, with a special focus on the following trends and features:
    - linear or non-linear
    - constant, increasing or decreasing
- Extend the focus on features of graphs to include:
  - maximum or minimum
  - discrete or continuous

Drawing graphs

- Draw global graphs from given descriptions of a problem situation, identifying features listed above
- Use tables of ordered pairs to plot points and draw graphs on the Cartesian plane