INDEX

INTRODUCTION

Dear Teacher

This resource is intended to assist you in the teaching of Mapwork in your classroom. The resource has been developed to assist you in providing meaningful activities to your learners. The activities in the manual are CAPS compliant and have been developed as per the content in the CAPS policy.

The manual should be used in conjunction with the Senior Phase lesson plans which were provided to all schools. As per the CAPS policy this Mapwork component is covered in Term 1 in both Grade 8 & 9. Teachers can use these activities as classwork or for revision purposes.

It is essential that constant reference is made with the CAPS policy to ensure that weighting and time spent on a particular concept is adhered to. As per standard practice in any classroom, activities completed by learners need to be marked in order for feedback to given to the learner. This can be done via the learners themselves, peer marking or by the teacher. Please note that this type of marking is only to be used for informal assessments. In the event of formal assessment, marking should be done by the teacher.

This document serves as a guideline and/or workbook to be used to enhance learners understanding of Mapwork. In the event of any errors or errata in this manual, please notify your local subject advisor.

We hope that you enjoy using this resource and that it will assist you in fostering a love for the subject in your learners.

GRADE 8 – Mapwork

Grade	Policy Content	No. of hours allocated for content	No. of periodss to complete content **(Note: Periods used is 30 min)**	Activities which cover the content	Page numbers in which content is covered	Lesson plan numbers in which content is covered
8	**Maps and atlases**	5	10	Activity 1 - 7	Page 4 - 17	Lesson Plan 1 - 10
8	**The globe**	6	12	Activity 8 - 13	Page 18 -28	Lesson Plan 11 - 22
8	**Satellite images**	2	4	Activity 14 - 15	Page 27 - 30	Lesson Plan 23 - 26

Activity 1

Latitude and Longitude

1. Study the map that shows longitude and latitude and answer the following questions.
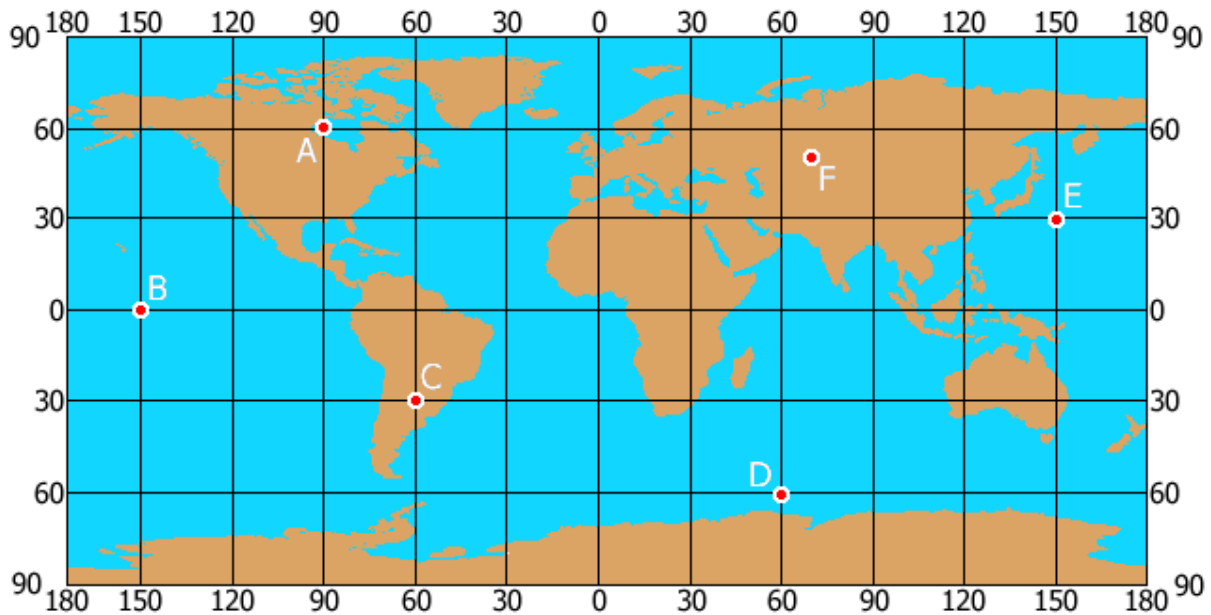
1.1 What name is given to the lines that run horizontally across the map?
1.2 What name is given to the lines that run vertically across the map?
1.3 State the latitude and longitude to the exact degree of the places A – F.
1.4 Underline the correct answer:
1.4.1   Always name the (latitude/longitude) first and the (latitude/longitude) last.
1.4.2   The latitude of the North Pole is (180°N/ 90°N)
1.4.3   If numbers get bigger towards the top of the page, it is (North/South) of the Equator.
1.4.4   If numbers get bigger towards the right side of the page, it is (east/west) of the Greenwich.
1.4.5   Lines of longitude is also called (latitudes/meridians).
1.4.6   Lines of latitude is also called (meridians/parallels)
1.5 Write a short paragraph beginning with the next phrase:

" Latitudes and longitudes are important to us because…….. "

Activity 2

Degrees and minutes

Find a world map in an atlas and answer the following questions:

2.1 Identify the Arctic circle on a world map. In which hemisphere is this line of latitude?
2.2 Identify the Antarctic circle on a world map. In which hemisphere is this line of latitude?
2.3 At what degrees and minutes do we find the Tropic of Cancer?
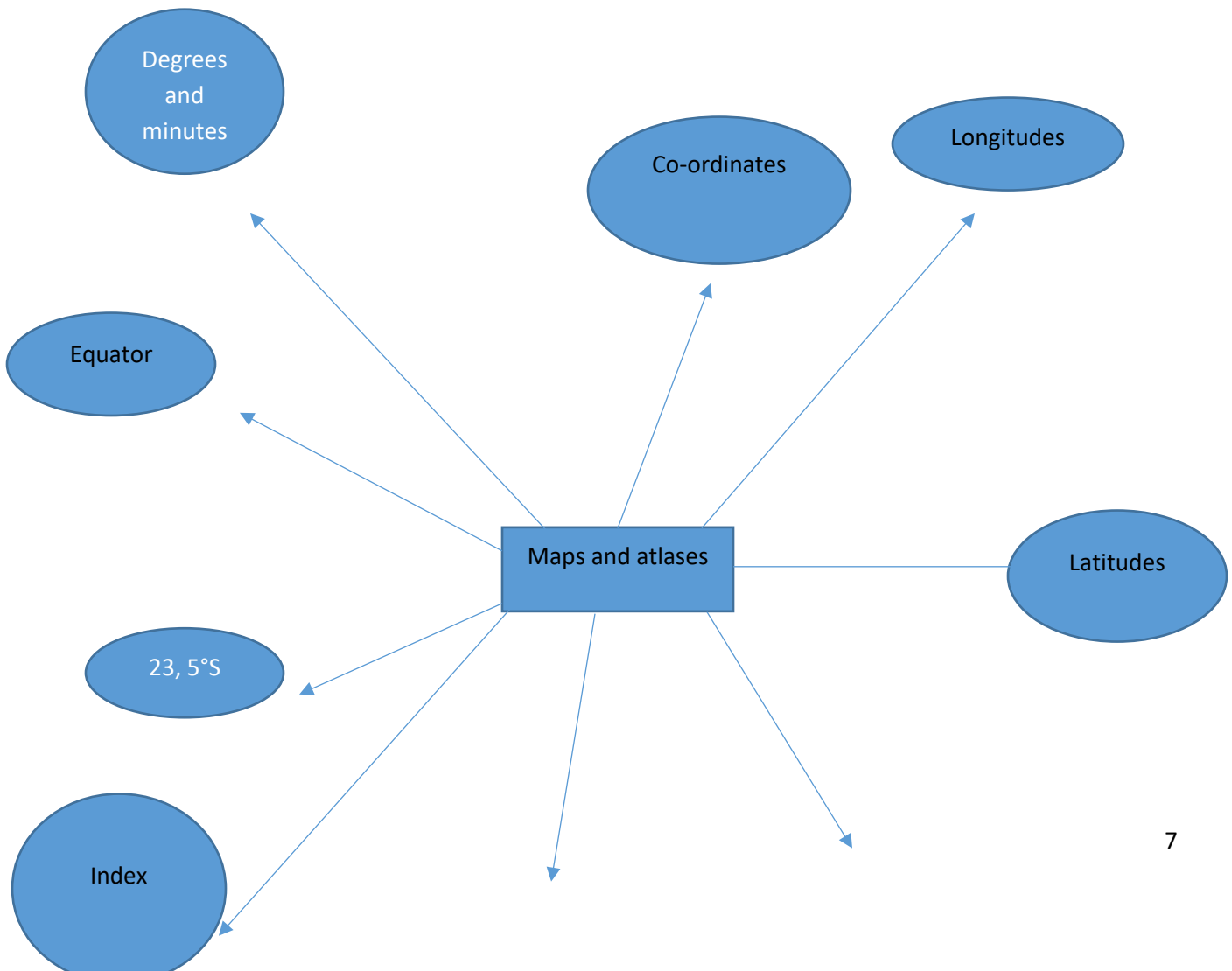2.4 At what degrees and minutes do we find the Tropic of Capricorn?
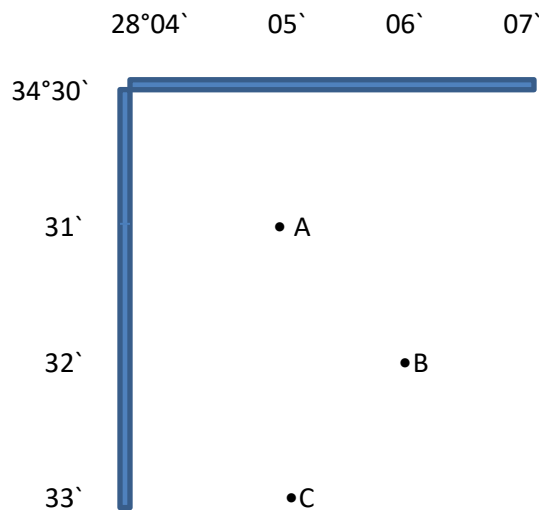
2.5 Draw the above diagram of the latitude and longitude reference system in your workbook.
2.6 Calculate the positions of A, B and C. Write the answers in your workbook.
2.7 Plot one more position anywhere on your diagram. Call the position D.
2.8 Calculate D on your diagram and have a classmate mark your answer.
2.9 Use the atlas and find the provincial map of KwaZulu/Natal. Find the co-ordinates (degrees and minutes) of the next places **on the map**: (Do not use the index)

2.9.1 Pietermaritzburg

2.9.2   Amanzimtoti

2.9.3   St Licia river mouth

2.10 Use the provincial map of KwaZulu / Natal in the atlas and name the place at the following co-ordinate
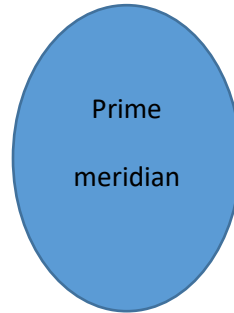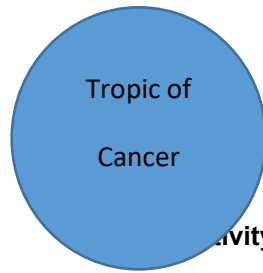
ordinate

2.10.1   A lake at 28°S and 32°30`E

2.10.2   A dam at 28°25`S and 29°02`E

2.10.3   A city at 31°02`S and 30° 13`E

Activity 3

Using the Atlas index to find places on a map

1. You have entered a competition and you won a trip to any location (city or country) in the world. Where would you like to travel to?
2. Use the index in the atlas and provide the latitude and longitude of the place you chose.
3. Name the continent in which this place is located.
4. Do research on the place and write a paragraph of approximately 10 lines on why you would like to visit this particulate place.
5. To be able to understand maps and atlases, it is important to grasp the meaning of the following concepts. Copy the mind map in your book and complete it by filling in the definition or meaning of each concept.

Degrees and minutes

Co-ordinates

Longitudes

Equator

Maps and atlases

Latitudes

23, 5°S

Index

Tropic of Cancer

Prime meridian

Activity 4

Kinds of scale in an atlas

4.1 Copy the table in your book. Fill in the following statements under the correct caption

- Features are usually less detailed
- Features are generally more detailed
- 1:1000 000
- 1;10 000
- Map of South- Africa
- A map of the world
- A map of the city Kempton park

Small scale map	Large scale map

4.2 Why are atlas maps not all drawn to the same scale?

4.3 Study the next map and answer the following questions.
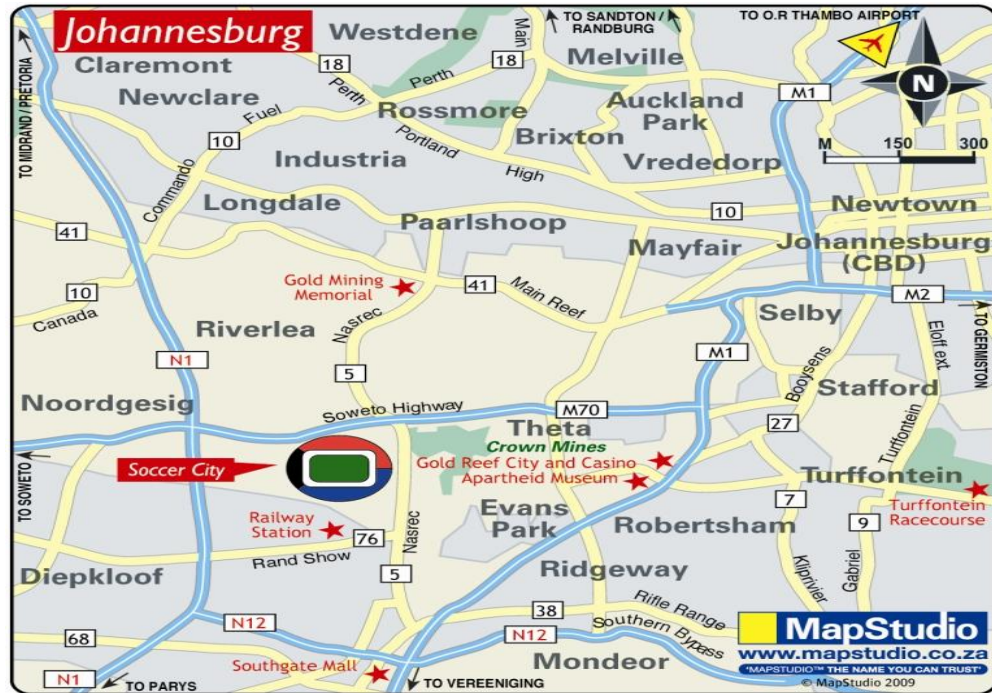
4.3.1 Would you identify the above map as a small scale map or a large scale map?

4.3.2   Find the Sporting field in the map

4.3.3   Do you think you will be able to see Soccer City on a small scale map.

4.3.4   Give a reason for your answer

4.3.5   Which scale is used on the above map?

Activity 5

Three types of scales
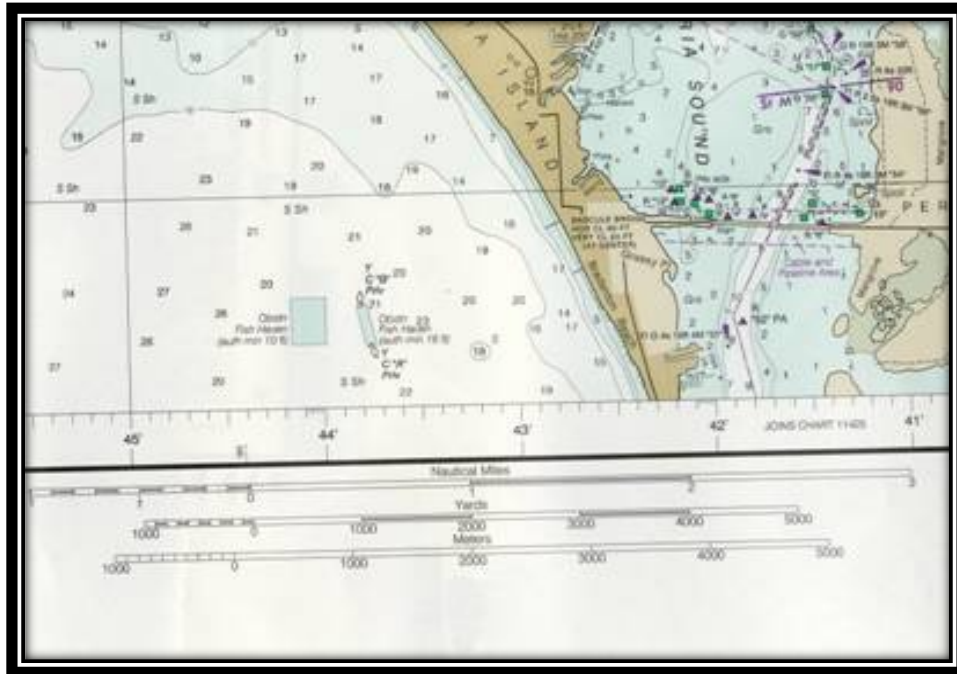
5.1 What do we use a scale of a map for?

5.2 Name three types of scales that we use in geography.

5.3 Provide an example for each of the three scales you mentioned in question 3.

5.4 Write 1: 50 000 out as a fraction.

5.5 In the ratio scale 1:50 000 - 1cm represents 50 000_____

5.6 What can you use to measure a straight line on a map?

5.7 What do you call the scale on the left of the 0 on the line scale?

5.8 What do you call the scale on the right of the 0 on the line scale?

5.9 What do you use to measure the curved line accurately on a map?

Activity 6

Scales: Line scale, word scale and ratio scale.

6.1 Study attachment 1, the map of **Africa** and calculate distances between the following by using the line scale:

    a. Luanda and Cairo
    b. Harare and Maputo
    c. Maputo and Cape Town

6.2 Study attachment 1, the map of **South Africa** and calculate distances between the following by using

the line scale.

    a. Port Elizabeth and East London

    b. Upington and Bloemfontein
    c. Polokwane and Durban

6.3 Study the **Eastern Region** map and calculate distances between the following by using the line scale:

    a. Swartruggens and Koster

    b. Hartebeespoort and Brits
    c. Sun City and Rustenburg

6.4 Use the map of the Eastern Region. Calculate the ground distance between Ventersdorp and Centurion following the N14 National road. Remember you are now measuring a winding route.

6.5 Study the three figures on attachment 1 and answer the following questions:

    a. How many cm are there in 1 m?

    b. How many cm are there in 5 m?
    c. How many cm are there in 800 m
    d. How many m are there in 2 km

6.6 Change the following ratio scales into word scales:

    a. 1:10 000 (use cm and m)

    b. 1:250 000 (use cm and km)
    c. 1:8000 000(use mm and km)

6.7 Write the following word scales in the form of ratio scales

:

    a.   One cm on the map is equal to fifty thousand cm on the ground.

    b.   One cm on the map is equal to two million cm on the ground.
    c.   One cm on the map is equal to 25 m on the ground.
    d.   One cm on the map is equal to 0,5 km on the ground.

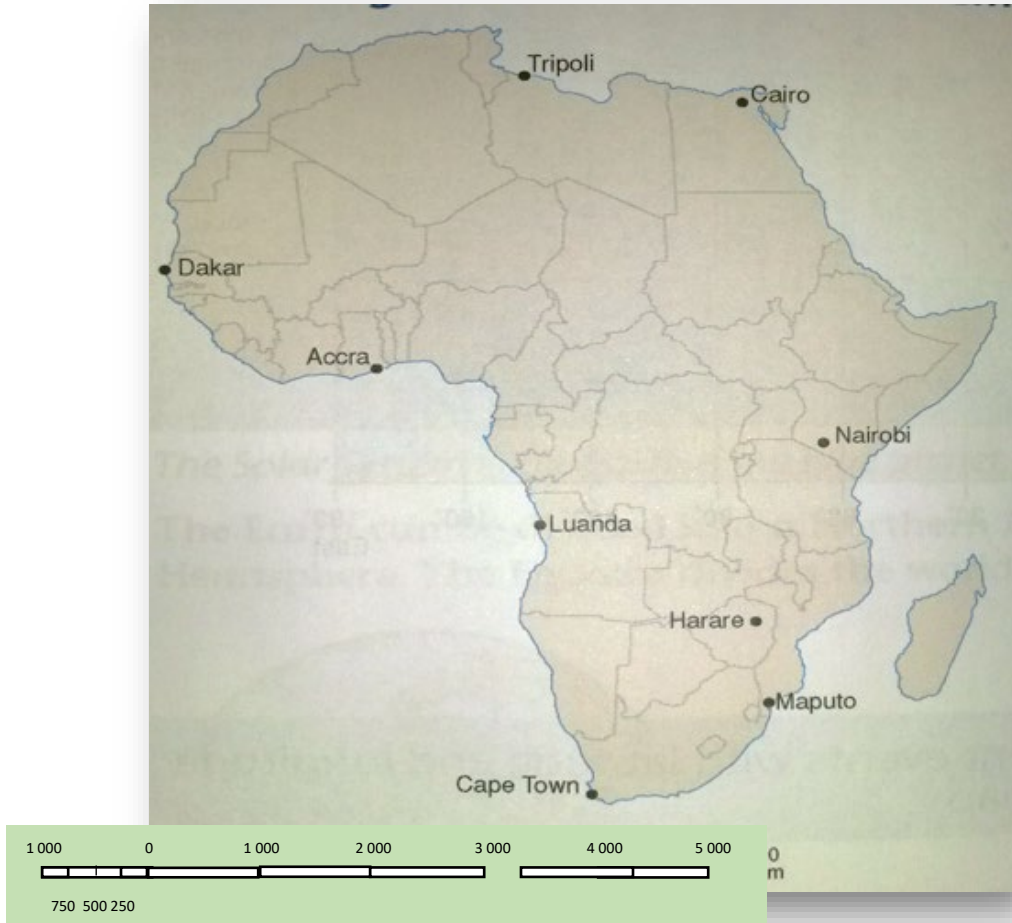6.8 Convert the following number scales from their fraction form to a ratio form.

$$a. \quad \frac{1}{1000\ 000}$$

$$. \quad b \frac{1}{300\ 000}$$

$$c \frac{1}{50\ 000}$$

Activity 6

ATTACHMENT 1

AFRICA

1 000   0   1 000   2 000   3 000   4 000   5 000

750 500 250

PLEASE NOTE THAT COPYING A MAP MAY DISTORT THE SCALE.

SOUTH AFRICA

Kilo   Hecto   Deca   (Unit)   Deci   Centi   Milli

King Henry Died Until Drinking Chocolate Milk

King Henry Doesn't Usually Drink Chocolate Milk

EASTERN REGION
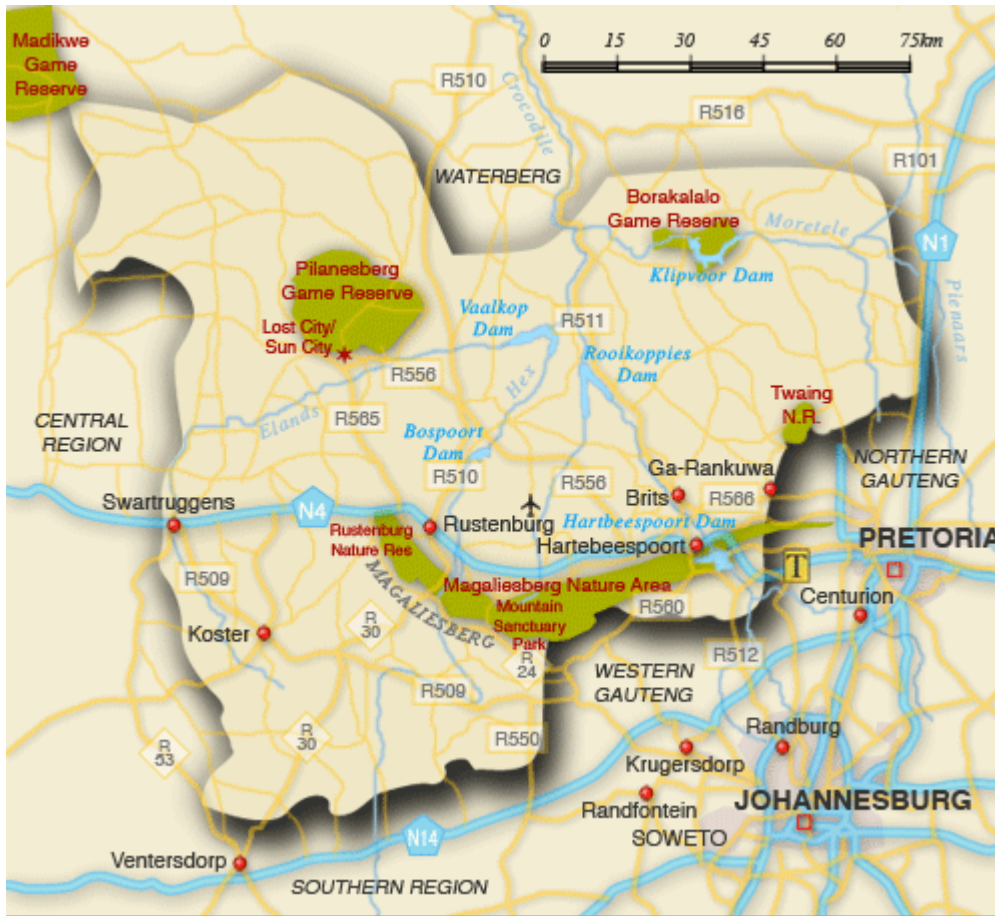
MEASUREMENT TABLE
1 cm = 10 mm
1 m = 100 cm
1 m = 1000 mm
1 km = 100 000 cm
1 km = 1000 000 mm
1 km = 1000 m

Activity 7

Implementation of the ratio scale on a map and orthophoto map.

A topographical map is the most accurate map as they are produced from detailed land surveys and aerial photographs. They show both natural and human made features

Study the topographic map of Harrismith on **Attachment 2.** Work on your own and answer the following questions:

7.1 Find the following locations on the map of Harrismith and place the alphabet letters on the exact position on the map.

X = **28°17` S and 29°05` E**
Y = **28°18` S and 29°07` E**
Z = **28°16` S and 29°06` E**

7.2 What is the scale of the Harrismith map?

7.3 Match the above mentioned scale with one of the next terms: regional scale, local scale or world scale.

7.4 What type of scale can you find on the topographic map?

7.5 How many millimetres on the ground are represented by one millimetre on the map of Harrismith?

7.6 Express the ratio scale / number scale of the map in a fraction scale.

7.7 Convert the ratio scale into a word scale using centimetres and kilometres.

7.8 Use the ratio scale to calculate the direct distance in **meter** between:

      7.8.1   **A – E**
      7.8.2   · **1731 – G**

    Include all calculations

7.9 Calculate the ground distance in **kilometres** between the following places:
7.9.1 · **1731 – C**
7.9..2 **C – G**
Include all calculations

The photo next to the map is an orthophoto map of Harrismith.

An orthophoto map is aerial photograph that has contour lines, spot heights, trigonometrical beacons and other features on it.

7.10   What is the scale of the orthophoto map?
7.11   Is this scale larger or smaller tha the ratio scale of the topographic map?
7.12   Explain your answer of question 11.
7.13   Use the ratio scale of the orthophoto map of Harrismith and express the scale in a fraction scale.
7.14   Write the orthophoto map scale in a word scale using centimetres and meters.
7.15   Use the ratio scale of the orthophoto map and calculate the direct distance in kilometres between **A** and **E.**

Include all calculations.

Activity 8

Source A
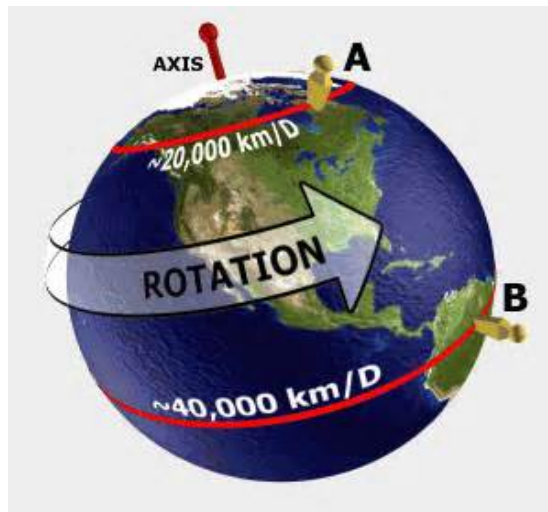
Source B
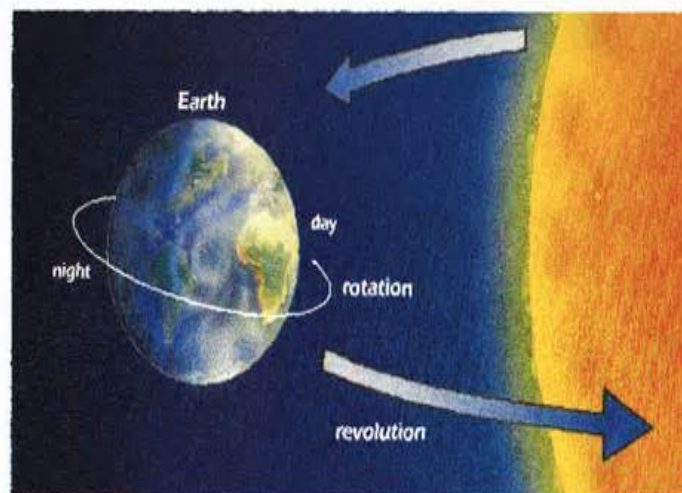
Earth rotates on its axis as it revolves around the sun.

The earth rotates around it own axis.

The axis is an imaginary line that is tilted at an angl of 23,5° to a line perpendicular to the path of the earth's orbit to around the sun

The earth rotates from West to East,the sun appear to rise in the east and set in the west.

The earth makes on complete rotation in 24 hours

At any one moment, half of the world is in darkeness and the other **half in daylight.**

This means the earth rotates through 360°of longitude in 24 hours

Activity

Study Source A and B and answer the questions.

8.1 Define the following terms

8.1.1 Rotation

8.1.2 Solstices

8.1.3 Equinoxes

8.2   Briefly explain how the earth rotates?

8.3   How long does it take the earth to rotate around its own axis?

8.4 How long does it take the earth to evolve around the sun?
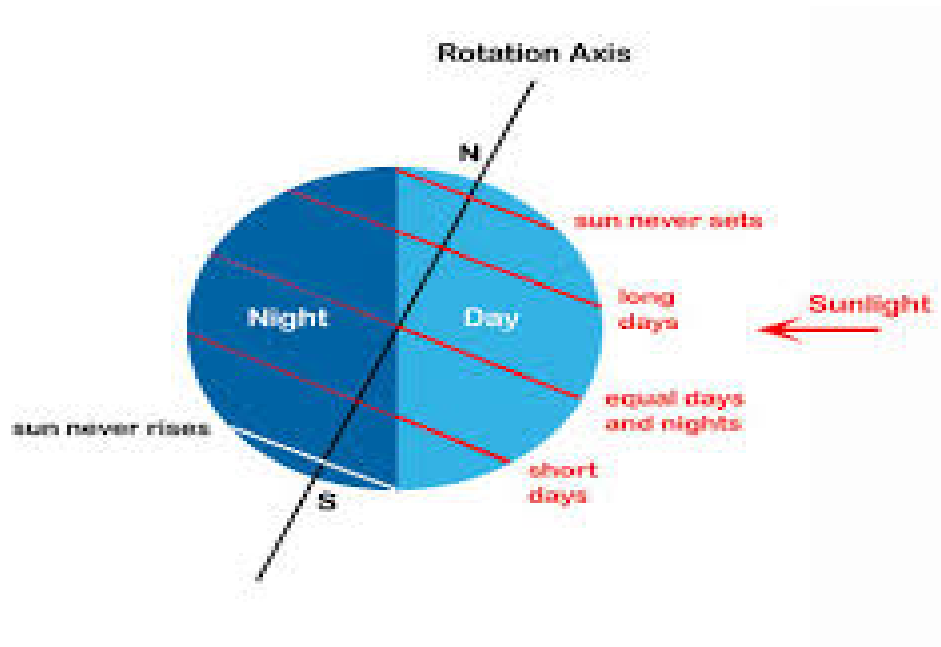
Figure 3

9.   Study Figure 3 and answer the questions.

9.1   In figure 3 describes the position of the sunrays towards the earth?

9.2   Which part of the earth receives equal days and night?

9.3   Which part of the earth experience short days?

9.4   Name any two countries that lies in the tropic of Capricorn?

9.5. According figure 3 the sun never rises in the South pole and never sets in the North pole. Does it remain like this? Motivate.

9.6   Describe briefly how day and night occurs?

9.7   Explain how the different seasons occurs?

Source A

A standard international time measurement that is used all over the world. It is the time experience at 0° longitude called Greenwich
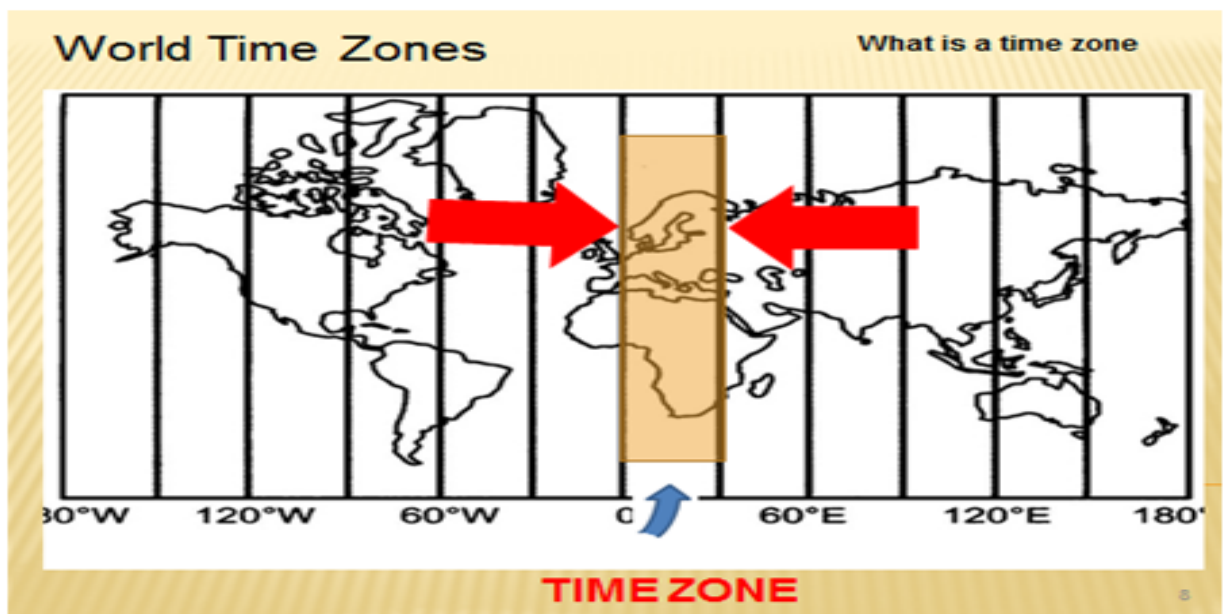
Source B

A 15° difference in longitude that results in a one hour difference in time between two adjoining longitude lines . 12 lines towards East and 12 lines west =24 lines on earth
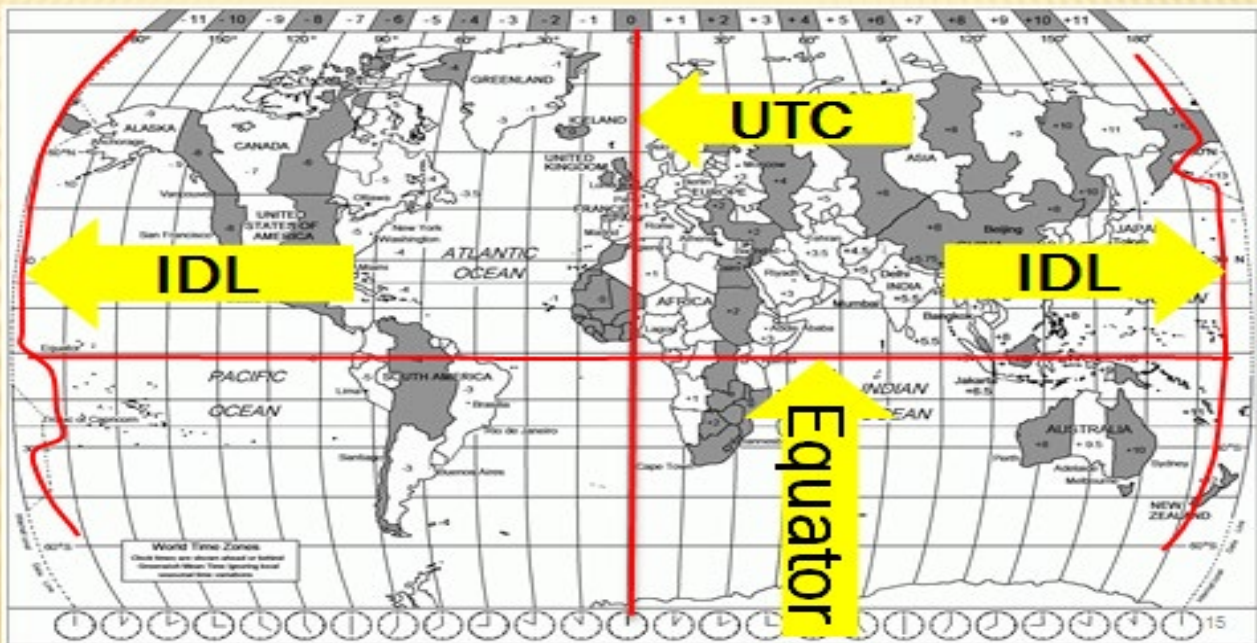
Source C

- Every time zone is relative to the Time Greenwich. Coordinated Universal Time (UTC) ormerly Green wich Mean Time, is now ued as the standard referenc for Time.

- The International Date Line (IDL) is the 180° line of longitude where the -12 and the + 12 time zones meet.

- After the longitunial lines reach 180^0 in both west and east, this line that meets are refered as the <u>imaginary line</u> that runs through the Pacific Ocean . The line is called <u>The international date line</u>. The east by international agreement,thecalender date is one day earlier than the west.

- East of IDL is one day ahead of the western side of the IDL.

- If you leave America on Tuesday for Japan, (west) it would be Wednesday if you cross the IDL.

- If you leave for America on Monday from Japan, (traveling east) you would arrive in America on Sunday.
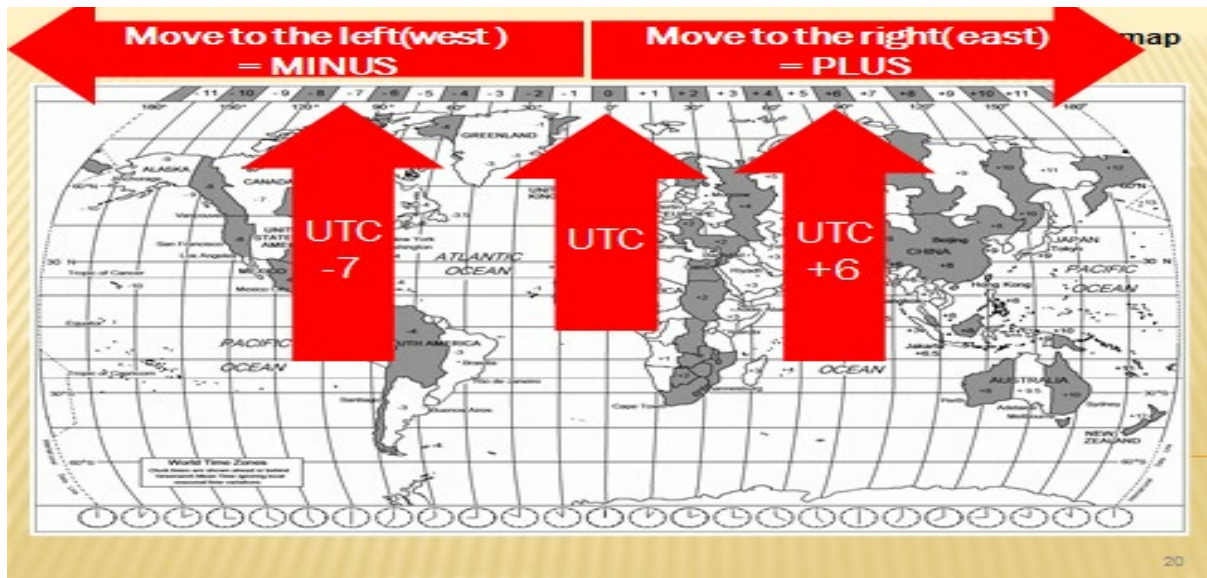
If you move to the right (East) from the UTC – Prime meridian you will add the time means the countries will be a few hours or a day ahead.

If you move to the left(West) from the UTC- prime meridian you will minus the time – means the countries will be few hours or a day behind.
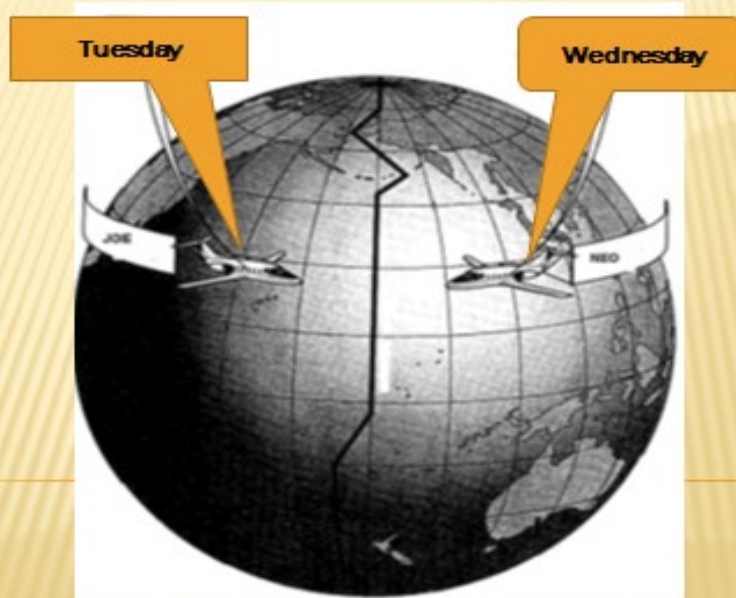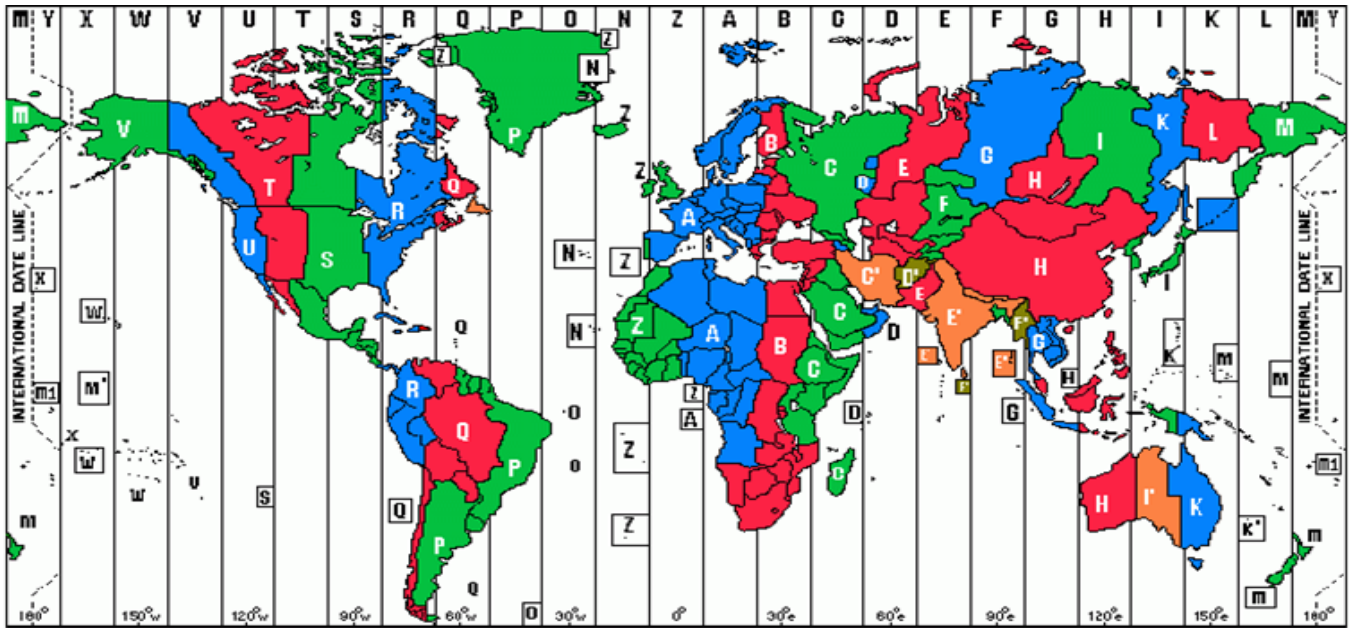
- A 15° difference in longitude that results in a one hour difference in time between two adjoining longitude lines

- All the places/countries in A will have the same time as it lies between the 15° and the 30° line.

- All the places /countries in K will have the same time as it lies between the 135° and the 150° line.

- If you move beyond the IDL 180° you will repeat a day as you than move on the west side of the ID
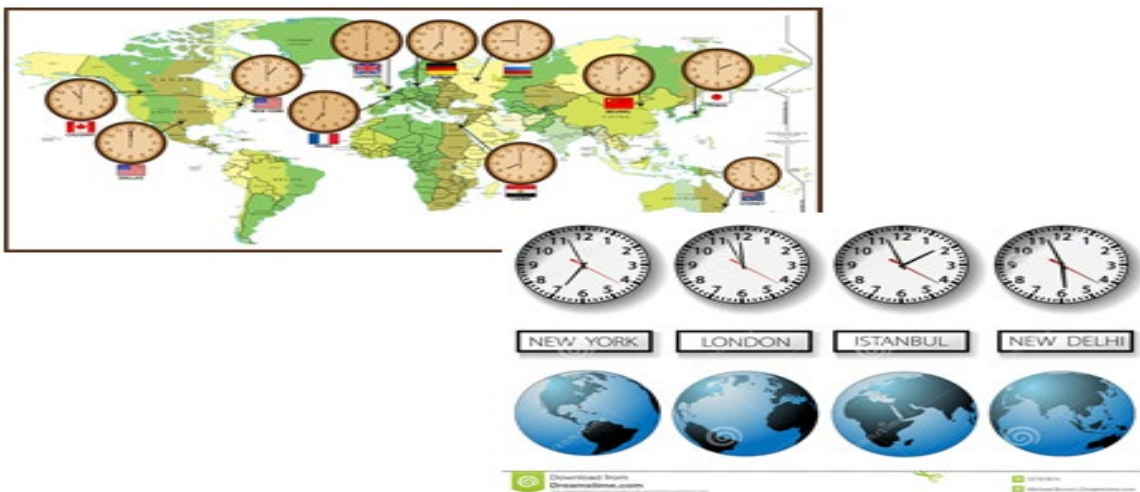
Scenario:

If we left New York at on Monday and travel west ward around the world to Australia, we would cross the IDL and it would be Tuesday.

If we leave 7h00 on Monday morning from New York to London it will be 12h00 (afternoon) in London

Explain the following example to learners

Example: South Africa is on the 30^0 E, if it is midday at the GMT than it will be 14h00 the afternoon. Another country on the west side on the 30^0 W, will have 10h00 the morning.

If its 10h 00 in South (30^0E) what time will it be in London (0^0)

Difference in longitude = 30^0

Difference in time = 2 hours

London is west from South Africa and will be 2 hours earlier than

The time in London will be 8h00.

Source 10.1
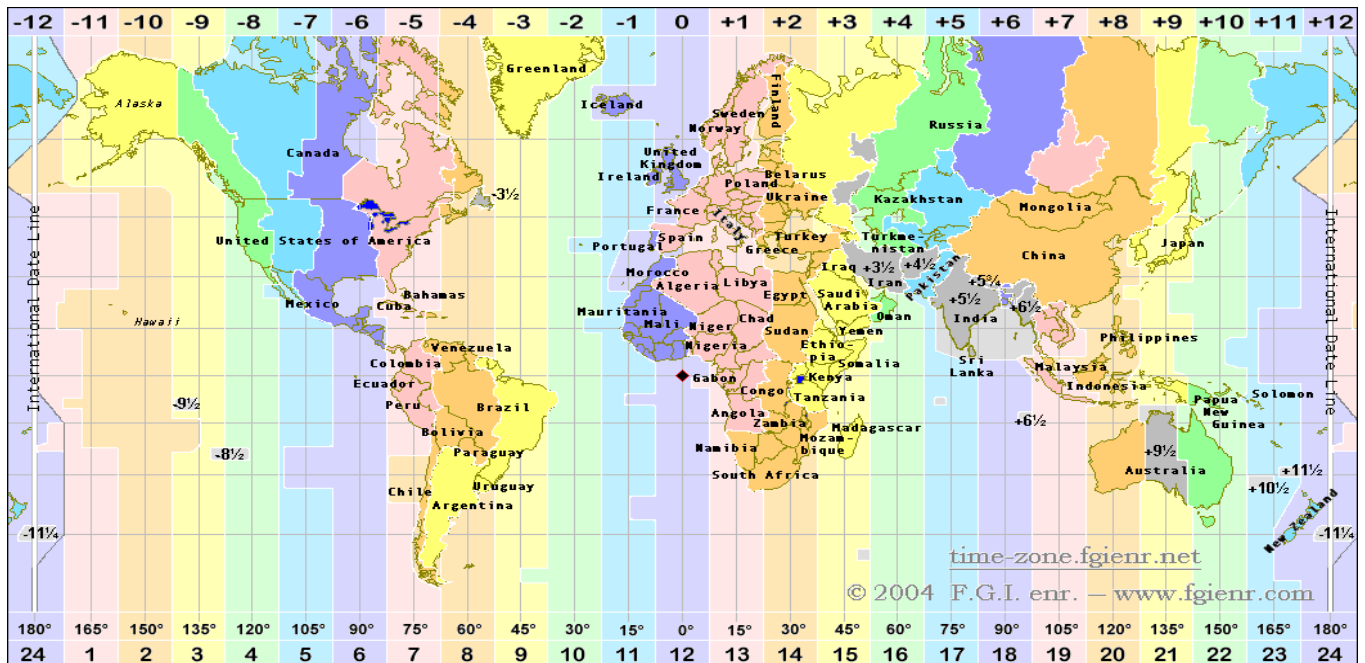
For every 1° longitude line is equals to <u>4 minutes</u>: Therefore for every 15 °longitude line is equal to <u>1hour/ 60 min</u>

Activity 10

Study the world map (Source 10.1) and determine the International time zone.

10. What do you understand with the following:

10.1 International time zone.

10.1.2 IDL

10.1.3 GMT

10.1.4 Standard time

10.1.5 UTC

10.2. Complete the following sentences. By filling in the words. (earlier, later, add, subtract.)

10.2.1 Place that is East of South Africa are _____ that means we must _____   time

10.2.2 Places that West from South Africa are----------------- that means we must _____   time.

10.3 Why is there time difference between the East and the West?

10.4 If it is 13h00 in South Africa what time will it be in Australia?

10.5 If it is afternoon in South Africa what time of the day will it be in a) Brazil and b) New Zealand?

10.6 If it is 6h00 the morning in the USA what time will it be in Angola

10.7 On what degree line of longitude is Argentina in South America located?

10.8 Which line of longitude is South Africa located?

Activity 11

Refer to the source below and answer questions set.
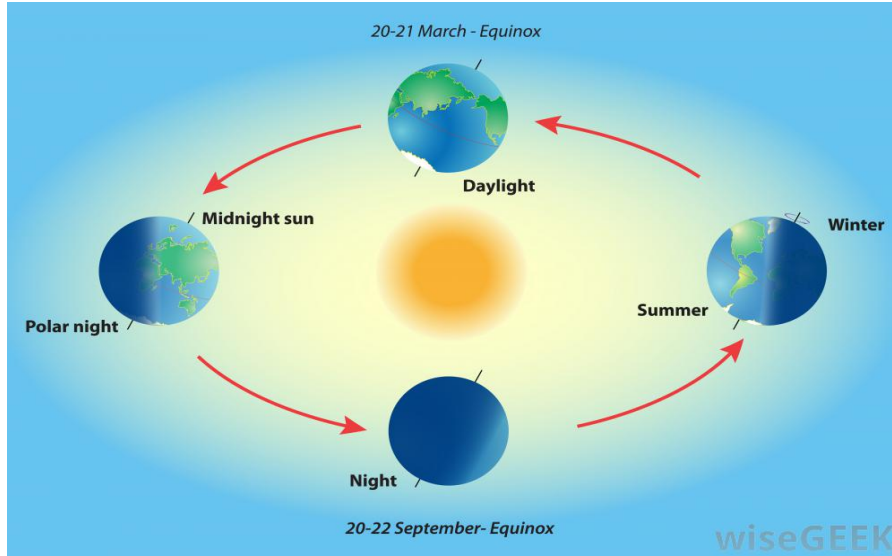
11.1 On 21 March what season is experienced in South Africa?
11.2 Explain how are the temperatures in South Africa during the season mentioned above?
11.3 How will be the places away from the sun? Explain your answer.
11.4 Explain the reason for places to receive the same amount of heat from the sun.

Activity 12

Source A   Source B
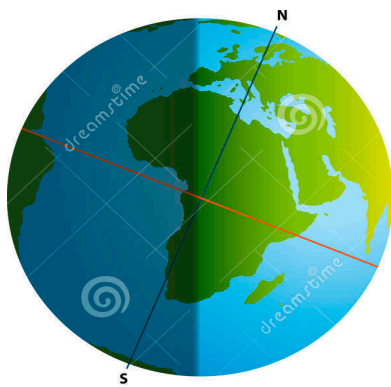
summer solstice (June 21)   winter solstice (December 21)
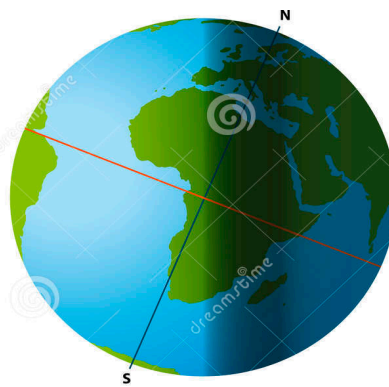
12.1   If one says the solstice in source A refers to South Africa. Is that true or false?
12.2   If the answe in 1. above is false, provide the correct answer.
12.3   In source A what season is experienced by the 2 continents in the source.

12.4 Explain weather conditions of winter solstice in Source B for the continent facing away from the sun.

Activity 13

CLASSWORK
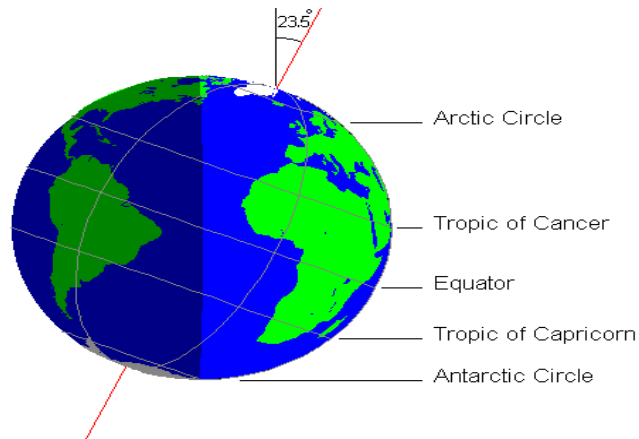
13.1   Name the 2 continents experiencing night.
13.2   Name the 2continents experiencing day.
13.3   Write a papragraph to explain how the tilt of the earth's axis and the revolution of the earth cause
           the length of day and night to change at different times of the year.

ACTIVITY

Refer to the South Africa from the source provided and answer questions set:
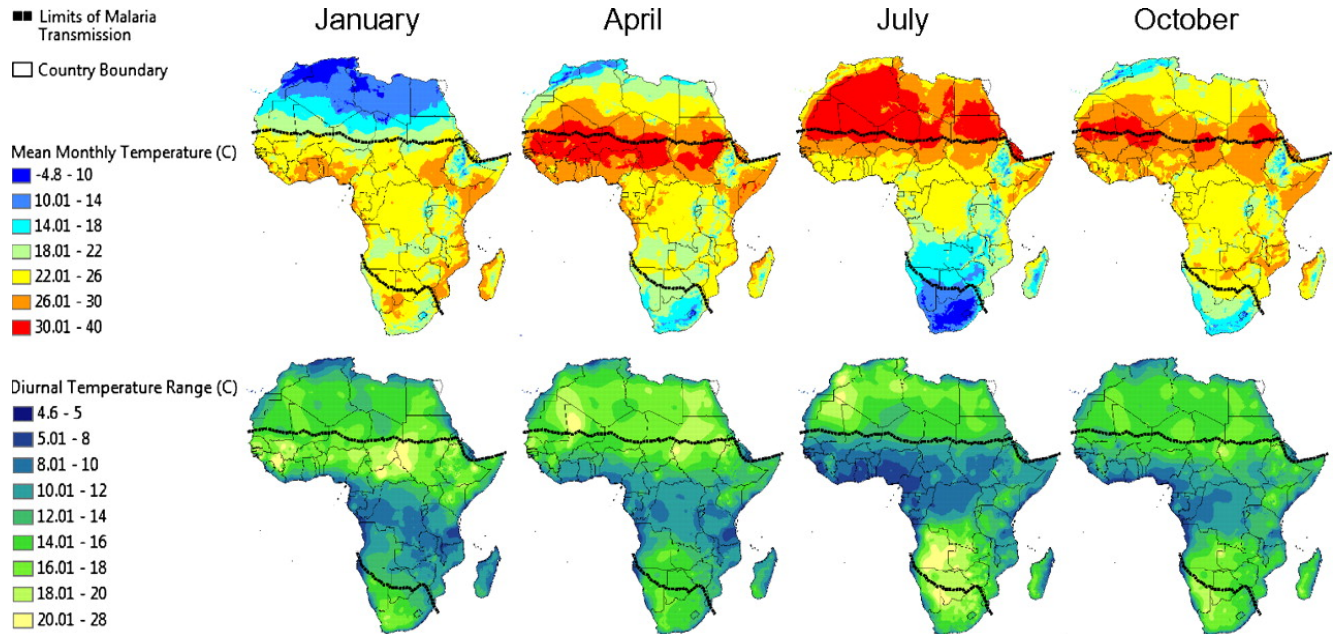
14.1   During which month is winter experienced in South Africa?
14.2   What is the lowest temperature reading during that month?
14.3   Explain why are tempearuture like that during the month identified in 1 above.
14.4   What is the maximum temperature in South Africa in January?
14.5   What is the maximum temperature reading in July in South Africa?

Activity 15

ACTIVITY
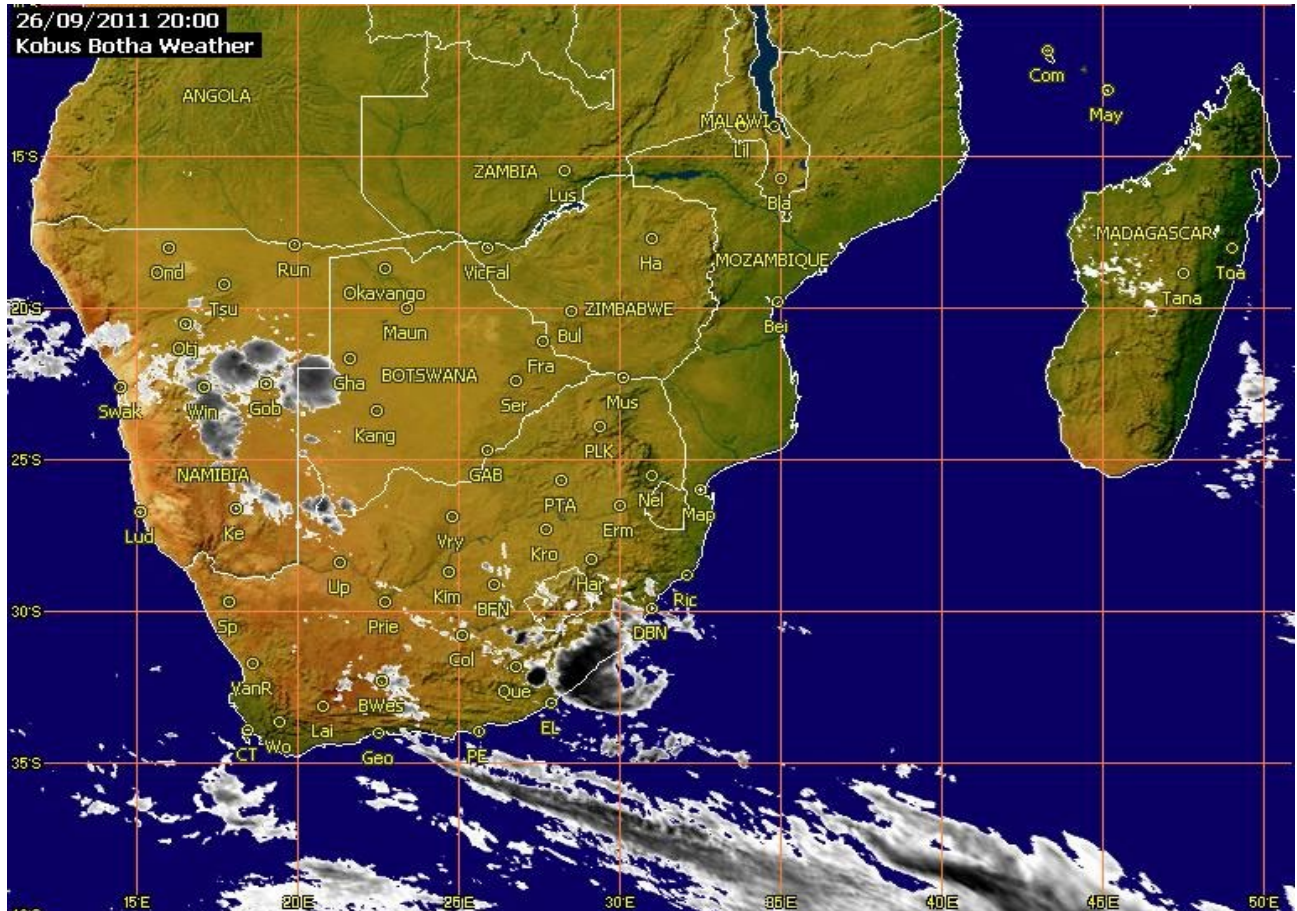
Refer to the Satellite image above and answer the following questions:

15.1   In which season was the information from the satellite image recorded. (Refer to the left hand
          corner of the satellite image.
15.2   What has been added to this satellite image to make it more useful.

Between which latitudes are most clouds in the eastern part of South Africa

GRADE 9 – Mapwork

Grade	Policy Content	No. of hours allocated for content	No. of periodss to complete content (Note: Periods used is 30 min)	Page numbers in which content is covered	Lesson plan numbers in which content is covered
9	Contour Lines	3 Hours	6	32 - 51	1 - 6
9	1:10 000 Orthophoto maps	3 Hours	6	52 - 65	7 - 12
9	1:50 000 Topographic maps	4 Hours	8	66 - 91	13 – 20
9	Information from maps and photographs	2 Hours	2	91 - 96	21 - 24

Concept of contour lines

Leran some facts about contours

- ✓ Contours are **imaginary lines** and do not actually occur on the ground.
- ✓ Contours are shown by **brown lines** on a 1: 50 000 map.
- ✓ Contours **cannot intersect** (cross) each other.
- ✓ Contour lines are **continous and closed** except when they run on to the edge of the page.
- ✓ Contours are around the map. Numbers on conrtour are therefore printed right way up, upside down or even sideways. This indicate which of the other contour lines **is higher and which is lower**.
- ✓ The way in which the contours are read tells us the direction of the slope.
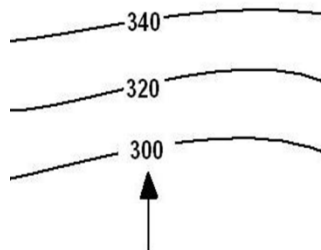
The numbers face toward you as you move UP the slope.
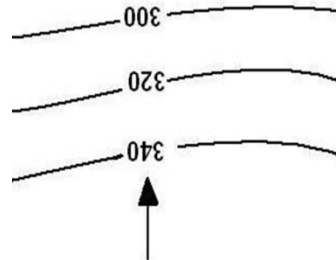
The numbers face away from you as you move DOWN the slope.

- ✓ When contour lines are close together the slope is steep, when they are far apart the slope is gentle.
- ✓ Certain contours are printed in bold print (darker and thicher) to help the map reader calculate altitude ranges more quickly. These are callled **index contours**. On a **1 : 50 000** map they are **100m** apart and on a **1 : 10 000** orthophoto they are **20m** apart.
- ✓ The difference in altitude between successive contours are known as the **contour interval** (CI)

Activity 17
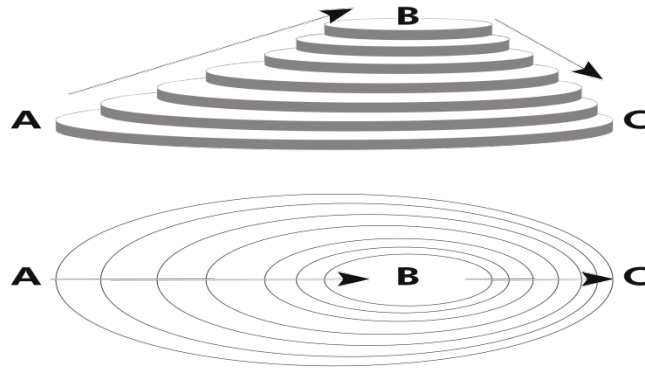
17.1.   Add the following contour values 220, 240, 260, 280, 300, 320 and 340 on to the sketch. Use a darkbrown colour pencil to indicate the index contour and lightbrown to indicate the rest of the contour lines.

17.2.   Answer the following questions:

17.2.1. Where is the steep slopes, the gentle slopes. Use directions (A-B), (B-C) in your answer.

17.2.2. Is this a mountain, hill or valley? Give a reason for your answer.

17.2.3. Where will a waterfall be found? Give a reason for your answer.

Activity 18

18. Use the diagram and answer all the questions.

18.1.   Give the height of the following places.

18.1.1. Place F

18.1.2. Place B

18.1.3. Place D

18.1.4. The highest point.

18.2.   List all the points at the same height as E.

18.3.   List all the points that are higher than F.

18.4.   List all the points that are lower than B.

18.5.   Where is the heighest point on the map?
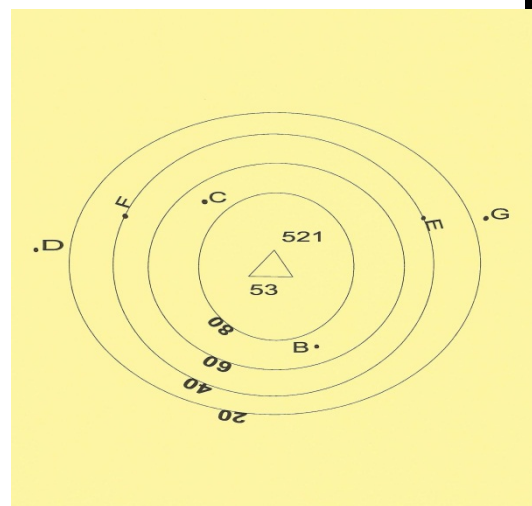
Activity 19

Fill in appriopriate contour line values for each contour line along the **red line**.
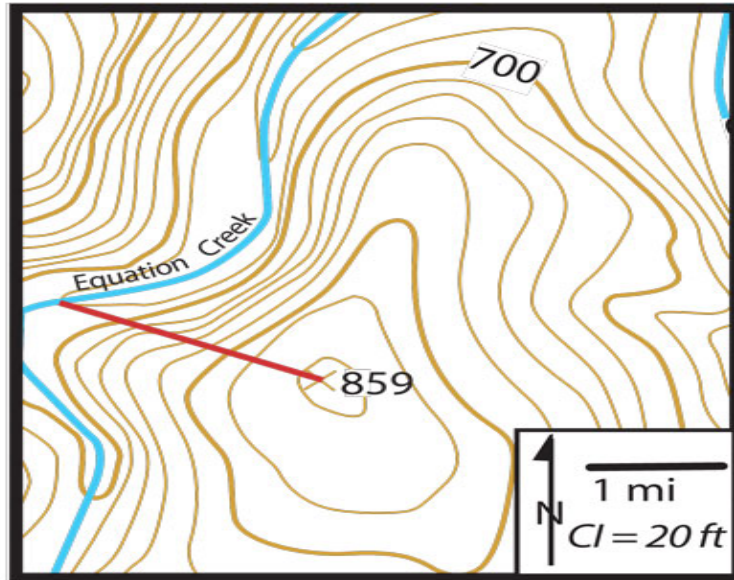
Topographic Map of part Math State Park

Activity 20

You are a developer and you are planning to develop this island

 into a holiday resort. Answer the following questions **and**

motivate each answer. Indicate on the map the different areas

as numbered on the questions..

1. Where will the natural bay be situated?
2. Where will he caravan park be situated?
3. Which area will be ideal for a helicopter landing sport?
4. Which area will be ideal for rock climbing?
5. Where will you build the lighthouse?
6. Which area is the ideal place to develop the beach?
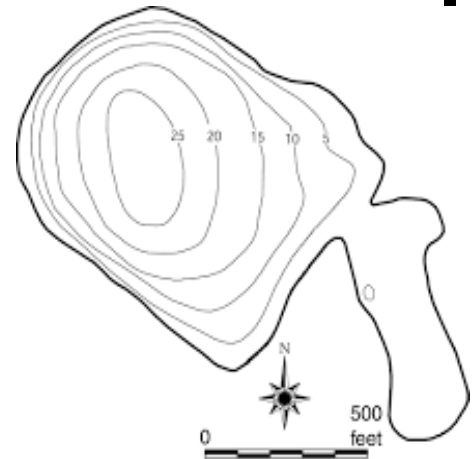
Activity 21

21.1.   Compare the following diagrams that were drawn with the same contour interval and scale

X	Y	Z
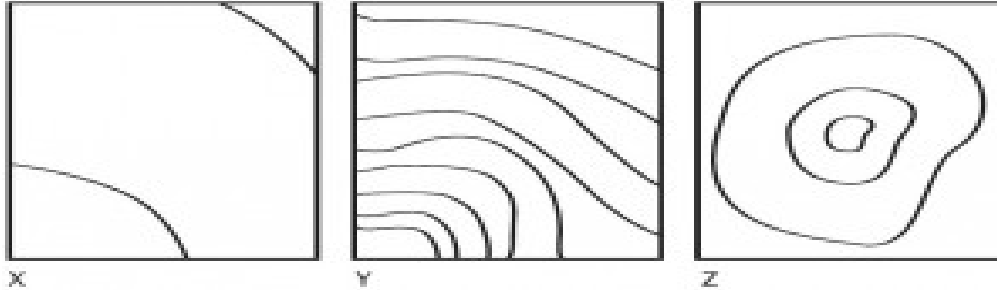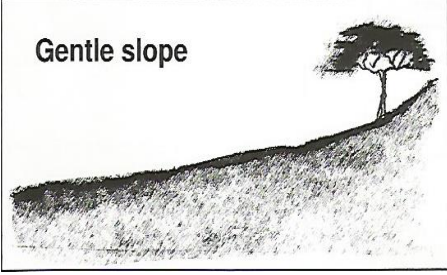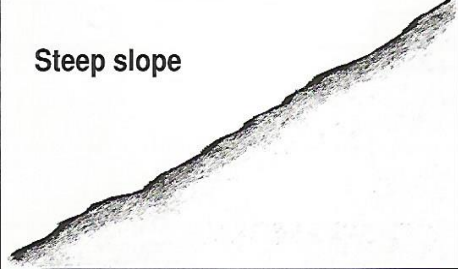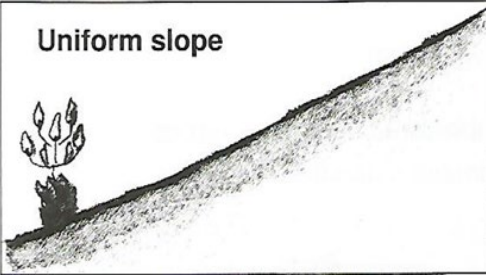
21.1.1. Which shows fairly flat land?
21.1.2. Which shows a hill or valley with a gentle slope?
21.1.3. Which shows a steep hillside?

21.2.   Look at the diagram below and answer the following questions:
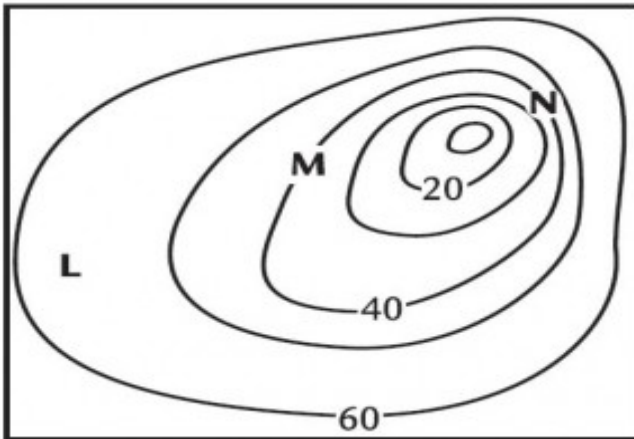
21.2.1. What kind of landform is this?
21.2.2. Which location on the map (L, M, or N) marks the steepest area?
21.2.3. Which location on the map (L, M, or N) marks the flattest.
21.2.4. Identify the slope between N and M
21.2.5. Identify the slope between M and L

Steep and Gentle slopes

	• Contour lines are far apart. • Variation in altitude (height) .
	• Contour lines are close together. • Variation in altitude (hight) is great over a short distance.
	• A slope that is the same throughout. • Also called an even slope. • It may be Steep op Gradual. • The contour lines are more or less equal distance apart over a great distance.

Activity 22

Follow the instructions and draw a map, of an island,

with the following features.

- Use your own contour line values
- Draw a **steep** hill on the **west** side **and** a **gente** slope on **the east** side
- Add a waterfall and a Natural bay
- Indicte the hiking trail on the map with the correct symbol
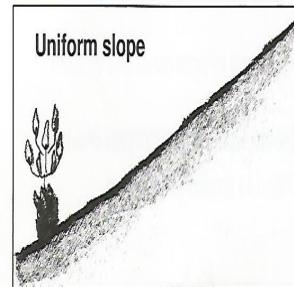- Add a lighthouse and rocky outcrop around the lighthouse.
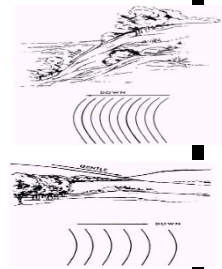
Activity 23

Draw and fill in the correct contour values on the diagram and indicate if it is a steep or gentle slope. Use a contour interval of 10 m.
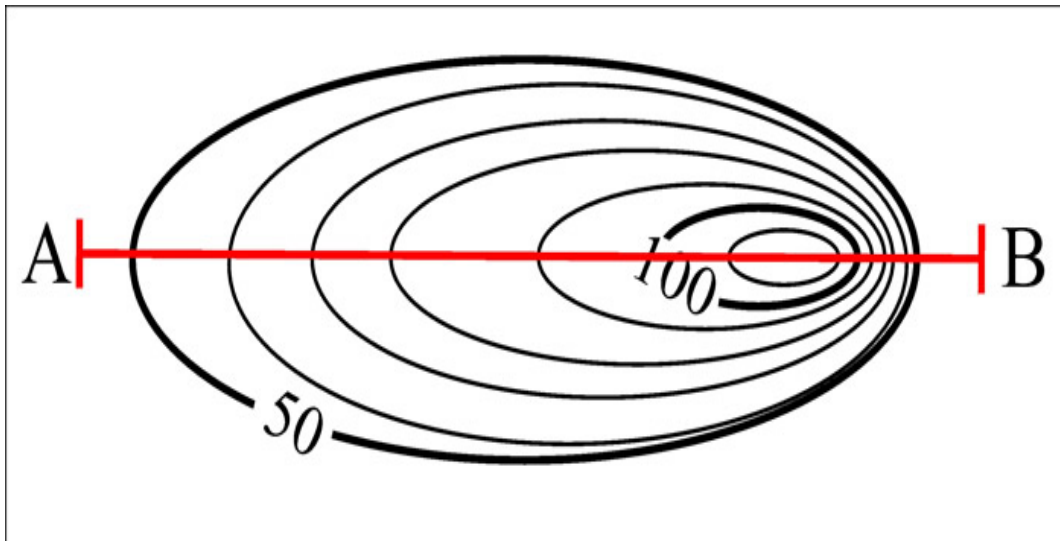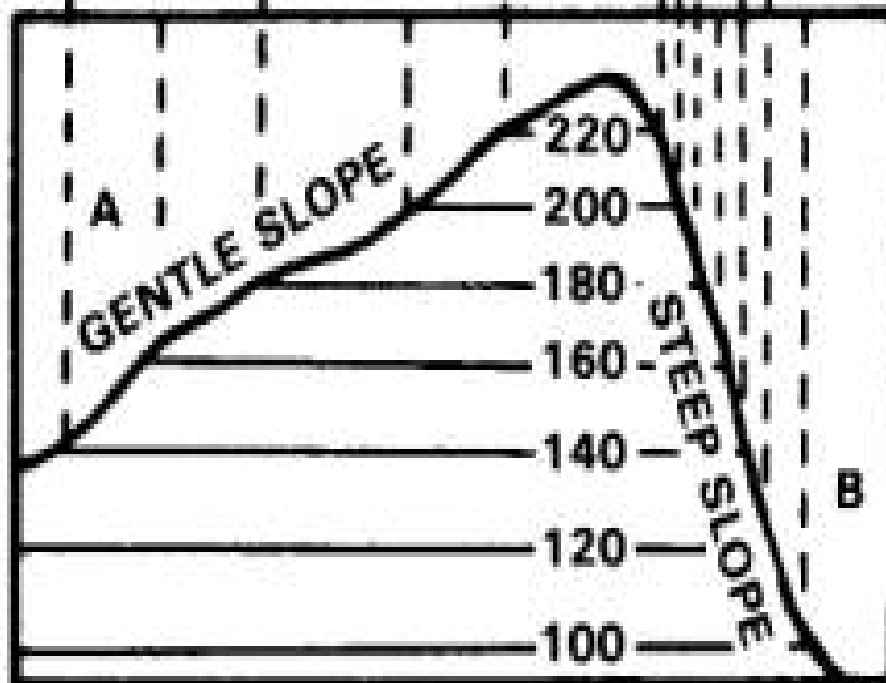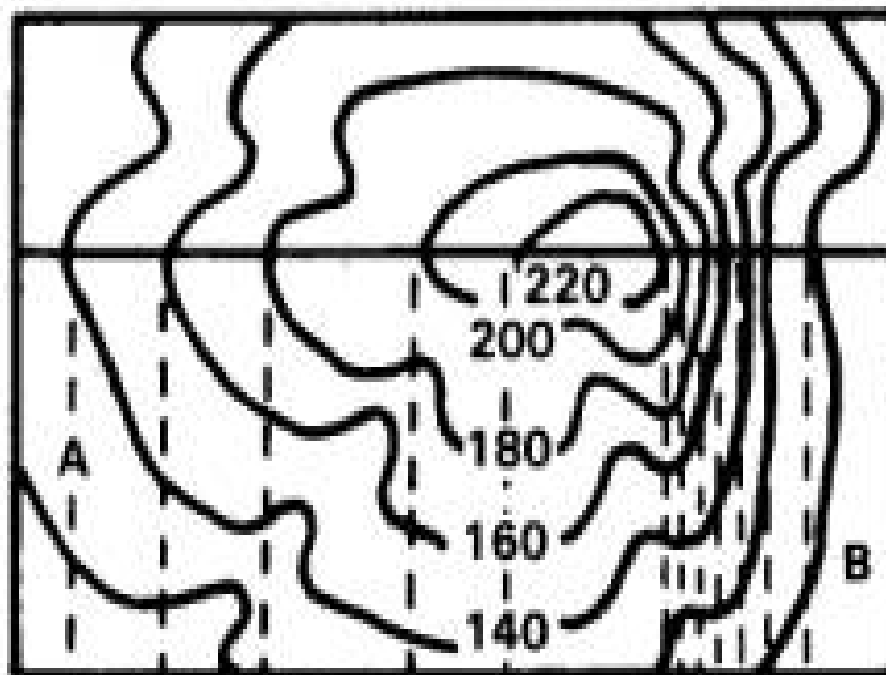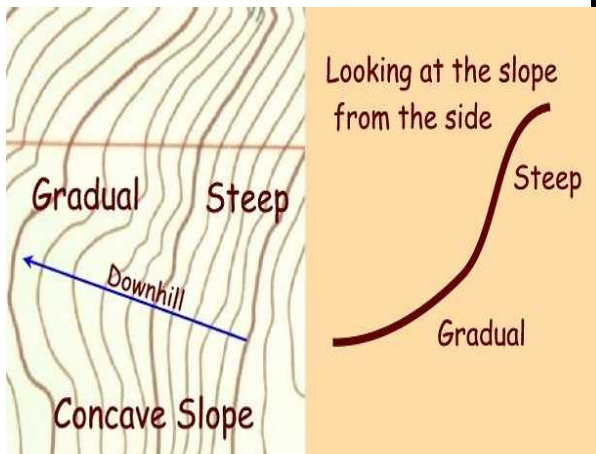
Slopes

Contours give us an indication of slopes. It is thus important for you to be able to distinguish the variuous types of slopes.
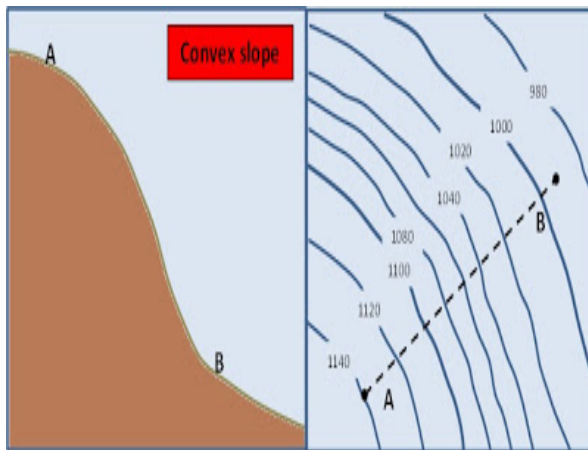

Gentle slope
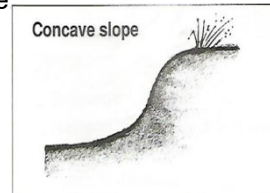

Uniform slope

Steep slope

Concave slope

Uniform slope

Convex slope

Terraced slope

HILL AS SHOWN ON MAP

220
200
180
160
140

A
B

GENTLE SLOPE
220
200
180
160
140
120
100
STEEP SLOPE
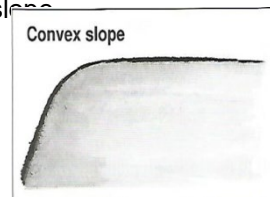A
B
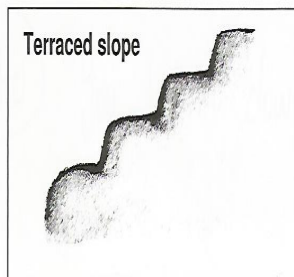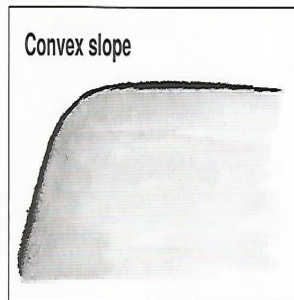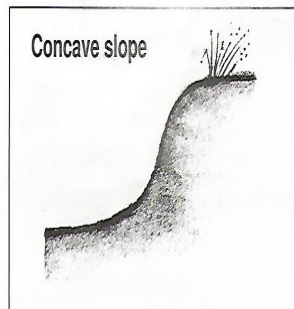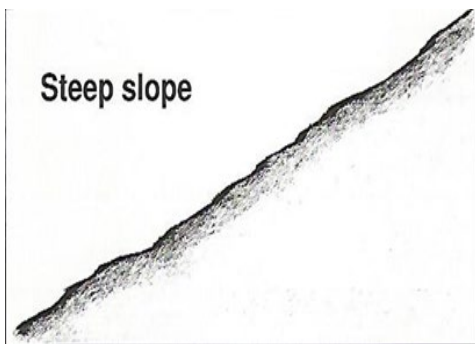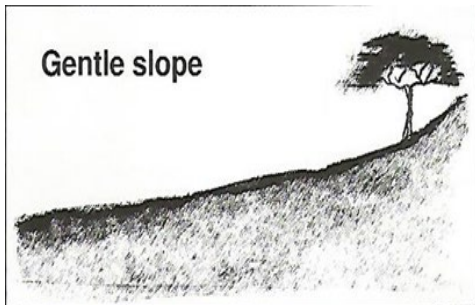
|	**Concave**
	• It is in the form of an inward curve. • Contours sre spaced far apart at low altitude (height) altitude and are much closer together at a high altitude
	Convex
	• It is in the form of a outward curve. • At the bottom of the slope the contours are close together, they become futher apart as one moves up-slope
	Terraced
	• Also known as a stepped slope. • Alternative steep and gradual. • Some contours are clor together, others far apart.
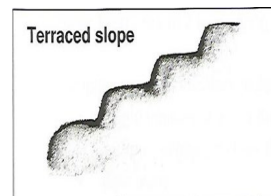
Activity 24

Study the contour map extract of Tafelberg.

24.1.   Indicate the following features with different colouring

o   **Non perennial rivers** with a **blue**

o   **Track and hiking** with **black**

o   Priminent **rock outcrop** with **yellow**

o   **Steep slopes** with **brown**

o   **Gentle slopes** with **green**

o   **Trig beacon 70** with **pink**

o   Trig beacon 315 with **red**

o   **Dam and damwall** with **dark blue**.

o   **Excavation** with **orange**

24.2.   In which province is Tafelberg situated?
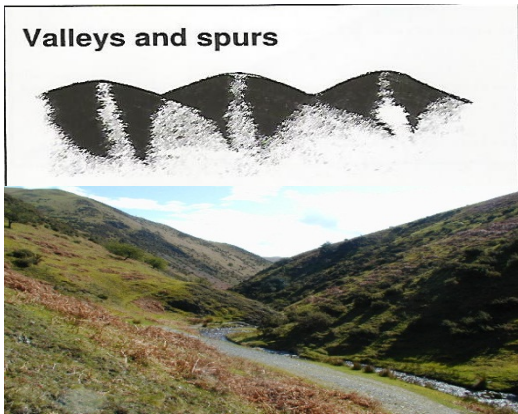24.3.   Is the airport in Cape Town an International Airport?
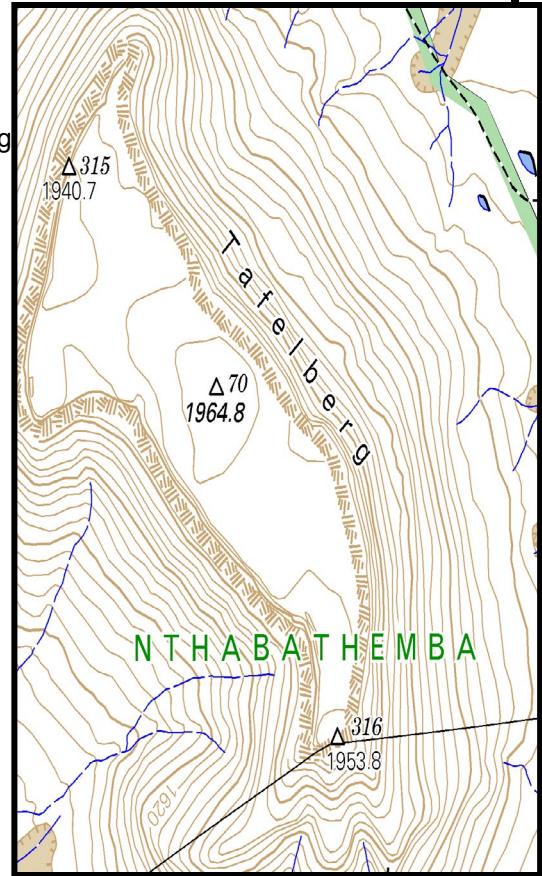
Contour lines and a side view of a landform
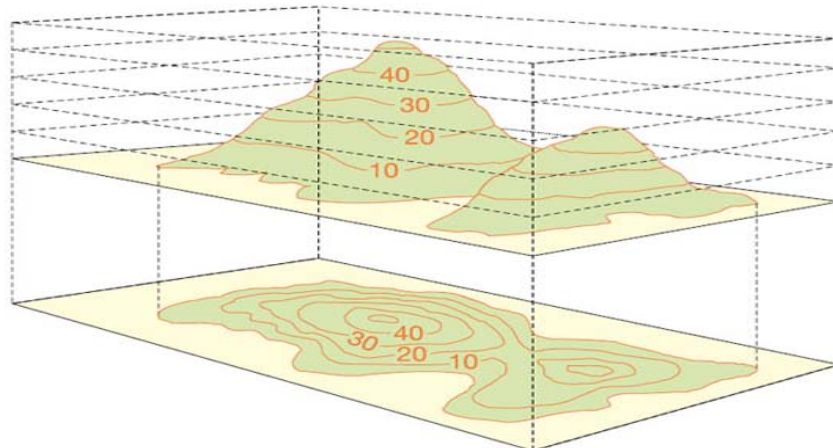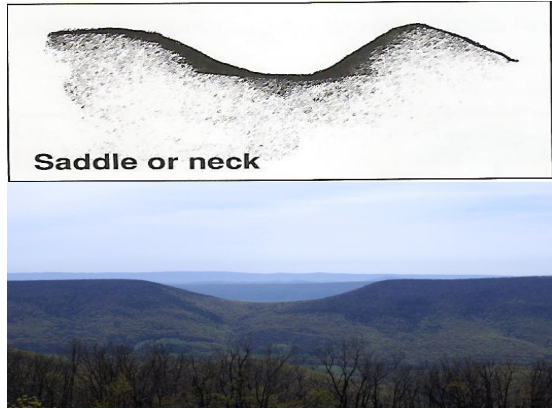
<u>Landforms</u>

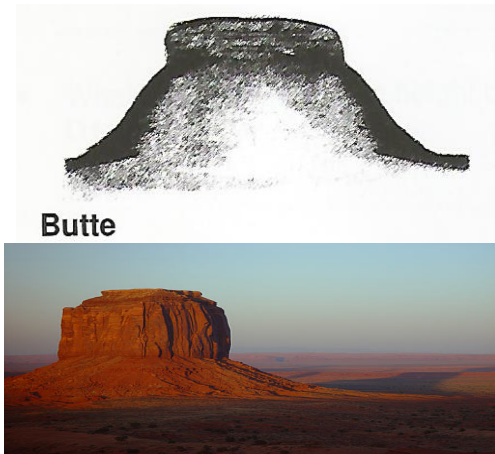Contours give a clear indication of the topography.

Valleys and spurs

Saddle or neck
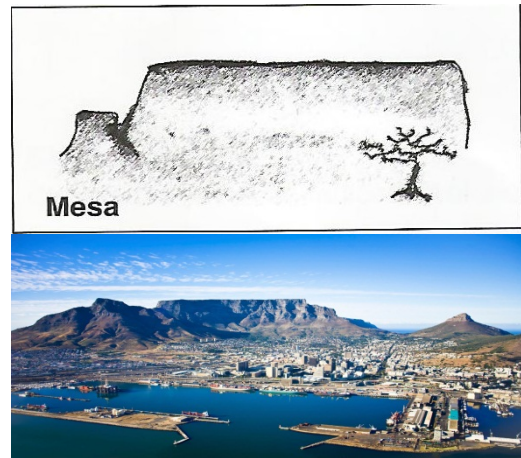

Butte

Mesa

Gap or poort
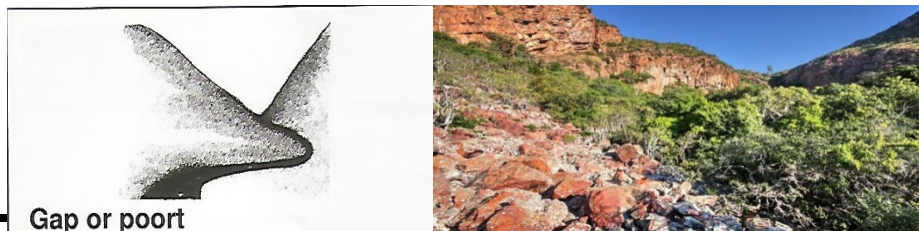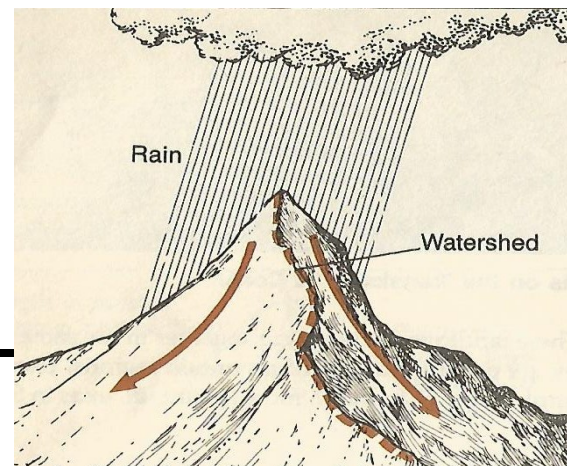
River valleys and spurs

| Spurs	
	• A spur is a long, gently sloping strip of ground that runs down from a hill to lower grounds. Sours often provide access to and from the high grounds, for walkers and for roads. • A spur is recognized when the "V" shape of the contours points to the lowest area.
Valley	
	• A Valley is formed by flowing water. It is usually V-shaped. The exact shape will depend on the characteristics of the stream following through it. Rivers with steep gradients as in mountain ranges, produce steep walls and a bottom. Shallow slopes may produce broader and gentle valleys • A valley is recognised when the "V" shape of the contours points to the highest area.
Watershed	
	• Also known as a divide. • It is a ridge that divide one drainage basin from the other. • The watershed is the highest point on the mountain from where the water flow down the mountain on both sides.

43

| | |
| | |

Activity 25

Map 2329BB Makhado
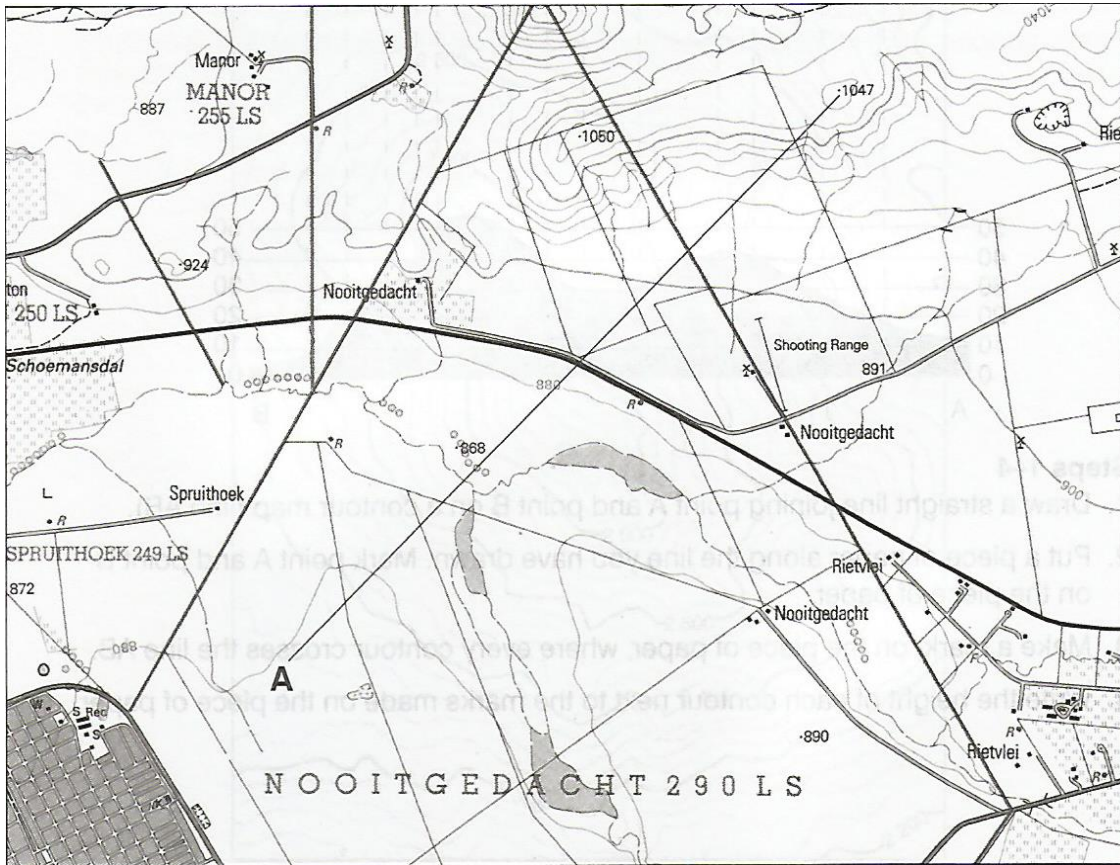
25.1. In which province is Makhado situated?
25.2. Describe the slope at spot-height **1060.**
25.3. Will any agricultural activities take place in this area? Motivate your answer.
25.4. Describe the slope at spot-height **890.**
25.5. Will any agricultural activities take place in this area? Motivate your answer.
25.6. Study the south western area of this map. Describe the land use of this area.
25.7. Define the word "shooting range" Why is the shooting range situated in that area? (distance from town, contour value)

Activity 26

Use the diagram as a reference. Givee the definition of a watershed.
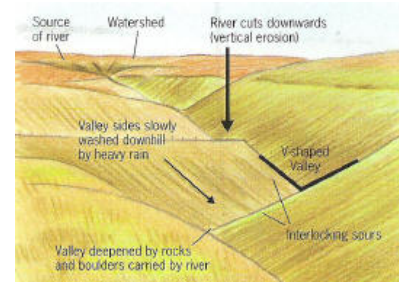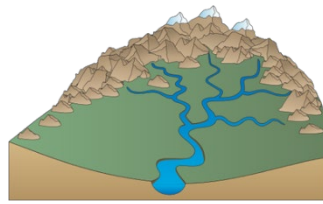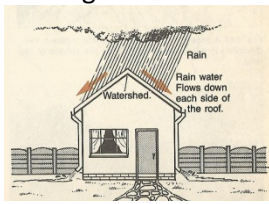
An Example of how your work should look

Upper valley characteristics

"V"shape valley, vertical erosion dominant

Interlocking spurs

Slumping and landslides - very active hillslopes

Terracettes formed by soil creep

Narrow, shallow channel, low velocity and discharge

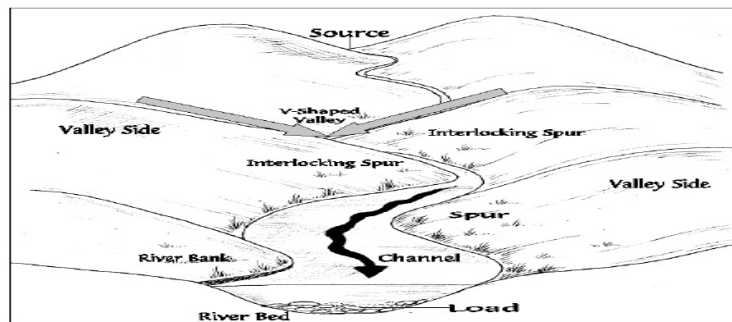Large bedload derived from upstream and from valley sides

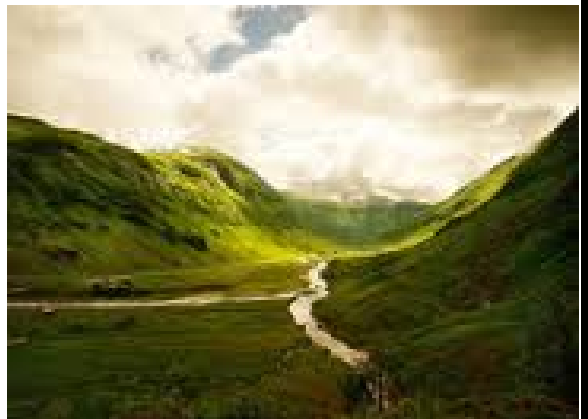## V-Shaped Valleys and Interlocking Spurs
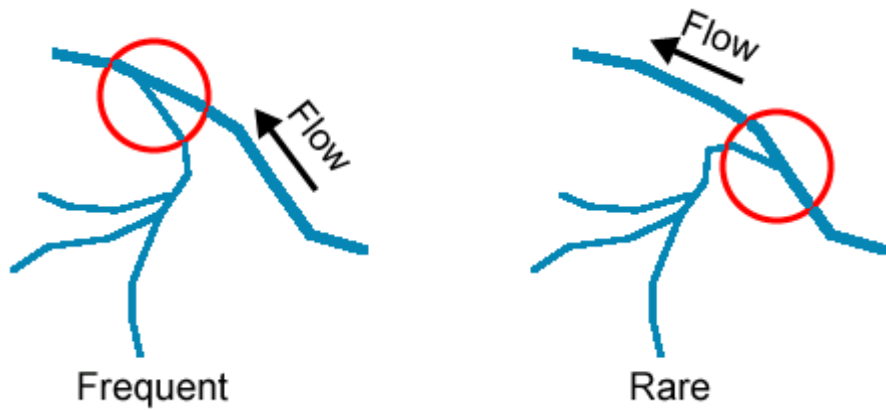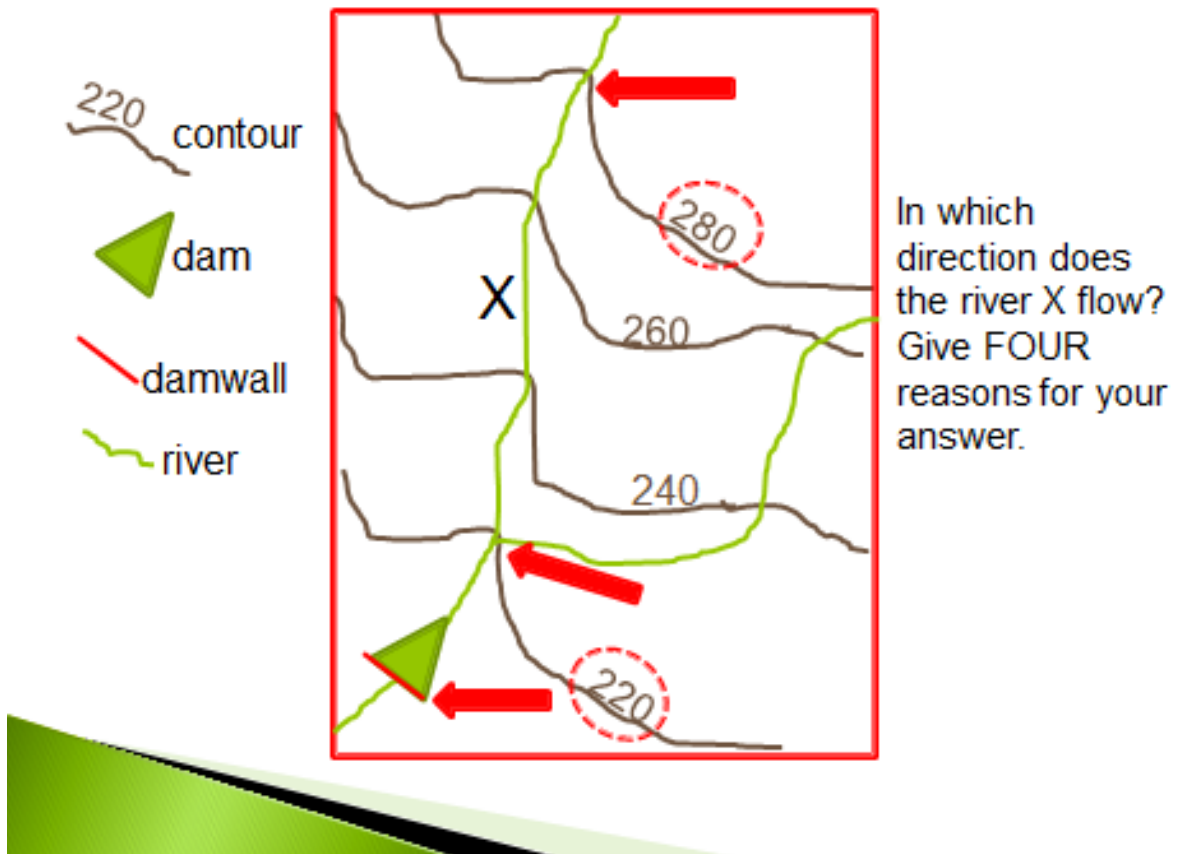
River valleys and spurs

Spurs and Interlocking Spurs

- ✓ Spurs, and interlocking spurs, are features found in the upper reaches of river valleys. They are erosional features, meaning that they are formed by water flowing over the land and eroding it as it moves.

- ✓ Imagine two gently sloping hillsides forming the sides of a small valley. As rain falls on these valley sides, the water runs down hill (it's called run off) towards the bottom of the valley where it joins a small stream. The main process at work in the stream is the downward, or vertical, erosion of its bed. As well as eroding downwards, the stream twists and turns as it finds a way round obstacles such as areas of more resistant rock.

- ✓ The water flows faster around the outside of the bends than it does round the inside of them, causing undercutting on the outside of the bends and deposition on the inside edges, or slip-off slopes. This eventually leads to the creation of spurs; ridges of land sloping down to the stream on either side of the valley.

- ✓ Because the river meanders from side to side, the spurs form first on one side of the valley, then the other, so they alternate from bank to bank. This means that if you look along the valley the spurs seem to join together, or interlock. Hence they are called 'interlocking spurs'.

- ✓ Direction of river flow

River Valleys and Spurs

Direction of river flow

220 contour

dam

damwall

river

In which direction does the river X flow? Give FOUR reasons for your answer.

Frequent

Rare

Flow

Flow

Features of a river valley

- Source – where a river starts
- Spurs – ridges of land around which a river winds.
- Valley sides – the slopes on either side of a river
- V-shaped valley – the shape of a valley in its upper course
- Channel – the course of a river
- River banks – the sides of a river channel
- River bed – the bottom of a river channel
- Load – Material that is carried or moved by a river

Interlocking Spurs

v-shaped valley

Photo source: www.geographyphotos.com
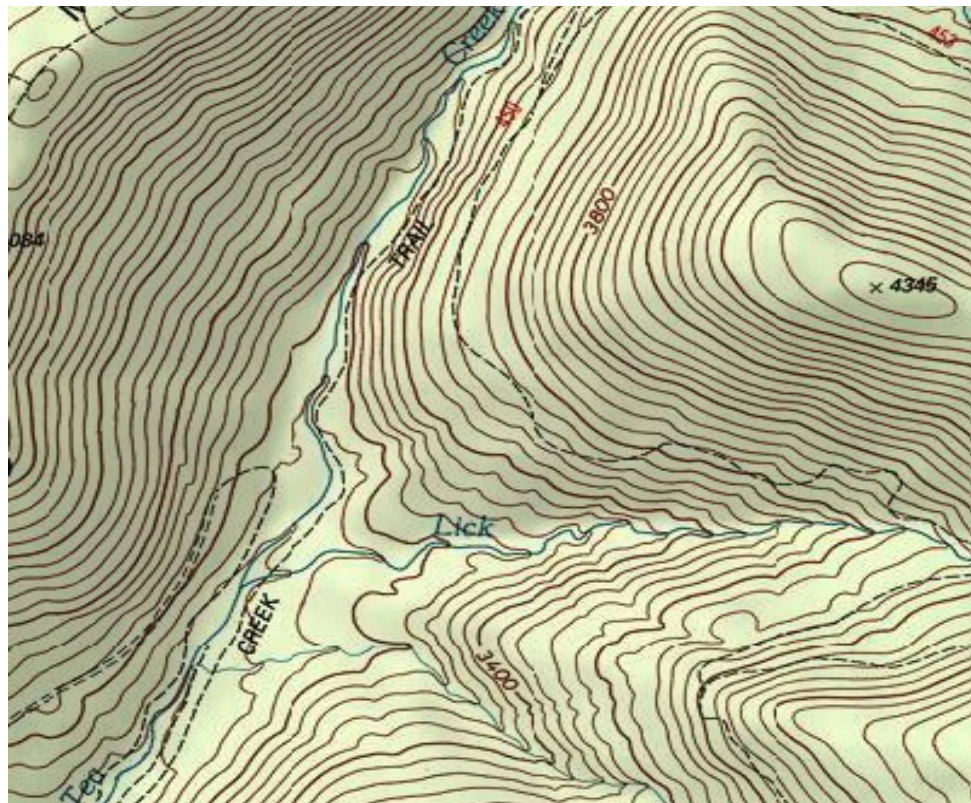
Activity 27
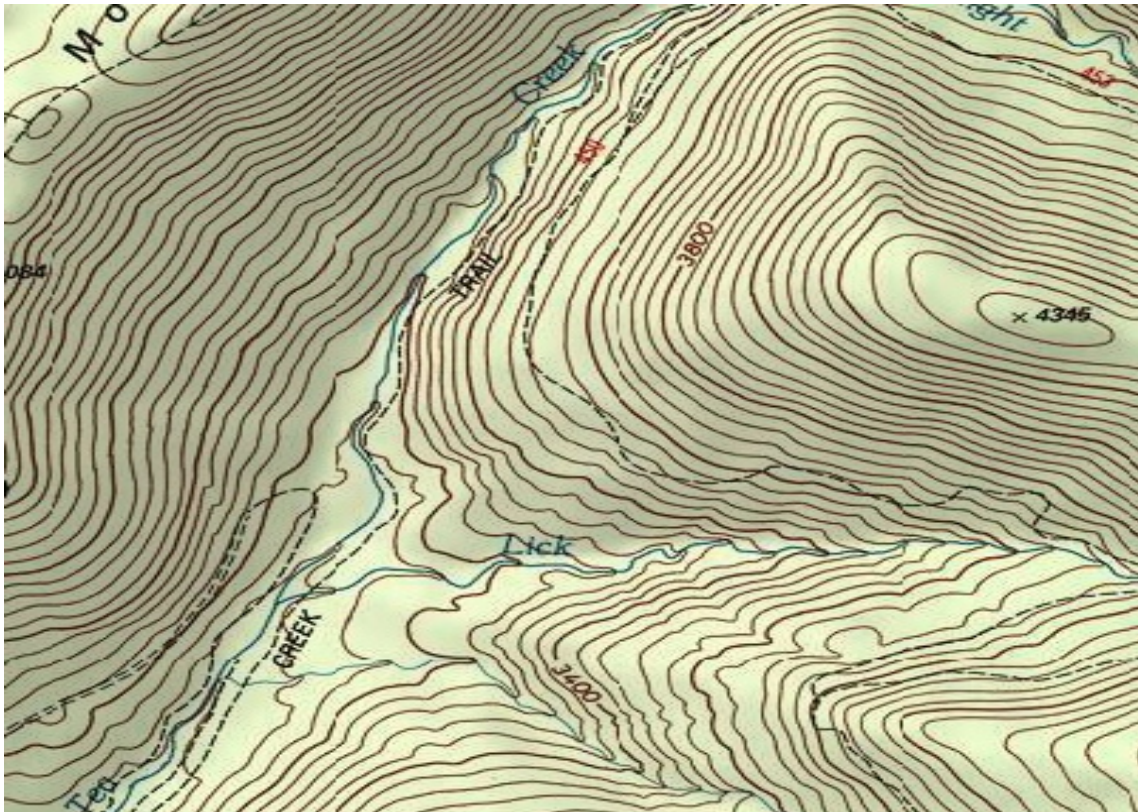
27.1.   Write down characteristics of a steep slope, Spur, and indicate the landforms on the map with a yellow highlighter.

27.2.   Write down characteristics of a gentle slope, Valley, and indicate the landforms on the map with a green highlighter.

27.3.   Write down the rest of the map symbols that appears on the map.

Activity 28

28.1.   What is the height at B?

28.2.   What is the height at D?
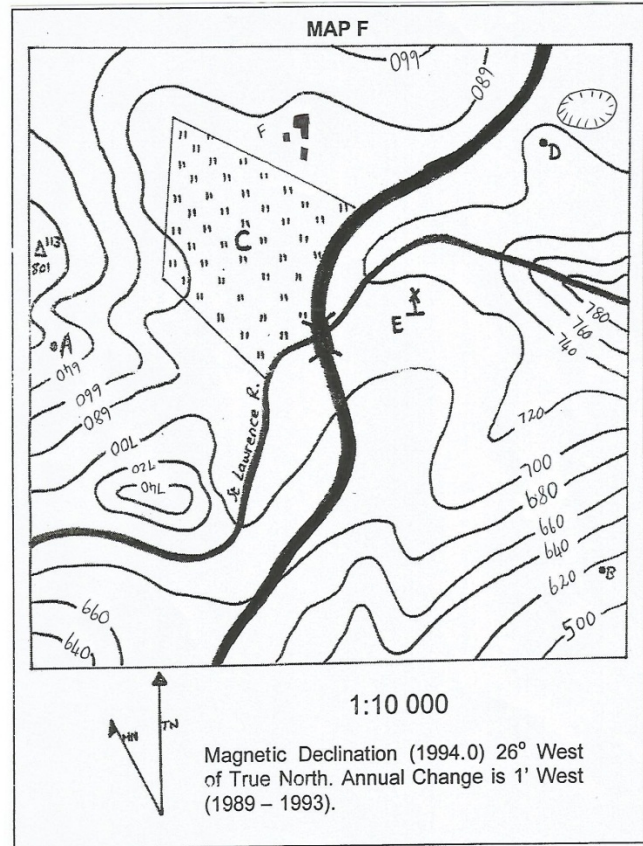
28.3.   What is the height at trig beacon 113?

28.4.   Indicate on the map a gentle slope, a uniform slope , a spur and a hill with different colour pencils or highlighters.

28.5.   What type of activity is taking place in the block labelled C?

28.6.   Identify the conventional signs at E and F.

28.7.   In which general direction is the river flowing?

MAP F

1:10 000

Magnetic Declination (1994.0) 26° West of True North. Annual Change is 1' West (1989 – 1993).

Vertical Aerial Photographs

Oblique Aerial photos

- High oblique photos
- HIGH HAS HORIZON
  - Horizon is visible
  - Cover large area
  - Show side view, easy to identify objects
  - Scale is not uniform

- Low oblique photos
- LOW HAS NO HORIZON.
  - Taken at a angle but only land is visible
  - Side view make it easy to identify objects
  - Scale not uniform

Orthophoto Maps

1.4 Differences between topographic and orthophoto maps

	Topographic Map	Orthophoto Map

Activity 29

HOMEWORK

Make a collage using oblique foto's

Use pictures from :

- newspaper,
- magazine
- print from the internet
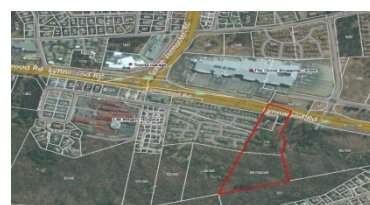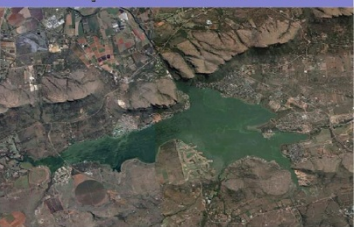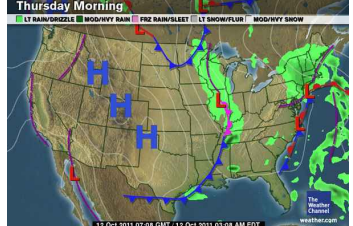
Activity 30

Identify the following pictures. Choose from the list below.

Weather map, vertical aerial photo, world map, topographic map, street map,

 low oblique aerial photo, high oblique aerial photo

A	B	C
D Hartbeespoort Dam 2016 hectares	E	F
G	H	I

Orthophoto images made from aerial photographs

✓ Orthophotos are made from vertical aerial photographs.

✓ Orthophoto maps are made by adding map information to the orthophotos.

✓ They have contour lines superimposed on them to provide a sense of the height of the landscape.

✓ An orthophoto is a combination of **a map** and **a photograph.**

✓ The scale of a orthophoto is 1: 10 000

Activity 31
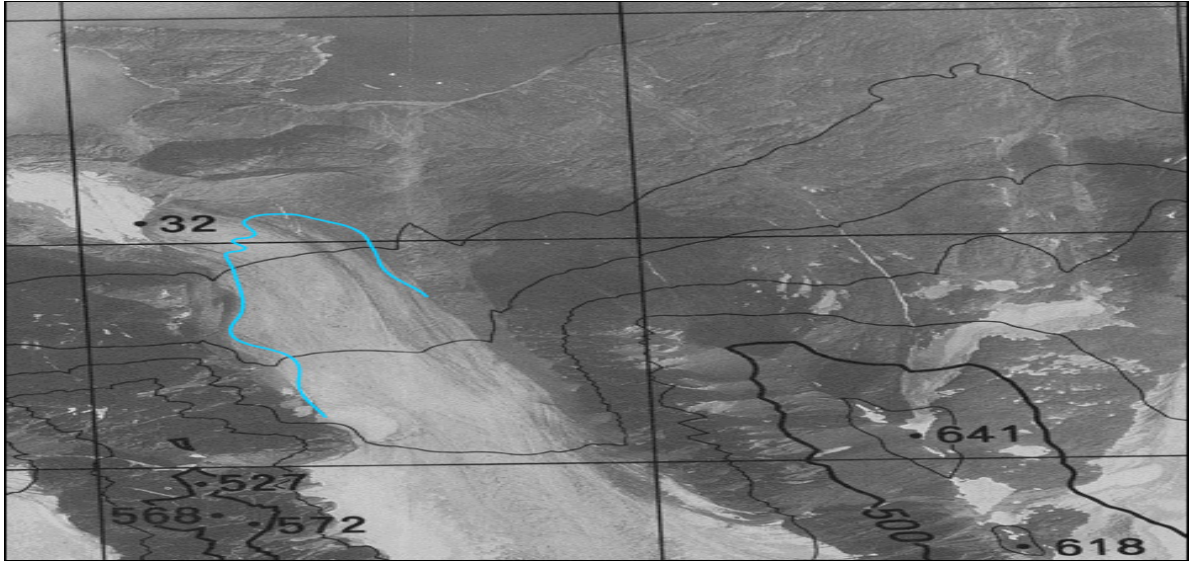
31.1.   What are orthophotos?
31.2.   How has improved technology assisted the production of orthophotos?
31.3.   What is the value of the index contour line on this orthophoto?
31.4.   What is the value of the highest spotheight on the orthophoto?

Activity 32

Source A

A. 2627BD LENASIA/SOWETO (Not extracted to correct scale)

Source B

B. 2627BD LENASIA/SOWETO
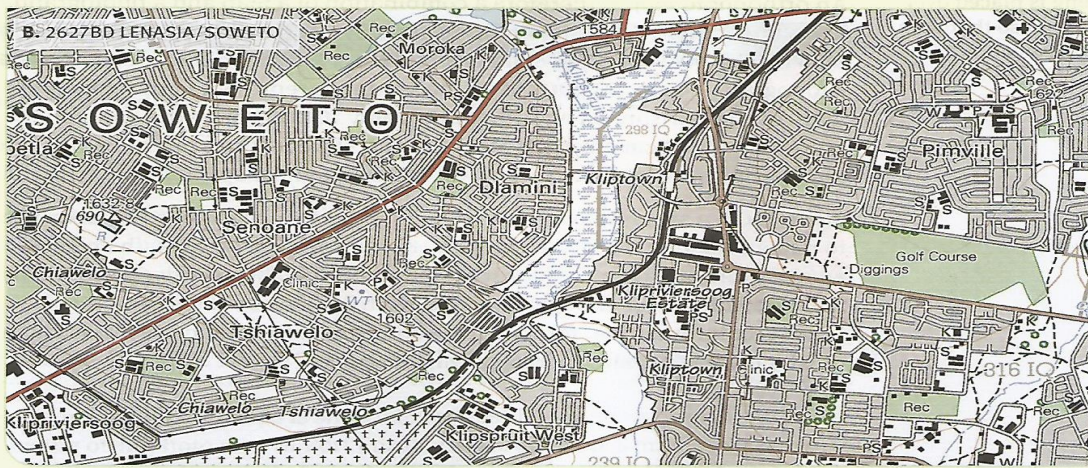
32.1.   Use a highlighter and identify the folowing places on the orthophoto:
- marsh and vlei
- main road
- Golf course
- cemetry
- Two railway stations.

32.2.   Conclusion: Is the area covered by the orthophoto and earial photo the same? Motivate your answer.

32.3.   In which source A or B is the features larger?

32.4.   What role do verticle photographs play in map making?

32.5.   What do you call a person that makes maps?

32.6.   In which province is Soweto?

32.7.   Explain the difference between a Marsh and vlei.

Orthophoto
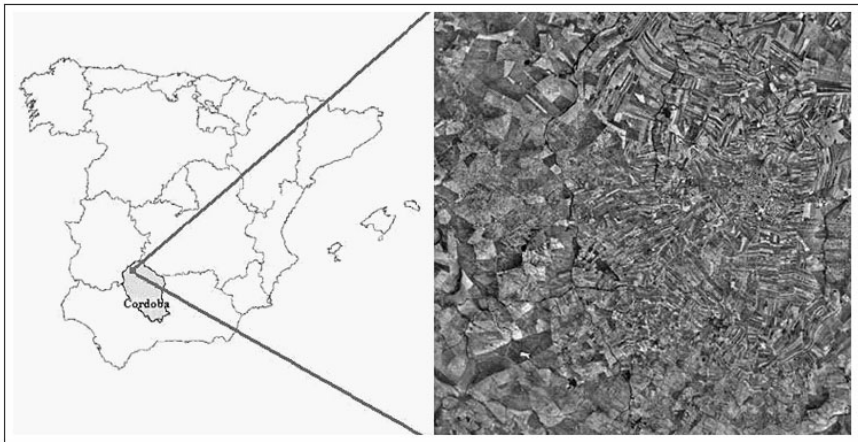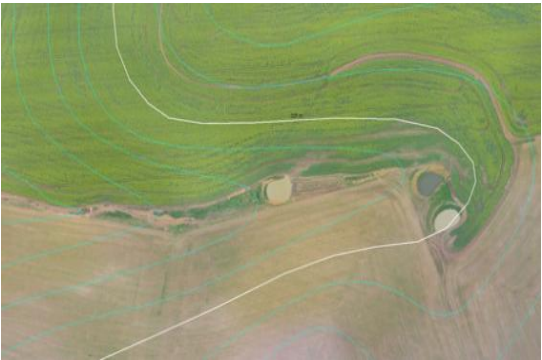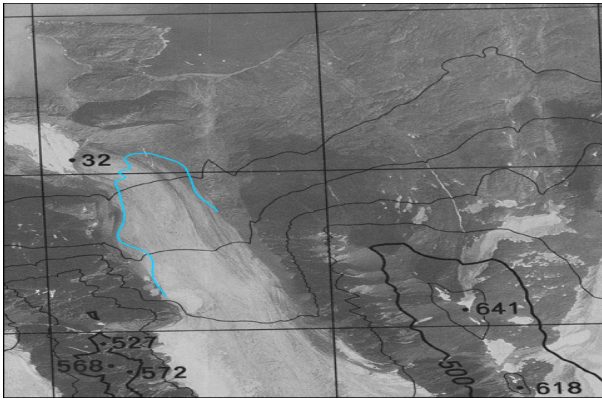
FIGURE 1
A map showing the study area in Spain

Aerial photo

Orthophoto images made from earial photographs

✓ An **orthophoto, orthophotograph** or **orthoimage** is an <u>aerial photograph</u> geometrically corrected ("orthorectified") such that the scale is uniform: the photo has the same lack of distortion as a map.

✓ Unlike an uncorrected aerial photograph, an orthophotograph can be used to measure true distances, because it is an accurate representation of the Earth's surface, having been adjusted for <u>topographic relief lens distortion</u>, and <u>camera tilt</u>.

✓ Orthophotographs are commonly used in the creation of a <u>Geographic Information System</u> (<u>GIS</u>).

✓ Software can display the orthophoto and allow an operator to digitize or place linework, text annotations or geographic symbols (such as hospitals, schools, and fire stations). Some software can process the orthophoto and produce the linework automatically.

✓ Production of orthophotos was historically achieved using mechanical devices.

✓ In creating an orthophoto thousands of individual images or frames can be assembled and mosaicked together to create a continuous, seamless image over a target area. Typically this image is still broken down into tiles to make it more "user friendly" but modern compression can also facilitate the supply of imagery of almost limitless extent and resolution.

Activity 33
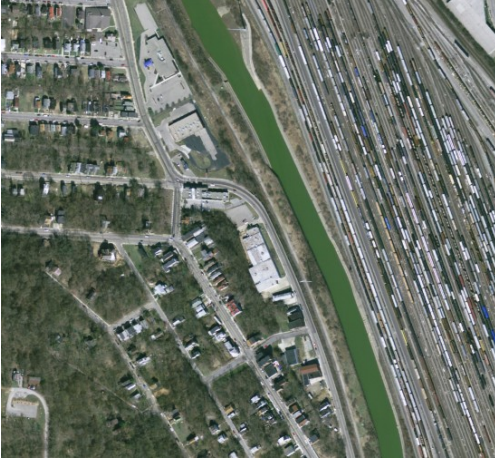
33.1. Identify the type of roads on this image.

33.2. Is this a high or low density build- up area? Give possible reasons for your answers.

33.3. Identify the area in the north east corner on the image. Motivate your answers

33.4. Identify the green strip in the image.

33.5. Will the contour lines be close together or far apart? Motivate your answer.

33.6. Identify the area. Give possible reasons for your answer.

33.7. Identify the type of roads in this image.

33.8. Is this an industrial or a residential area? Give possible reasons for your answer.

33.9. The contour line are far apart on this image. True of false. Motivate your answer.

33.10. Give the job title of the person in charge of this area.

How height is shown on arthophoto maps

- ✓ On the orthophoto map, the CONTOUR INTERVAL, is 5 METRES

- ✓ Height is used to show the following: ·

  - o Relief

  - o Intervisibility ·

  - o Gradient ·

  - o Cross-sections ·

  - o Vertical Exaggeration

- ✓ Height is shown on maps in various ways – always in metres above sea level i.e. as altitude

  - o Contour lines ·

o Spot heights ·

o Trigonometrical beacon

o Bench marks

Orthophoto images
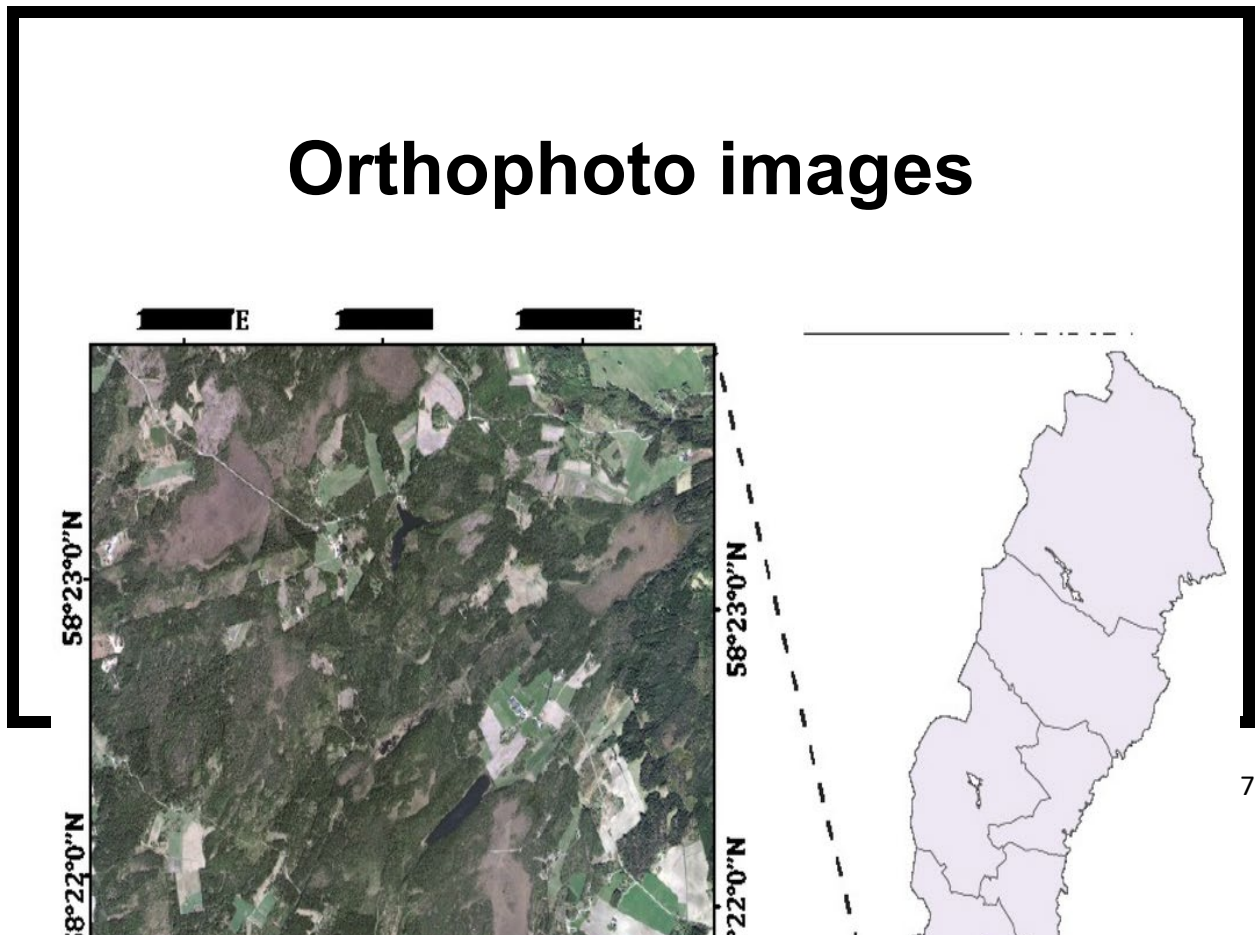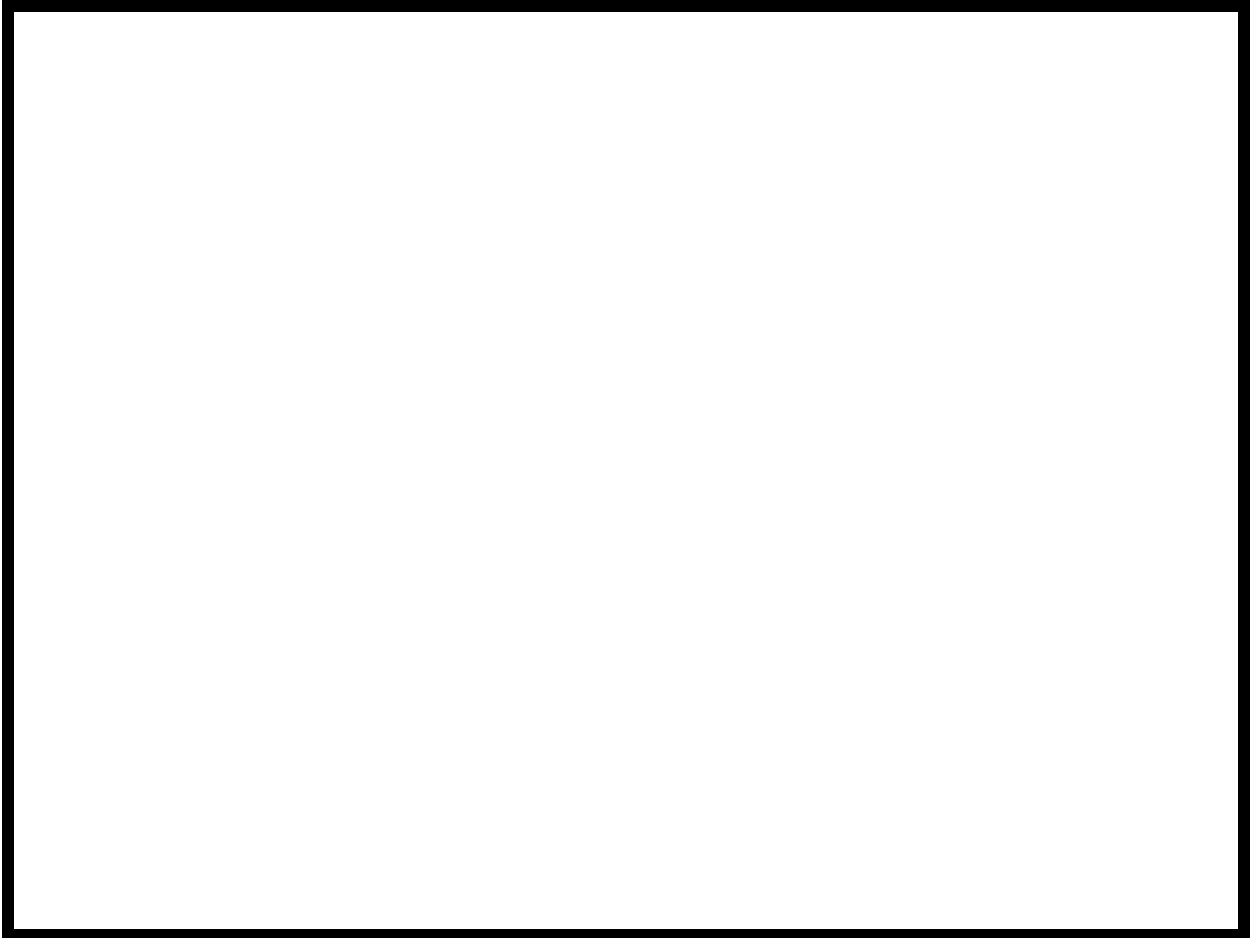
Topographic map and Orthophoto

Source 2A. Orthophoto map 3325DC of Port Elizabeth

Source 2B. Topographical map 3325DD of Port Elizabeth

Activity 34

How to extract information from maps and photographs.

Step 1   Locate a similar feature on both the map and the photograph. (Features on the photo will be larger)
Step 2   Use the map key to identify names of places and functions that the land serves.
Step 3   Use the larger features on the photo to identify other uses if that part of the map is too crowded.

34.1.   On which image are the features bigger?
34.2.   Which of the two images cover a bigger are?
34.3.   Identify the Bakensriver on the photo.
34.4.   Identify the dark areas next to the river.
34.5.   Identify two secondary roads on the photo.
34.6.   Will the contour lines form steep or gentle slopes in this area? Motivate your answer.
34.7.   On which image do you get a better "picture" of the area? Motivate your answer.
34.8.   Would you like to be a cartographer one day?
34.9.   Was all this height indicators visible on the Orthophoto? Motivate your answers.

Source 2A. Orthophoto map 3325DC of Port Elizabeth

Source 2B. Topographical map 3325DD of Port Elizabeth
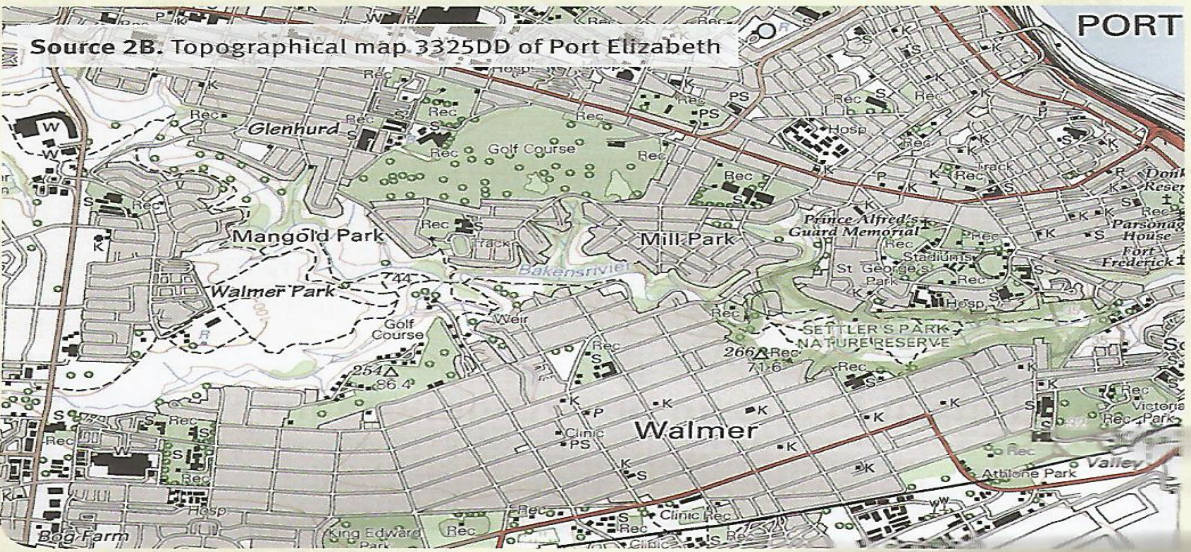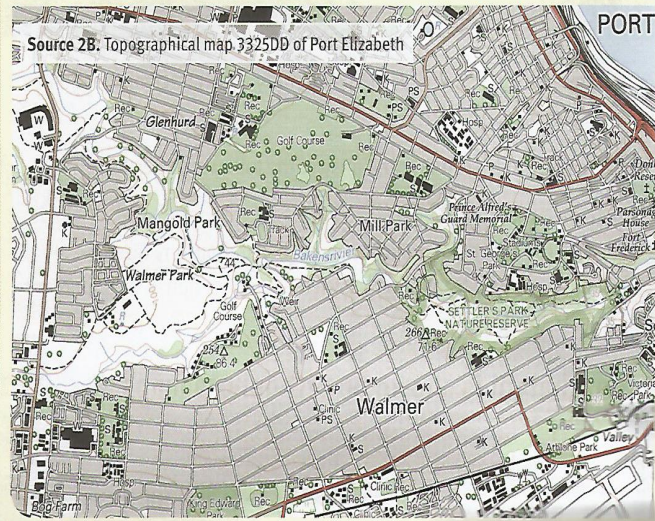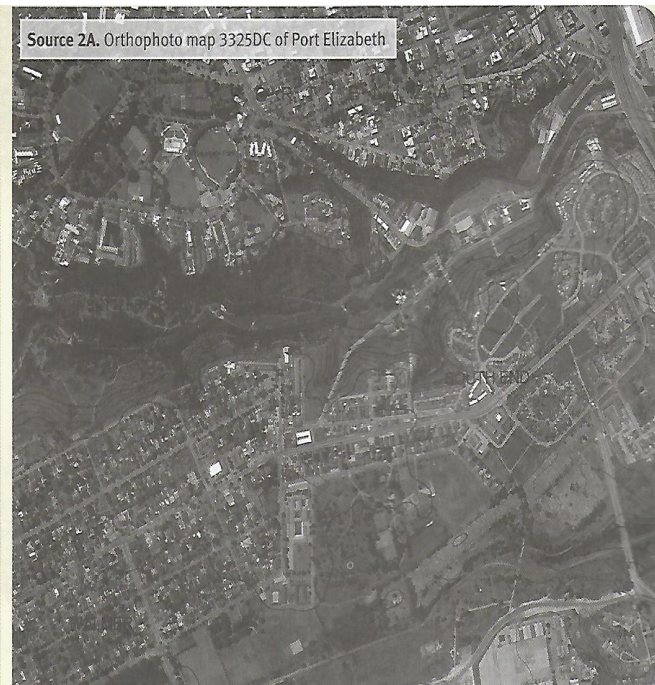
Activity 35

Study the image and answer the following questions.

35.1.   Identify this image.

35.2.   Is this area in a rural or urban area?

35.3.   Identify the group/person that will use this image.

35.4.   Why is there an overlay on the image?

35.5.   Will the area look the same if the person/ group is finished with their project.

35.6.   Identify governmental/individuals that will be involve with such a project.

Activity 36

Fill in the missing words.

Possible words: larger, flat, index, height, widely, closeness, 5, metres
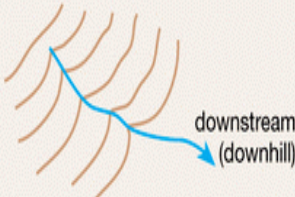
- 36.1.   The contour lines shows………… of the land above …. level.
- 36.2.   The contours are numbered in ………
- 36.3.   The lines run in intervals of ……..metres
- 36.4.   The dark black lines is called …….. lines
- 36.5.   If there are a few contour lines on the othophoto map , it shows that the area is
         …………...
- 36.6.   The …………. of contour lines shows us how steep the slope is.
- 36.7.   If the contours are ………. spaced, the slope is gentle.
- 36.8.   Areas coverd by an orthophoto map is ……………that areas on a Topographic map.
- 36.9.   Identify the highest area with a green high lighter.
- 36.10.   Identify the valley with an yellow high ligher.
- 36.11.   Give this orthophoto map your own values and identify the height, acording to your
         values, of the Hill.

RULES FOR CONTOUR LINES

1. Every point on a contour line is of the exact same elevation; that is, contour lines connect points of equal elevation.

2. Contour lines always separate points of higher elevation (uphill) from points of lower elevation (downhill). You must determine which direction on the map is higher and which is lower, relative to the contour line in question, by checking adjacent elevations.

3. Contour lines always close to form an irregular circle. But sometimes part of a contour line extends beyond the mapped area so that you cannot see the entire circle formed.

4. The elevation between any two adjacent contour lines of different elevation on a topographic map is the *contour interval*. Often every fifth contour line is heavier so that you can count by five times the contour interval. These heavier contour lines are known as *index contours*, because they generally have elevations printed on them.

5. Contour lines never cross one another except for one rare case: where an overhanging cliff is present. In such a case, the hidden contours are dashed.

6. Contour lines can merge to form a single contour line only where there is a vertical cliff.

7. Evenly spaced contour lines of different elevation represent a uniform slope.

8. The closer the contour lines are to one another the steeper the slope. In other words, the steeper the slope the closer the contour lines.

9. A concentric series of closed contours represents a hill:

10. *Depression contours* have hachure marks on the downhill side and represent a closed depression:

11. Contour lines form a V pattern when crossing streams. The apex of the V always points upstream (uphill):

downstream (downhill)

12. Contour lines that occur on opposite sides of a valley always occur in pairs.

13. Topographic maps published by the U.S. Geological Survey are contoured in feet or meters referenced to sea level.
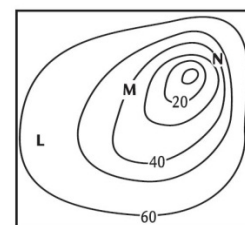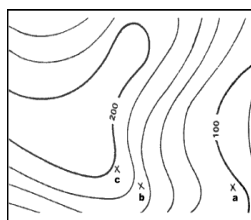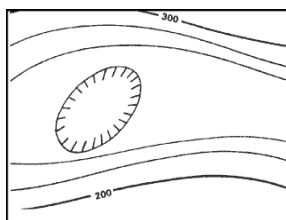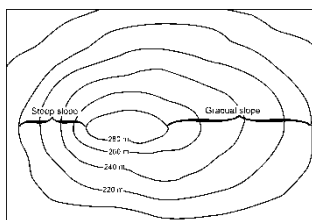
Class Activities 37

Draw the columns in your book and describe the different features found on Orthophoto

	Discription
37.1. Steep slope	
37.2. Gentle slope	
37.3. Regular slopes	
37.4. Irregular slopes	
37.5. River valley	
37.6. Spur	

Read map symbols to identify natural features on topographic maps

Map symbols

Symbols are used in topographic maps to identify cultural and natural features. Symbols come in different shapes, sizes and colors to uniquely identify such features on the map.

Cultural features include roads, trails, buildings, boundaries, railways, power transmission lines, pipeline, campgrounds, mines, dams, recreation areas, . Natural features may include water (rivers, streams, lakes, wetlands and swamps, rapids), relief (mountains, valleys, canyons, and other landforms,), vegetation (forested areas, cleared areas, orchards ...). Toponomy or feature and place names are added to provide textual information about features. Gridlines and contour lines on the map are represented with different line symbols.

You can create maps using Geokov Map Maker and add a variety of symbols / icons, create custom icons, and add symbols and icons from other web pages as explained here.

Map Legend

Map legend is a key to the symbols. It provides a complete listing of all the symbols used on the map and the corresponding features they represent. The legend can be located along the borders, below the map, or on the back of the map. Although many symbols used in different maps are similar, there is no one standard international legend for topographic maps. Below you can find the Canadian NTS and USGS
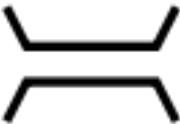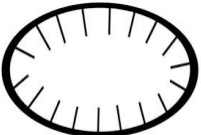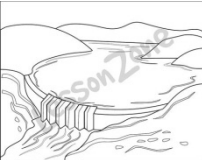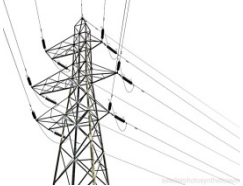
topographic maps' legends. The margin of the map contains other important information such as map scale, north arrow, declination diagram, date, publisher, date, etc.

Activity 38

Nominal Data

	airport	town	mine	capital
Point	✕	●	⚒	★

	river	road	boundary	pipeline
Line	——	——	– – –	··············

	orchard	desert	forest	water
Area	(dotted pattern)	(stippled pattern)	(grey shade)	(grey shade)

Redraw the correct topographic map symbol and identify the symbol as a point, line or an area symbol.

a	b	c	d	e
	TUNNEL	SCHOOL WELCOME		

f	g	h	i	j
		Monuments		

k	l	m	n	o
shutterstock		R.I.P.		

Activity 39

East London: Images of a Port City

1:50 000

Legend includes: Freeways and Arterial Roads, Main Roads, Secondary Roads, Other Roads, Tracks and Hiking Trails, Service Railways, Electrified Railways, Multiple Track Railways, Power Lines, Telephone Lines, Walls, Anti-erosion Walls, Excavations, Lighthouse

Official maps and aerial photographs of your home environs can be ordered from: Chief Directorate: Surveys and Land Information, Private Bag, Mowbray, 7705.

Activity

Answer the following questions.

39.1.   In which province is East London?
39.2.   Explain why the area covered by the Topographic map and the Orthophoto is not the same.
39.3.   Use a highlighter and identify the followings places on the Orthophoto and Topographic map
   ✓   All the excavations
   ✓   All train stations
   ✓   The lighthouses
   ✓   Coastal rocks
   ✓   The museum

- ✓ Bridge over Baffalo river
- ✓ Arterial route no 72
- ✓ Skietbaan (give the English word)

40.1. Which ocean is on the east south of South Africa?

40.2. Name the ocean current flowing in the east coast of South Africa.

40.3. Give the definition of Aquarium.

40.4. What will you find in a Dock?

Landforms

Complete the crossword puzzle using what you know about the subject. Refer to the word bank if you need help.
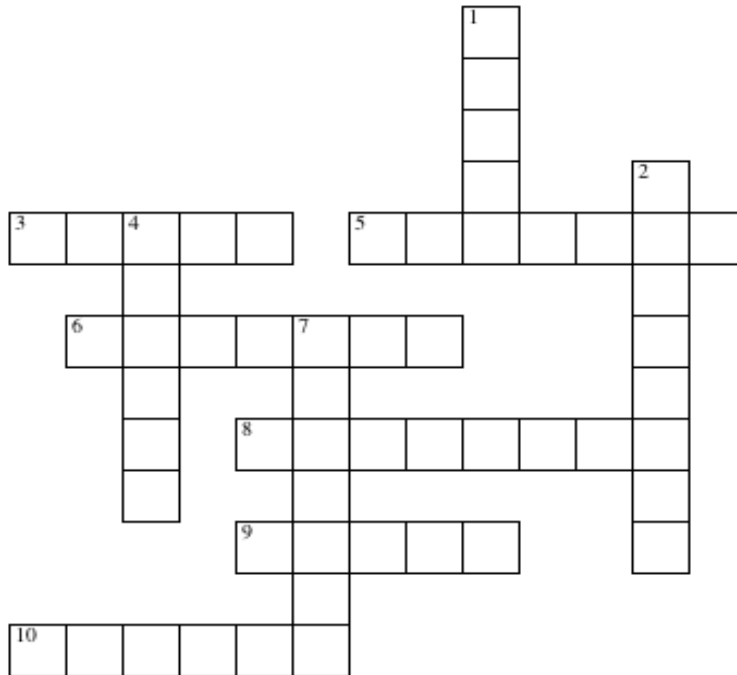
Word Bank

levee
delta
river
valley
glacier
mountain
plateau
wetlands
canyon
erosion

Across

3. Embankment usually on the side of a river used to prevent overflowing

5. Large body of year-round ice & snow that moves slowly across the land and deposits sediment where it melts

6. Large area of flat land that is higher than the surrounding land

8. Landform in which the Earth's surface rises higher than 1,000 ft

9. Large natural stream that flows into a larger body of water

10. Steep-walled valley created by a river or stream

Down

1. Deposit of sediment where a stream enters a larger body of water

2. Water ecosystems like saltwater marshes and swamps

4. Long, low area of land between hills or ranges of mountains

7. Process of wearing away or moving soil and rock by water, wind, and ice

www.education.com/worksheets

created by: education.com

Activity 40

40.1.   Identify all the map symbols from this map extract.

40.2.   With a green highlighter or pencil indicate all the

natural symbols.

40.3.   With a pink highlighter or pencil indicate all the

 manmade symbols

40.4.   In which Province and which town, will you find the

 Duncan Dock and Signal Hill?

40.5.   Give the lowest contour value printed.

40.6.   Give the value of trig beacon no 544.

40.7.   Name the reason why a symbol will be printed in red.

40.8.   Athens 1865. Find out what happened in this area

in the year 1865.

40.9.   Explain why this is not a residential area. Name evidence found in the map.

Activity 41

Identify the following symbols as a natural (physical environment) or constructed (manmade) features, and draw the symbol

A rivers	B Main road	C Row of trees	D Perennial dam	E School
F station	G cultivated land	H Water tower	I wall	J Coastal rocks
H bridge	L Marsh and vlei	M Communication tower	N Dry pan	O Orchard and vineyards
P Recreation grounds	Q cemetery	R embankment	S Water point	T woodlands
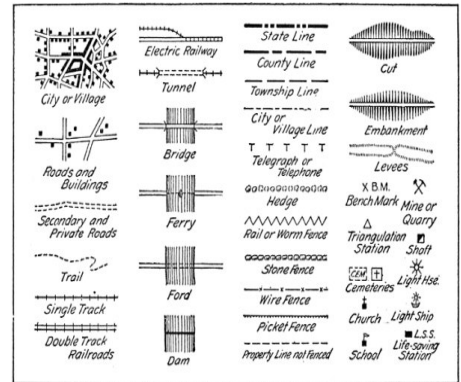
Height clues on a map

Activity 42

Redraw the table in your workbook and complete the table on the different height clues to be found on Topographic maps.

Name	Drawing	Description
Spot height		▪ ………….. with a number
Trig beacon		▪ …………… with two numbers. ▪ One number represent the ………… ▪ Other number represent the ………….. of the trig beacon
Bench mark		▪ Arrow next to a ……… with a value
Contour lines		▪ …………. lines that run in intervals of 20 ▪ Index contour lines are ……… brown.
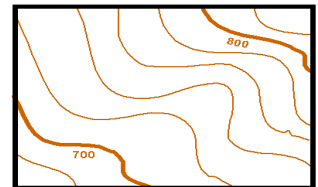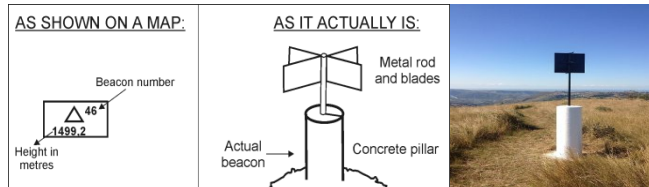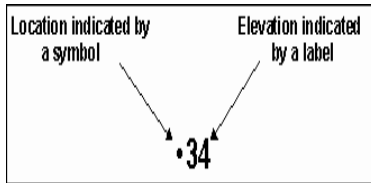
Height indicator on a Topographic map
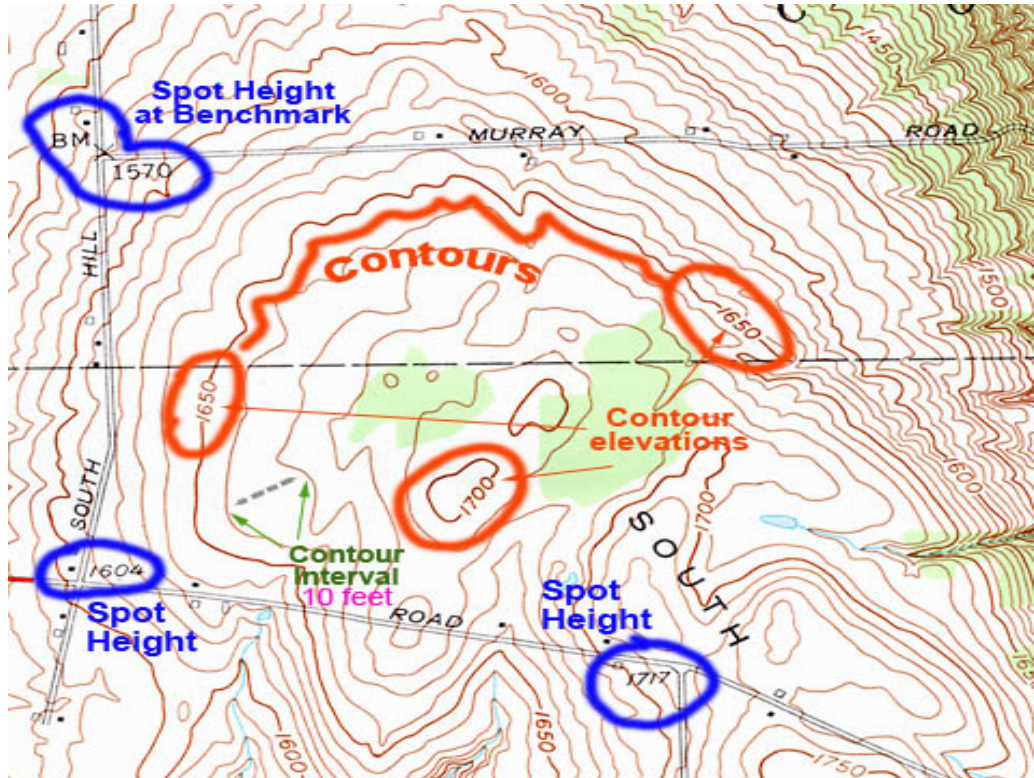
Using contour lines and spot heights
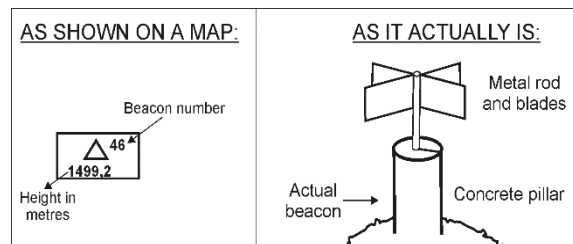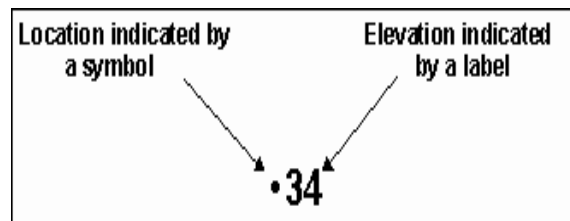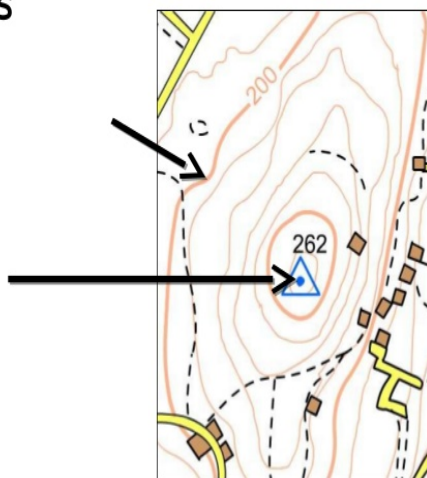
Contour patterns showing river valleys, hills
Valley

A valley is a low area between hills, often with a river running through it. In geology, a valley or dale is a depression that is longer than it is wide.

A valley is an elongated depression in the landscape that is formed by the action of water (V-shaped) or carved out by glaciers (U-shaped). Valley bottoms are represented by "U" or "V" shaped contour lines with their closed end pointing towards higher elevation.

Ridge

A line of high ground with height variations along its crest. The ridge is not simply a line of hills; all points of the ridge crest are higher than the ground on both sides of the ridge.

Activity 43

Fill in the missing information, and draw the appropriate drawing

	Name	Discribtion	Drawing
43.1.	Steep slopes		
43.2		contours on a map are far apart, the slope is gentle.	
43.3	Regular slopes	can either be gentle or steep, but the contours are evenly spaced. The contours have the same distance between the lines.	
43.4	Irregular slopes	The contours do not have the same distance between the lines.	
43.5		on a contour map, this looks like an arrow head or V-shape pointing towords the higher land	
43.6	Spur	on a contour map, this looks like and arow head or a V-shape pointing away from the higher land. Spurs are found on both sides of a river valley.	
43.7	Mountain	a mountain will have many contour lines, steep and genlte slopes. A mountain is a large area that is high above sea level.	
43.8		a ……….. can be a hill or a mountain. It can only be caled a ridge if the one side of the mountain is a steep slope and the orher side is a less steep or gentle slope.	

Different landforms
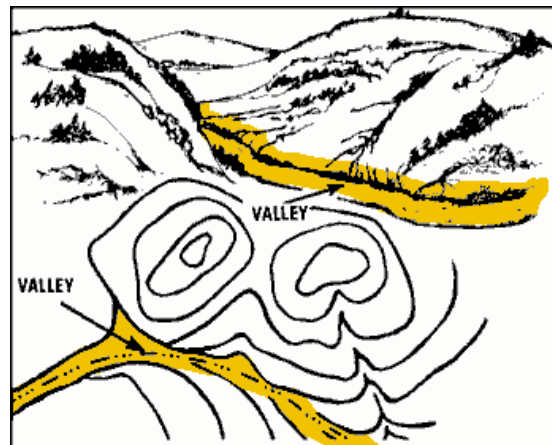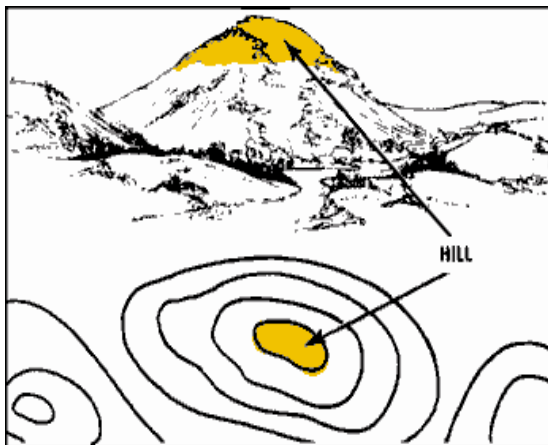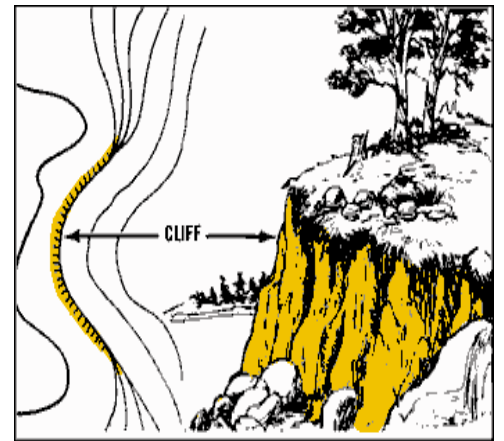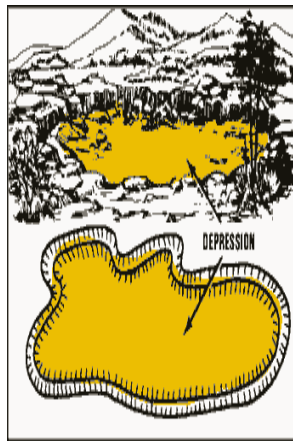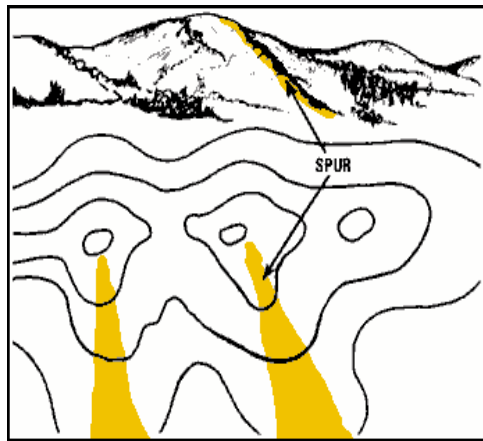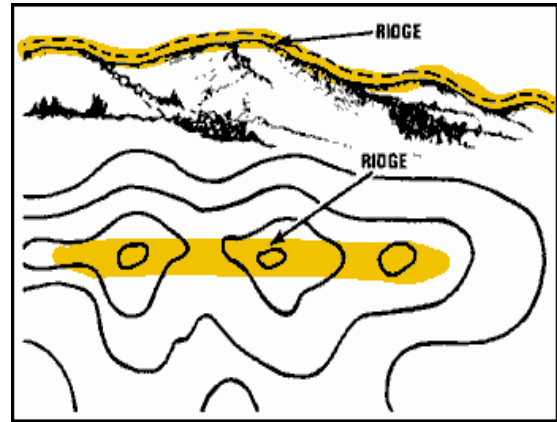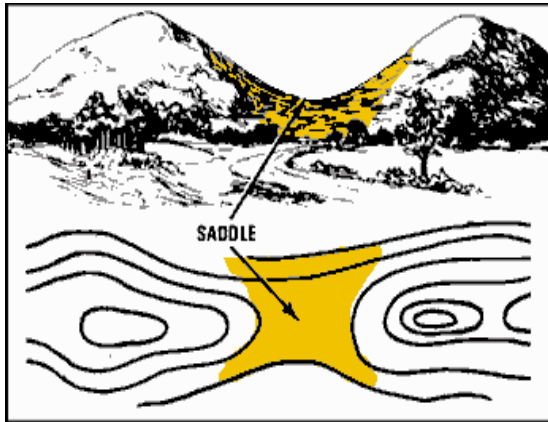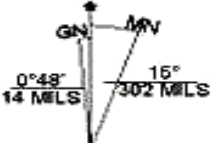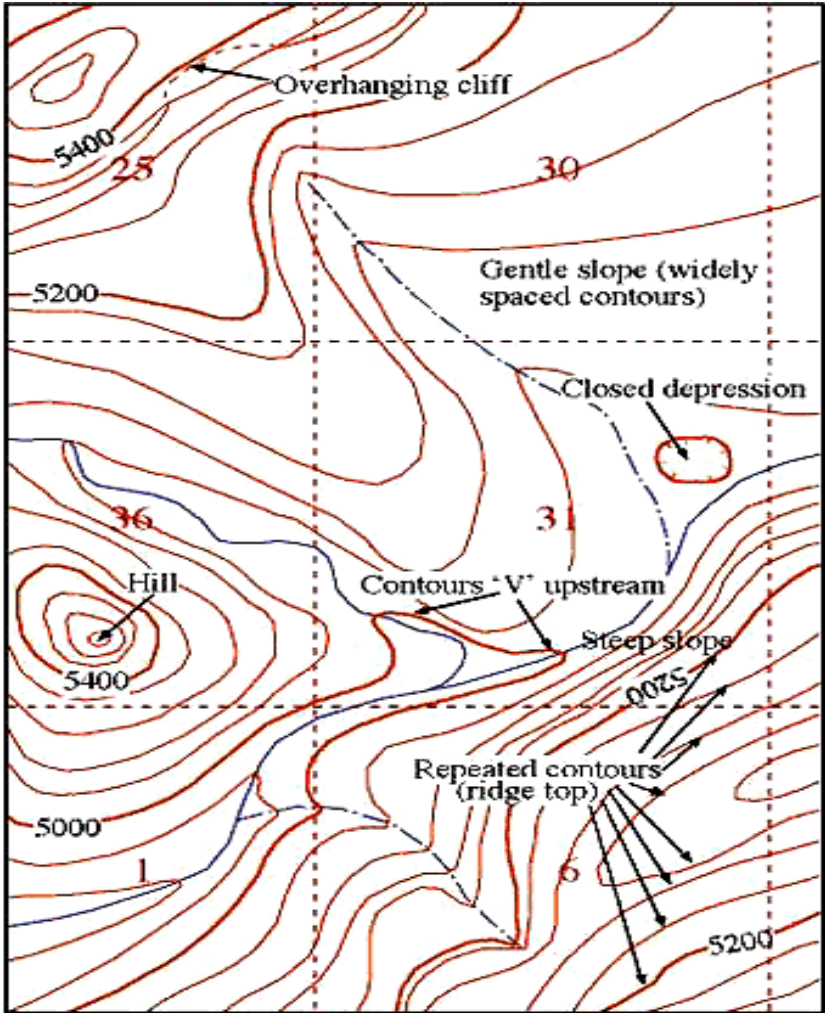
SADDLE

RIDGE

RIDGE

SPUR

DEPRESSION

CLIFF

HILL

VALLEY

VALLEY

Different landforms
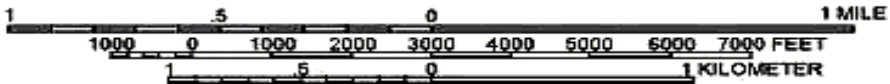
Contour pattern showing mountains, ridges and spurs.

Ridge - Arete - Spur Contour Lines

A ridge is a landform feature characterized by a continuous elevational crest with sloping sides. Arête is a narrow ridge formed by glacial erosion. A spur is a lateral ridge projecting from the mountain or the main ridge crest. A spur is usually formed by the two roughly parallel streams eroding gullies (draws) down the face of the mountain from the ridge line. (check out interlocking spurs and truncated spurs for more information). Ridges are represented by "U" or "V" shaped contour lines with their closed end pointing towards lower elevation. U-shaped contours indicate broader ridges, while V-shaped contours represent narrower and sharper ridge lines. Aretes and spurs are often generally referred to as ridges in backcountry recreation.

Ridge

A line of high ground with height variations along its crest. The ridge is not simply a line of hills; all points of the ridge crest are higher than the ground on both sides of the ridge.

Spur

A usually short, continuously sloping line of higher ground, normally jutting out from the side of a ridge. A spur is often formed by two thoroughly parallel streams cutting draws down the side of a ridge

Activity 44

Match the contour lines and the side view of the different landforms
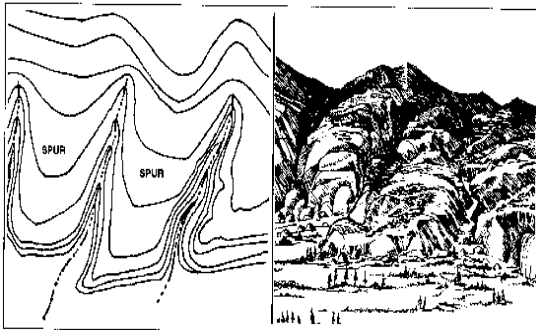
Figure 10-23. Spur.

GROUP ACTIVITY C

Matching Elevations Using Cross Sections and Contour Lines

Cross Sections

Contour Lines

Activity 45

Follow instructions to answer the questions that follow

A

45.1.1. Give the 5 mountain peaks each a name
45.1.2. Indicate the highest spot height value on the highest mountain
45.1.3. Indicate the spur on the lowest mountain
45.1.4. Indicate the valley between the three highest mountain peaks.
45.1.5. Name possible animals found on these mountain if it is in a **cold** pole region
45.1.6. Write down three characteristics of cold regions.
45.1.7. Name possible animals found on these mountain if it is in a **warm** region
45.1.8. Write down three characteristic of warm regions.
45.1.9. Indicate all the eastern slopes with a yellow pencil or highlighter.

B

45.2.

45.2.1. Indicate the plateau with a yellow pencil of highlighter

45.2.2. Give a definition for the word plateau

45.2.3. Indicate the escarpment with a green pencil or highlighter

45.2.4. Give a definition for the word escarpment.

45.2.5. Name a few mountain ranges found in South Africa in the Cape area.

45.2.6. Name a few towns found on the plateau area of South Africa.

C

45.3.

45.3.1. Write a paragraph "**Why low lying areas is better for any farming activity**" than high lying areas. Mention temp, soil,water, transport etc. in your paragraph.
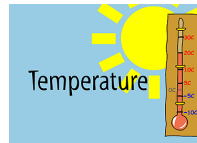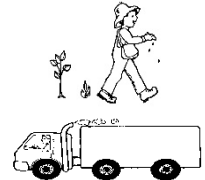
Identifying landforms

SPURS—Running downslope from each hill along a ridge.

RIDGE—Series of connected hills—a linear mass.

HILL

SADDLES

CLIFF—Sheet almost vertical slope.

DRAWS—Running downslope from each saddle.

VALLEY—If drained (hand spread).

DEPRESSION—Not drained (hand cupped slightly).

(a) Ridgeline

(b) Spur

(a)

(b)

RIDGE

VALLEY

Repeat

No Repeat

Repeat

TOP OF HILL

SIDE OF HILL
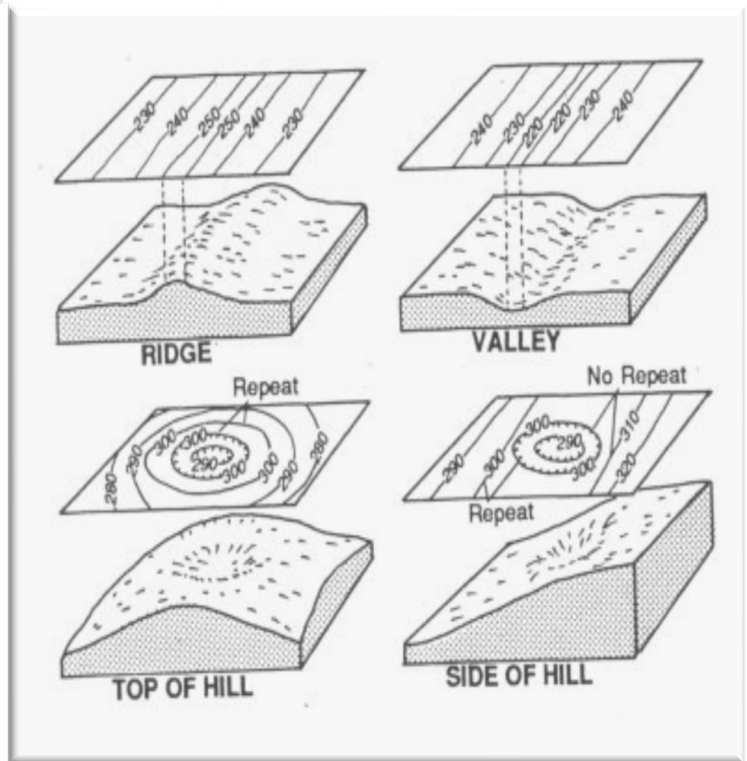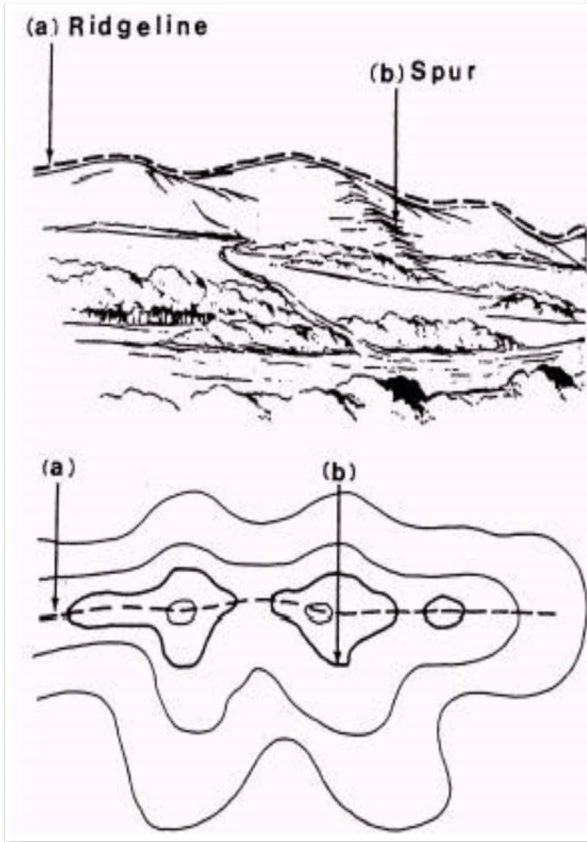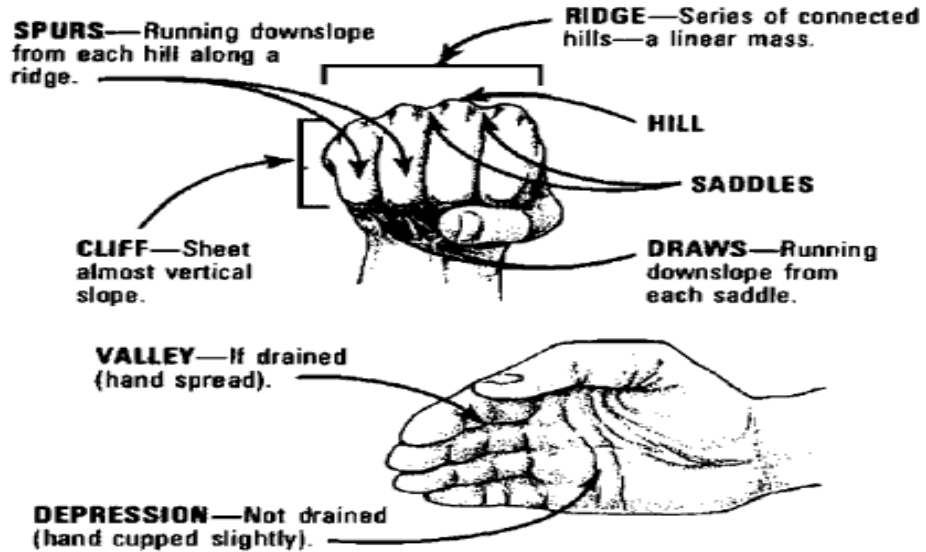
Scale and measuring distance on topographis maps – using line and ratio scales

What is Map Scale?

Map scale refers to the relationship (or ratio) between distance on a map and the corresponding distance on the ground. For example, on a 1:100000 scale map, 1cm on the map equals 1km on the ground.

Map scale refers to the relationship (or ratio) between distance on a map and the corresponding distance on the ground. For example, on a 1:100000 scale map, 1cm on the map equals 1km on the ground.

Map scale is often confused or interpreted incorrectly, perhaps because the smaller the map scale, the larger the reference number and vice versa. For example, a 1:100000 scale map is considered a larger scale than a 1:250000 scale map.

Activity 46
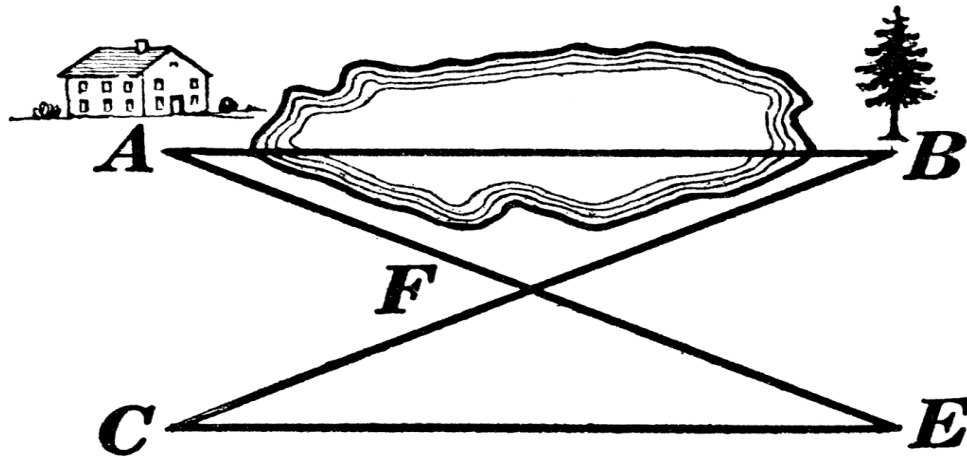
46.1.   **Measure the following distances. Your answer must be in km.**
   A.   From A to B
   B.   From A to E
46.2.   **Measure the following distances. Your answer must be in m.**
   A.   From C to E
   B.   From B to C
46.3.   **Give the followings directions**
   C.   From C to E
   D.   From B to C
   E.   From A to E
46.4.   Draw the correct map symbol for buildings and trees
46.5.   Identify the slopes on the island near the beach.
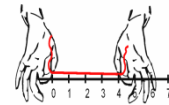
Activity 47
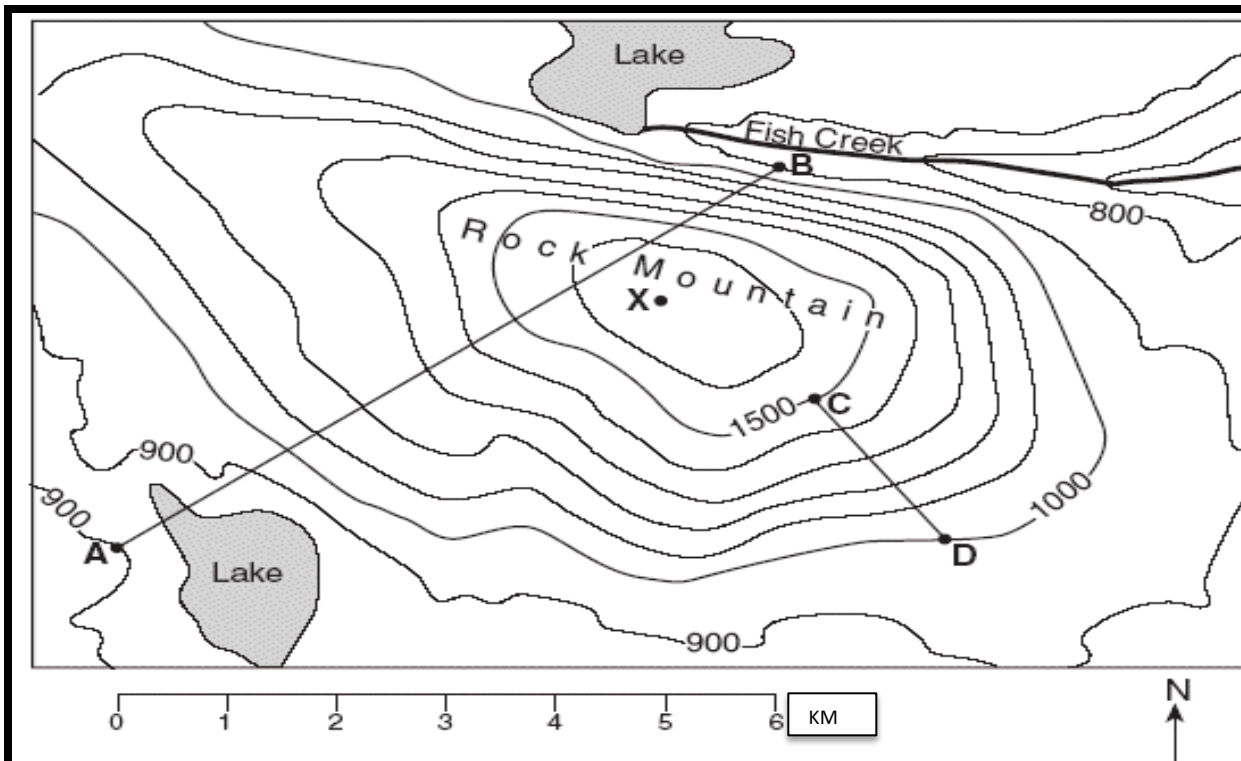
47.1.   **Measure the following distances. Your answer must be in km**
    A. From A to B
    B. From X to B
    C. From X to C

47.2.   **Measure the following distances. Your answer must be in m.**
    A. From B to D
    B. From C to A
    C. From D to X

47.3.   Identify the slopes near Fish Creek

47.4.   Identify the slopes in the SW corner of the map.

47.5.   Write down the correct vale for **X**

47.6.   Give the following directions
    47.6.1. From A to D
    47.6.2. From X to A
    47.6.3. From B to D
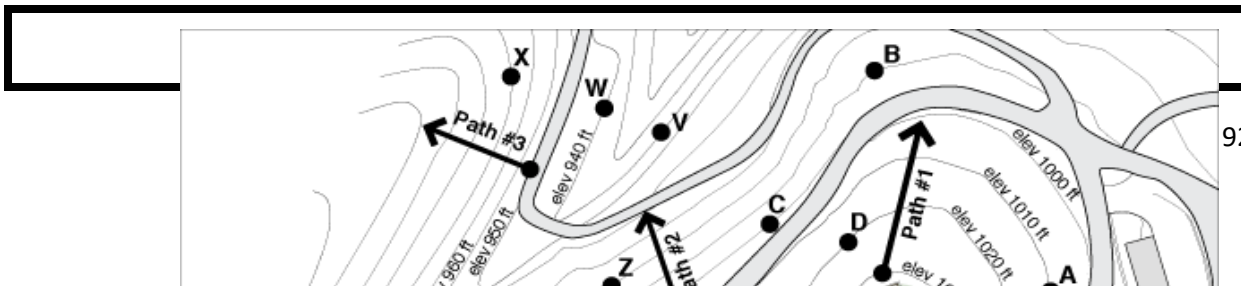
Activity 48
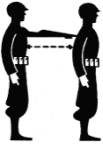
48.1.   Debate the following. Motivate your answer
48.1.1. Is there a river on this map
48.1.2. Is there a sports grounds.
48.1.3. Is the contour lines indicating a mountain or a hill?

Map Scales:
Large Scale vs. Small Scale

- A town plan is on a much **larger scale** so that features such as roads can be shown clearly (1cm:500m)
- Large scale maps are better for showing individual buildings in detail because they only cover a small area of land.

Map Scales:
Large Scale vs. Small Scale

- A map showing the whole world is on a very **small scale** (1:360 000 000 000) which allows for an overall view, but not much detail.
- Small scale maps are ideal for travelling by car because they cover large areas of land.

1:250 000

Difference between a Topographic and a Orthophoto map

	Topographic map	Orthophoto
Scale	1:50 000	1:10 000
Contour intervals	20 meter	5 meter
Colours used on maps	Blue, black ,brown, red, green	Black and white
Area covered by map	Big area	Small area

How to measure distances on a map
2. Curved Distances

- You may need to measure the distance along a road or river that does not travel in a straight line.
- To do this you ideally need a piece of string (or you can use a strip of paper).
- You lay the string down to follow the shape then measure the total length before converting back using the scale.
- If using paper you need to pivot the paper each time the path changes direction.

Co-ordinates to locate features.

How to Work with Grid References

- The latitude line forming the southern boundary of the map is...

- The longitude forming the eastern boundary of the map is...

- The minutes of latitude are indicated as...

- The minutes of longitude are indicated as...

- The seconds are calculated for both longitude and latitude positions

- Always give the southern position first.

- Measure the distance from the latitude directly to the north of the given place.

- Now measure the size of the latitudinal length of the grid.

- (There are 60" between each minute of latitude and each minute of longitude.)

Each grid block can be divided into lines of 60 seconds latitudes and longitudes
Divide the grid block in two half's (30' latitude and 30' longitude)
Each quarter now become a 'Big-block' numbered A to D
Divide each big block in half's (15' and 45' latitude and longitude)

Number each 'small block' in the big block A to D

Finally find now big block C and small block B
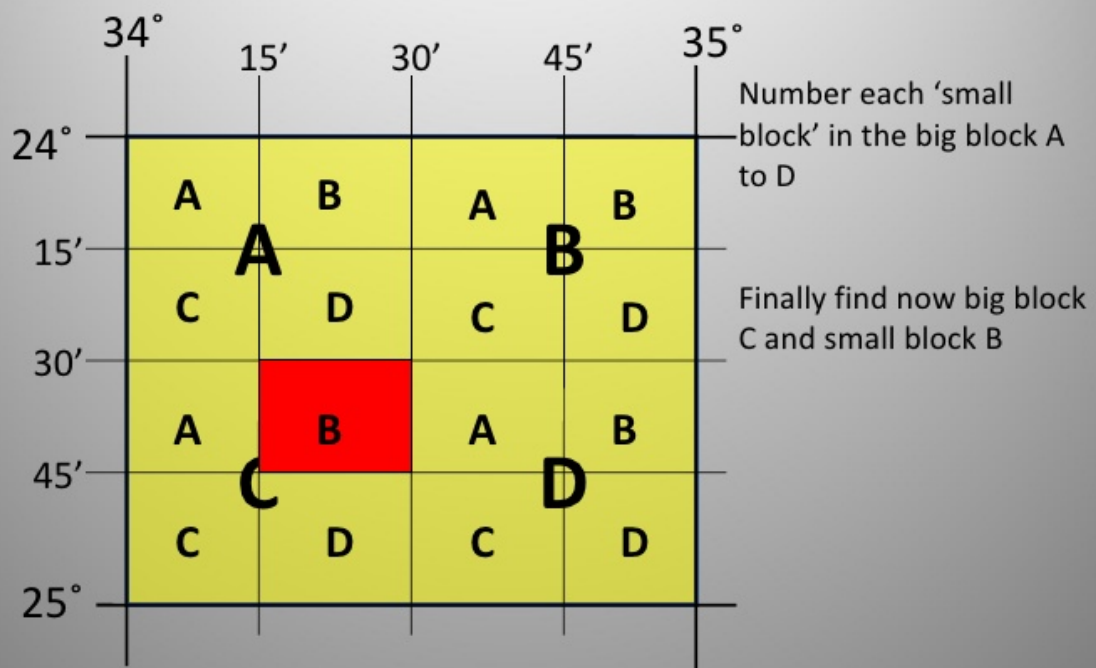
Activity 49

Study the map extract and follow the instructions.

49.1.1. Write down the **degree** for label A - E
49.1.2. Write down the **degrees and minutes** for label A - E
49.1.3. Write down the **degrees, minutes and second** for label A -
49.1.4. Give the following direction
49.1.4.1.   From B to D
49.1.4.2.   From C to B
49.1.4.3.   From A to E

49.2.   Calculate the distance from E to A. Show all your
         calculations.

TOPOGRAPHIC MAP
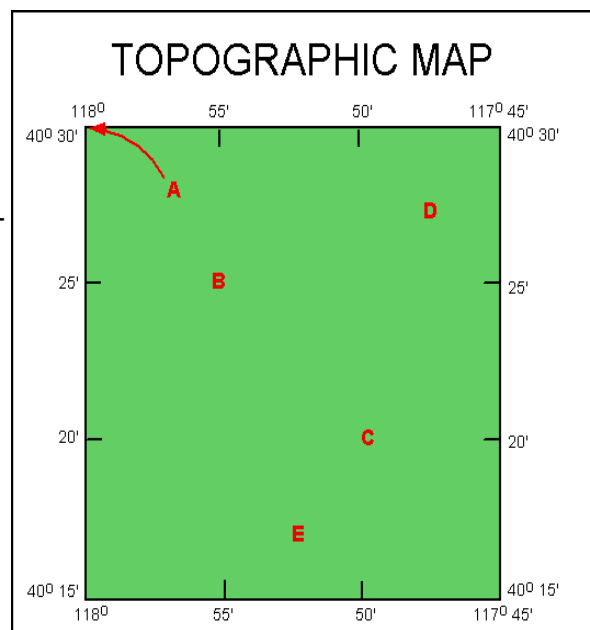
Activity 50

Follow the instructions

50.1.   Fill in 17° 34´ South

50.2.   Fill in 25° 47´ East

50.3.   Write down the co-ordinates of the following places

50.3.1. The letter i̠.

50.3.2. The T-junction in the road.

50.3.3. Where the river flows underneath the bridge in the road.

50.3.4. The middle of the bush.

50.4.   Name all natural symbols on the map.

50.5.   Name all the constructed symbols on the map.

50.6.   Draw the following symbols:

50.6.1. Secondary road with a bridge over a perennial river.

50.6.2. Cultivated land with buildings and a windmill in the area.
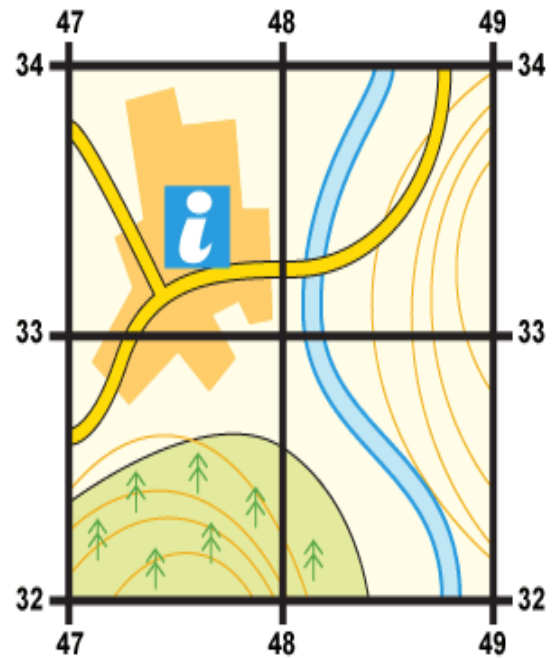
Interpret information from topographical map

98
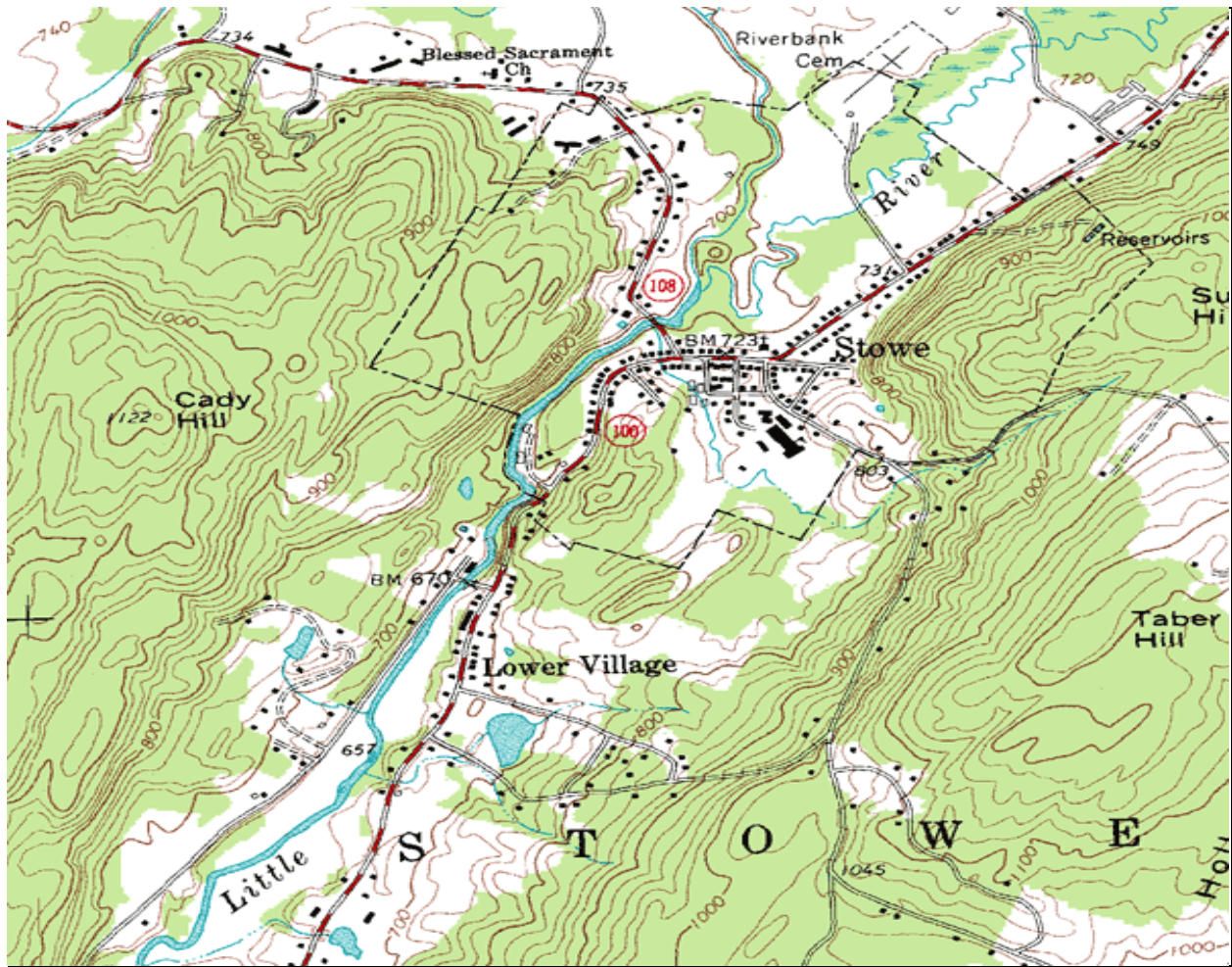
Activity 51

51.1.　　Is the river perennial or a non-perennial. Motivate your answer
51.2.　　What is the purpose of the reservoir on the map?
51.3.　　What do the black spots on the map represent?
51.4.　　What do the brown lines on the map represent and what is their purpose?
51.5.　　What is the contour interval of this map?
51.6.　　What does the green colour s represent on this map?
51.7.　　Do you think the population of Lower village practice agriculture? Explain your answer.
51.8.　　What do you think is the height at the centre of Taber Hill
51.9.　　How is the contours at the Cady hill   and Taber hill
51.10.　　Why are there no settlements on these hills?

LAND USE
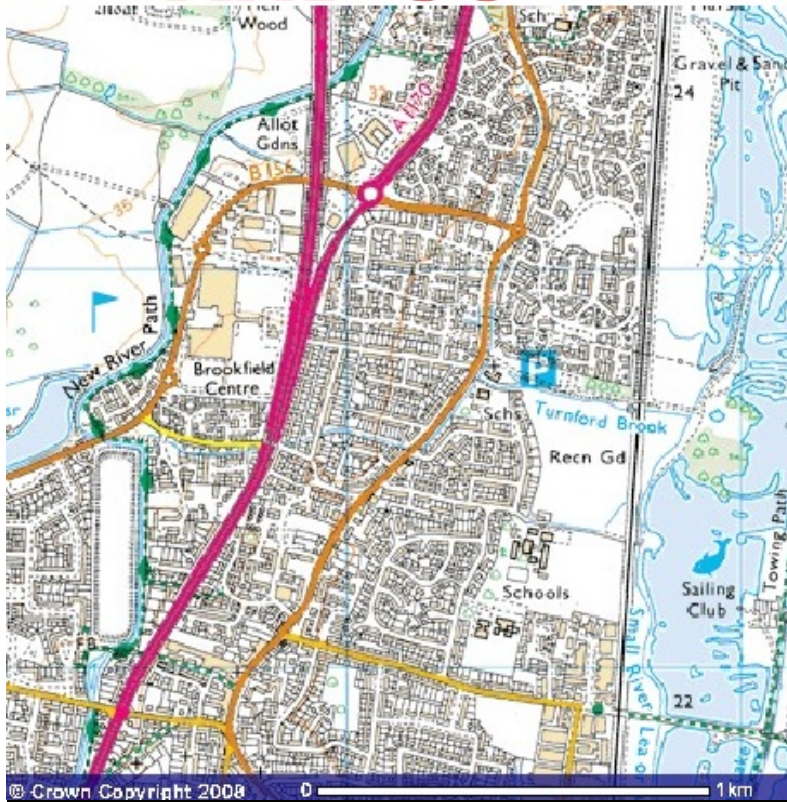
When asked what the land use is you must explain what the land is **USED** for.

In this case depending on which grid square you can see a variety of land uses e.g. a golf course, residential areas, lakes used for recreation, Roads, Allotments and many more.

PATTERNS OF COMMUNICATION
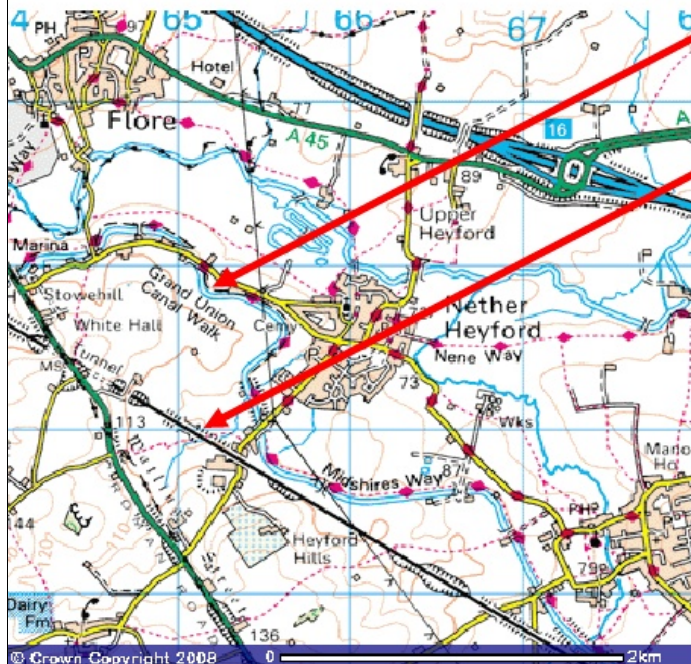
This includes:-

Canals

Railways

Roads

don't forget to know the difference between A roads, Motorways, B Roads, Rough Tracks. Look at your OS key carefully

SETTLEMENT
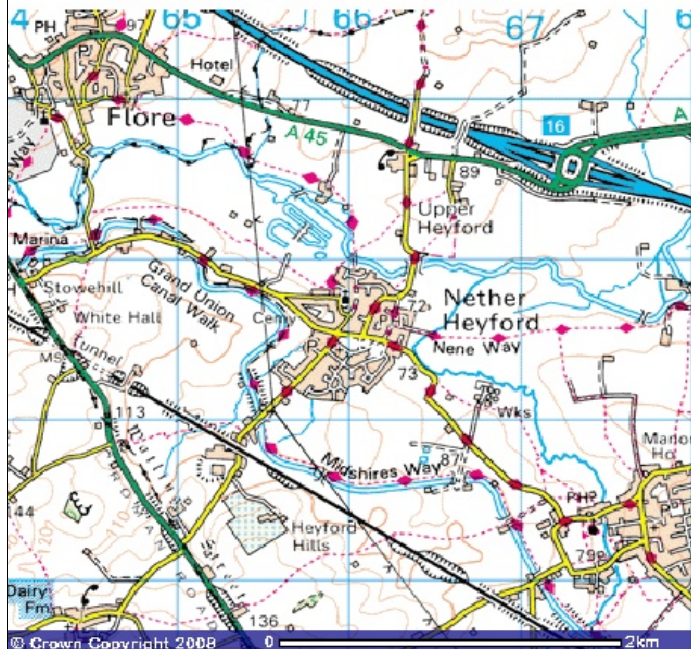
This includes:-

Its location – Where is it?

Its shape – (linear, star shaped, nucleated)

Its pattern – (nucleated, dispersed or evenly spread)

Clues that can assist the reader to interpret information from maps.

Relief	Drainage
Contour patterns Landforms Steepness of slopes Heights (general height, maximum, lowers) **Valleys** – number, shape, gradient,	Number of rivers Direction of flow Width Straight or winding Tributaries Human influence – straightening Lakes, marshes or floodplains
Vegetation	**Communications**
Woodland – location, amount, plantations or natural woodland **Rough Pasture** – location, amount	Types, Direction Landforms followed or avoided Influence of settlement
Settlement	**Land Use**
Site – height, slope, landform, water supply, resources **Situation** – relate site to relief and drainage and other settlements Route focus, bridging point **Shape** – linear or star shaped, dispersed, nucleated	Includes settlement, vegetation and communications but also industry, recreational areas and agriculture

SECTION B

MEMORANDUMS

GRADE 8 MEMORANDUM:
Activity 1

Latitudes and longitudes

    1.1 Latitudes
    1.2 Longitudes
    1.3 A- 60°N and 90°W
       B- 0° and 150°W
       C- 30°S and 60°W
       D- 60°S and 60°E
       E- 30°N and 150°E
       F- 50°N and 70°E

    1.4   Underline the correct answer:

    1.4.1   Always name the (latitude/longitude) first and the (latitude/longitude) last.
    1.4.2   The latitude of the North Pole is (180°N/ 90°N)
    1.4.3   If numbers get bigger towards the top of the page, it is (North/South) of
           the Equator.
    1.4.4   If numbers get bigger towards the left side of the page, it is (East/West) of the Greenwich.
    1.4.5   Lines of longitude is also called (latitudes/meridians)
    1.4.6   Lines of latitude is also called (meridians/parallels)

    1.5 ANSWER COULD INCLUDE THE FOLLOWING.
       Latitudes and longitudes are important to us because all places have a position on earth. To make locating places easier on maps, we use latitudes and longitudes. /Lines of latitude and longitude are imaginary lines that do not appear on the earth`s surface but are drawn onto maps to show positions.
       (Learners may use their own words in Question 1.5)

Activity 2
Degrees and minutes

2.1 Northern hemisphere

2.2 Southern hemisphere

2.3 23° 30`N

2.4 23° 30`S

2.5 Learners draw the diagram in their books

 2.6.1 A = 34°31`S and 28°05`E

 2.6.2   B= 34°32`S and 28°06`E

 2.6.3   C= 34°33`S and 28°05`E

 2.7   D is plotted in the learner`s books

2.8 Peer marking-(Look at the learners points they identified in 2.7)

2.9 ALLOW LEARNERS TO DEVIATE WITH 10` to either side in following answers.

2.9.1 29° 34`S and 30° 24`E (e.g. deviation =29° **24`-44**`S and 30° **14`-34**`E)

2.9.2 30° 02`S and 30° 53`E (allow deviation of 10` on

2.9.3   28° 25`S and 32° 27`E (allow deviation of 10` on

2.10.1 St Lucia lake

.2.10.2 Sterkfontein dam

.2.10.3 Port Edward

Activity 3

Refer to the Mind-map for guidelines will assist in answering all questions in that section.

Activity 4

Kind of scales in an atlas

4.1

Small scale map	Large scale map
Features are usually less detailed	Features are generally more detailed
1:1000 000	1 :10 000
Map of Gauteng	Map of city of Kempton Park
Map of the world	Map of South Africa

4.2 The scale of a map changes with the size of the area on the map. The smaller the area shown,

  the larger the map scale.

4.3.1 Large scale map

4.3.2 Soccer City on map

4.3.3 No

4.3.4 The small scale map doesn`t show detailed information. /Feature will be to small.

4.3.5 Linear Scale

Activity 5

Types of scale

5.1 We use a scale to convert smaller distances on a map to real distances on the ground.
5.2 Line scale, word scale, ratio scale
5.3 Line scale: <u>10 5 1 0   1   2   3   4   5km</u>

    Word scale: one centimetre equal 0,5 km
    Ratio scale: 1:50 000

5.4 1/50 000cm
5.5 Ruler or a piece of paper
5.6 Secondary scale
5.7 Primary scale
5.8 String.

Activity 6

Scales: Line scale, word scale and ratio scale.

Please note that copying of maps may distort scales. Teacher *must measure distances* on their copies.

6.1 Allow some deviation but not much

    a.   4000km
    b.   800 km
    c.   2000 km

6.2 Allow some deviation but not much

    a.   1,3 cm = 200km
    b.   2,7 cm = 450km
    c.   3,4 km = 580km/600km

6.3 Allow some deviation but not much

    a.   30 km
    b.   13 km
    c.   40 km

6.4 150-170 km Map distance=9.1cm
                Scale= 1.15km

Actual distance= 9.1x1.5 =136.5km

6.5 Conversions:

6.5.1   100 cm

6.5.2   500cm

6.5.3   80 000 cm

6.5.4   2000 m

6.6   Word scales:

a.   One cm on the map represent   one hundred m .on the ground
b.   One cm on the map represent two, five km .on the ground
c.   One mm on the map   represent eight km .on the ground

6.7   Ratio scales:

a.   1:50 000
b.   1:2000 000
c.   1:2 500
d.   1:50 000

6.8   Ratio scales:

a.   1:1000 000
b.   1:300 000
c.   1:50 000

Activity 7

Implementation of the ratio scale on the topographic map and orthophoto map.

7.1 Learners place X, Y and Z on attachment 2.

7.2   1:50 000

7.3   Local scale

7.4   Ratio scale/Line Scale

7.5   50 0000 mm

7.6 $\dfrac{1}{50\ 000}$

7.7   1 cm represents 50 000 cm

$\dfrac{50\ 000}{100\ 000}$ (100 000 cm in a km)

0, 5 km

One cm represents 0, 5 km

7.8.1 G = M x S

1, 3 cm X 50 000

65 000 / 100 (100 cm in 1 m)

G = 650 m

7.8.2 G = M x S

1, 1 cm x 50 000

55 000 / 100

G = 550 m

7.9.1   G = M x S

5, 6 cm x 50 000

280 000 / 100 000 (100 000 cm in 1 km)

G = 2, 80 km

7.9.2 G = M x S

6, 6 cm x 50 000

330 000 / 100 000

G = 3, 3 km

7.10   1:10 000

7.11   Larger

7.12 The features are larger on the ortophoto map / smaller on the topographic map.

OR

There are more detail on the orthophoto / less deail on the topographic map.

OR

The size of the objects on the photo is $\dfrac{1}{10\ 000}$ of the size on the ground. The map is $\dfrac{1}{50\ 000}$

of the size on the ground.

7.13. $\dfrac{1}{10\,000}$

7.14. 1 cm represents 10 000 cm

$\dfrac{10\,000}{100\,000}$

0, 1 km

One cm represents 0, 1 km

7.15   G = M X S   (you may replace **M** with **O** for orthophoto map)

8, 1 cm X 10 000

81 000 / 100 000

G = 0, 81 km

Activity 8

8.1.1 Rotation- earth turn around like a wheel on a fixed point or an axis/spins

8.1.2 Soltice- Soltice occurs when the sun's rays are directly over the tropics at noon, twice a year – on

21 or 22 July

and 21 or 22 December

8.1.3 Equinox- Occurs when the sun's rays shine directly over the Equator at noon,because

of the earth revolution around te sun this occurs on 21 or 22 March and 22 or 23 September.

8.2   The earth rotates on its axis which al√√ways at an angle of 23,5°√. The tilt of the earth axis is

maintained for the 365¼√

days it complete one orbit its revolution around the sun.√√ (4)

8.3   24hrs√ (1)

8.4   365¼ days √ (1)

Activity 9

9.1 The sun is directly on the tropic of Cancer√√, that means the northern hemisphere experience long days and shorter nights.

9.2 Equator

9.3 The tropic of Capricorn / Southern hemisphere.

9.4 South Africa√, Brazil,√ Australia√ and New Zeeland.√ (Any two)

9.5 When the Northern hemisphere has its longesthours of sunshine, within the artic circle the sun never sets and it is light for 24 hours. √√

The southern hemisphere has its shortest hours of sunlight, which means the sun is further away. Therefore the Antartic circle never receive sun light for six months. After every six months the position of the sun alternates at the pole circles.√√ (4)

9.6 The earth rotates once in 24hrs from west to east. √This makes it appear that the sun rises in the east and sets in the west. √
The sun maintains the same angle of tilt toward the sun a it rotates on its axis.√This means that at any time the earth is darkness and the other half is in the sunlight. √This alternating of light and darkness gives us our cycle of day and night.(4)

9.7 The sun does not move relative to the earth. The constant angle of the earth's axis as it moves around the sun causes variation to the amount of incoming solar radiation to places on the earth during different times in the year. During June-July the northern hemisphere is more tilted towards the sun when the southern is tilted away from it.

Activity 10

10.1.1 The different times around the world, it has been divided into time zones.

10.1.2 The International date Line is the 180°imaginary line of longitude where the +12 and the -12 time zones meets.

10.1.3 Every time is relative to the Greenwich. Greenwich mean time is used as the standard refernce for time.

10.1.4South Africa have a set time at 30°E . The line of latitude runs through South Africa and determine our standard time in South Africa.

10.1.5The Coordinated Universal Time , formerly Greenwich Mean time – is now used as the standard reference.

10.2 Earlier,√ add√

10.3Later, √ subtract√

10.4Countries receive the sun's light at the same time. The east sees the sun rise when the west are stil indarkness. Therefore all countries on the east side of South Africa will be few hours/ a day ahead , while the west side of South Africa will behours later or a day behind.√√

10.5 21h00- 22h00 (Remember Austraila have three different time zones)√

10.6 Brazil- morning,√   New -Zealand- evening.√

10.7 13h00 afternoon√

10.8 60°West√

Activity 11

11.1 Autumn
11.2 Temperatures start to drop
11.3 Places away from the sun are cool compared to the places facing the sun. Such places have lost heat and are not as hot as places facing the sun.
11.4 Places receive the same amount of heat because the sun is are directly overhead at the dequator.

Activity 12

12.1   False
12.2   It does not refer to South Africa as South Africa does not have winter in December.
12.3   Summer -Europe

            Winter-South Africa

            Summer – North Africa
12.4   Temperture is cold

Activity 13

13.1   North and South America
13.2   Europe and Africa
13.3   June-Earth tilt in the N Hemisphere is closets to the sun resulting in longer days and shorter
             nights

Activity 14

14.1   July
14.2 4.8^0C -10 C
14.3   South Africa is far from Equator and receives less amount of heat from sun as it is facing
             away from the sun during that season due to the till of the earth
14.4   26 C (Temperatures are fluctuating now due to climate change)
14.5 10^0C

Activity 15

15.1 Spring

15.2   Country borders and City names

15.3 35-40 Degrees

<div align="center">Activity 16</div>

16.1   Spring
16.2   Cloud cover
16.3   Sea- blue and land green
16.4 30^0- 35^0
16.5   Cold.   Cold with sky covered by clouds, windy and rain fall.

<div align="center">Activity 17</div>

17.1. Learners will indicate the contour index (dark brown) line on the sketch.

17.2.1 Steep slope B-C

      Gentle slope A-B

17.2.2 Hill- Contour lines is indicated as circles/conical hill is on the top.

17. 2.3 B-C:The contour lines are steep

<div align="center">Activity 18</div>

18.1.1   40m

18.1.2   70m

18.1. 3 0m

18.1.4   53m

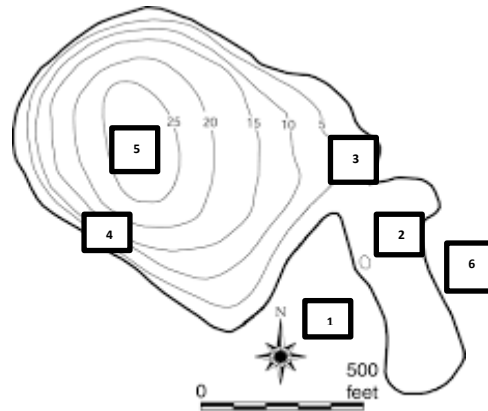18.2. F

18.3. B and C

18.4 E and F

18.5 53m

Activity 19

19. 800m ,780m, 700m, 720m, 740m, 760m, 780m, 800m, 820m, 840m, 859m

Activity 20

1. Bay- a area of water partially surrounded by land

2. Gentle slope/flat area

3. Gentle slope/flat area

4. Steep slope/steep hill

5 Highest point

6. Towards the end of the coastal line where the slope is gentle.

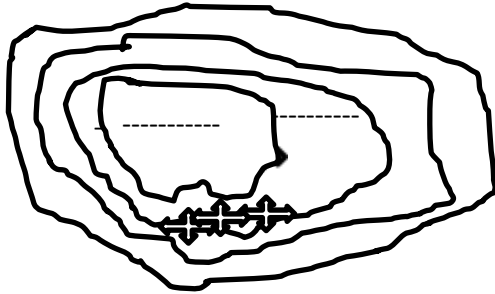
Activity 21

21.1.1 X

21.1.2 Z
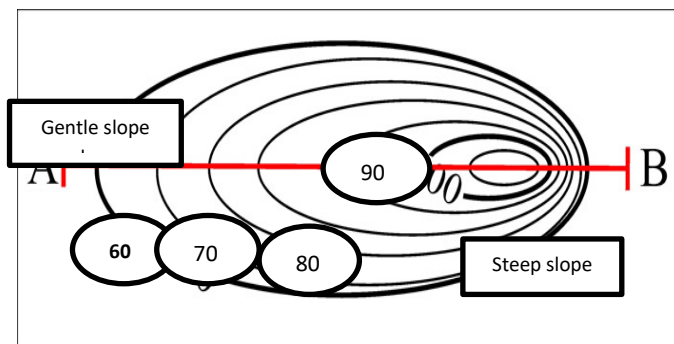
21.1.3 Y

21.2.1 Hill

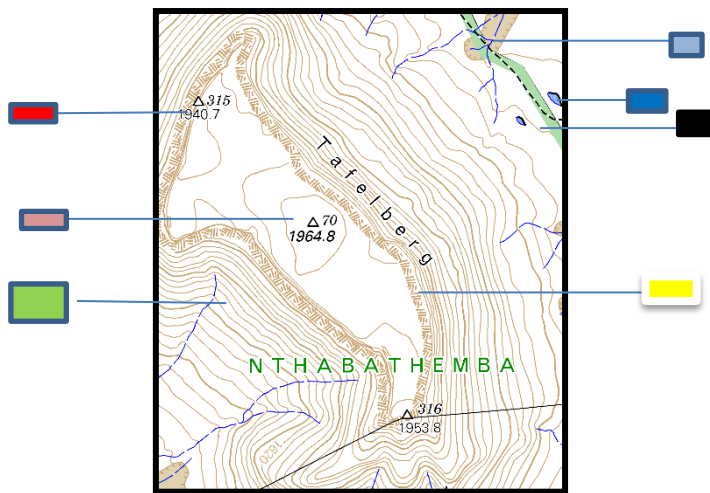21.2.2 N

21. 2.3 L

21.2.4 N-M Convex

M-L Concave

Activity 22

Activity 23

Activity 24.1

24.2 Western province

24. 3 Yes.

Activity   25

      25.1.   Limpopo province.
      25.2   Steep
      25.3   No because of the steep slopes.
      25.4   Gentle or low lying area.
      25.5   Yes. The low or gentle slope of the area is ideal for agricultural activities.
     25.6   Built-up area
     25.7 (distance from town, contour value) an area provided with targets for the controlled
           practice of shooting.
           It is far away from the town because of the noise when shooting.
           The low lying area because you need flat land for aiming purposes.

Activity 26

26.1 **Eleviated area that seperated two drainage basin.**
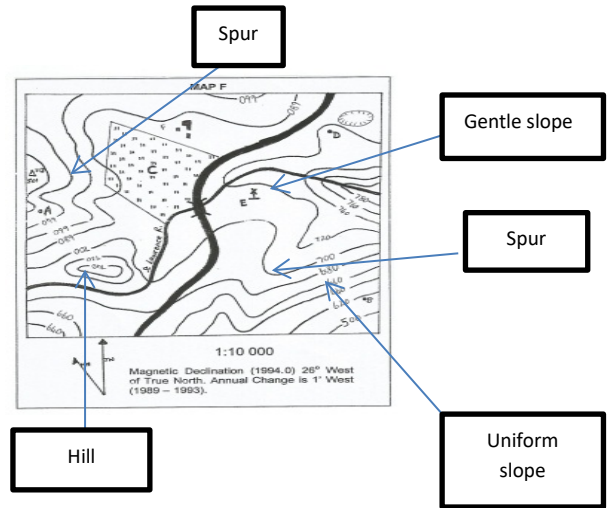
Activity 27
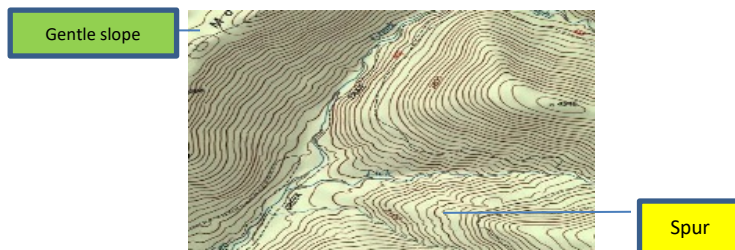
27.1 High lying areas, not often populated,difficult to build any infrastructures.
27.2 Low lying areas,farmers often live in fertile valleys, alongside a river,
27.3 **Track and hiking, spotheight**

Activity 28

28.1.   **±610 m**
28.2   **±720 m**
28.3   **801 m**
28.4   Learners indicate the slopes on the map
28.5   **Caltivated land**
28.6   E **Windmill**and F **Buildings**
28.7   **Sw**

Spur

Gentle slope

Spur

Uniform slope

Hill

Activity 29

Learners presents their collages.

Activity 30

Activity Memo		
A **vertical aerial map**	B **topographic map**	C **vertical aerial map**
D **vertical aerial map**	E **high oblique photo**	F **street map**
G **vertical aerial map**	H **weather map**	I **world map**

Activity 31

31.1. **Images made from verticle aerial photos.**
31.2 Using satelite images.
31.3 **5 m**
31.4 **641 m**

Activity 32

32.1. Use a highlighter and identify the folowing places on the orthophoto:
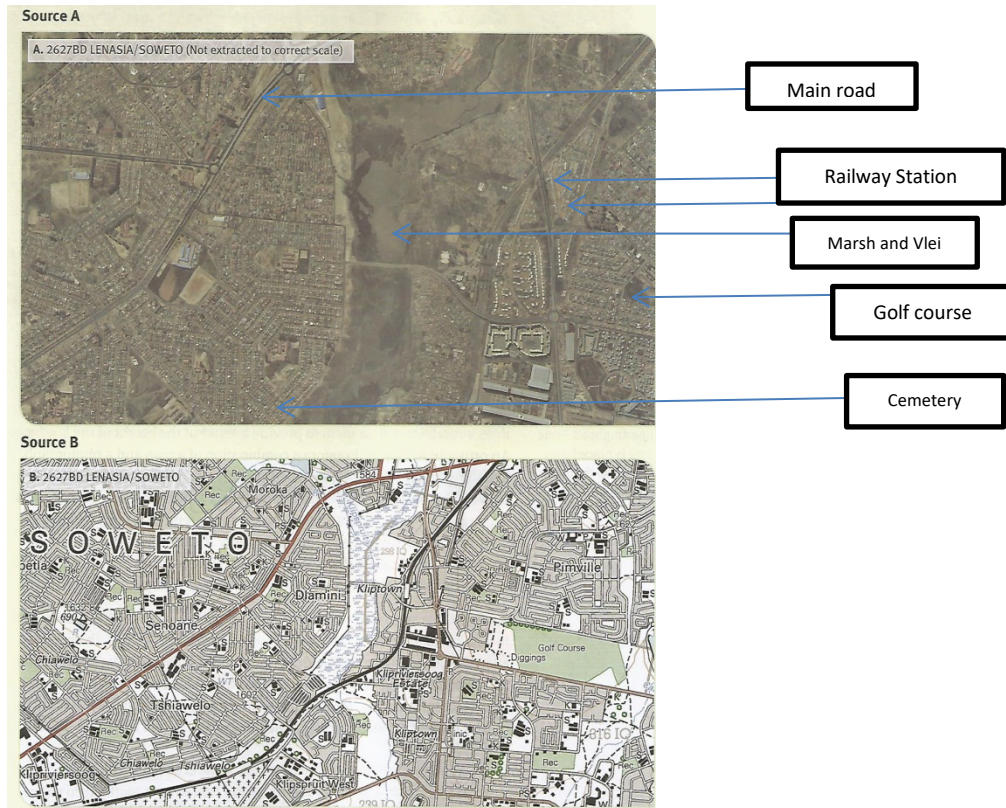
32.2. Colclusion: Is the area covered by the orthophoto and earial photo the same? Motivate your answer.

     No, the photo cover a smaller area than the Topographic map

32.3.   Source A

32.4.   Cartographer

32.5.

32.6. In which province is Soweto? Gauteng

32.7. An area of low-lying land which is flooded in wet seasons or at high tide, and typically waterlogged at all times.

A vlei is a shallow minor lake, mostly of a seasonal or intermittent nature. It even might refer to seasonal ponds or marshy .

Activity 33

33.1 Other roads because it is in a built-up area.	**33.7 Harbour - The dark areas indicate water**
33.2 Low density- The buildings are far apart and there are lots of Trees and open areas.	33.8. Other roads
33.3 Station. There are many railway lineas and trains in that area.	33.9 Industrial area
33.5 River	Harbour is located near a industrial area
33.6 Contour lines far apart. Railwaylines needs level / flat land. Buildings uaually o build on level land to minimise cost.	**33.10 True. The harbour is at the lowest Point, at sea level.**
	33.11Harbourmaster.

Activity 34

34.1   **Orthophoto Source 2A**
34.2   **Orthophoto Source 2 A**
34.3   Identify the Bakensriver on the photo.
34.4   **Trees**
34.5   Identify two secondary roads on the photo
34.6   **Gentle. Built-up area**
34.7   Topographical map. More clear than the orthophoto
34.8   Would you like to be a cartographer one day? See learners answer
34.9   No Trig beacon , contour lines not visible.

Source 2A. Orthophoto map 3325DC of Port Elizabeth

Bakens River

Source 2B. Topographical map 3325DD of Port Elizabeth

Study the image and answer the following questions.

35.1.   Aerial photo

35.2   Rural

35.3   Building contractor

35.4   Possible stand identified for building complex

35.5.   No. New houses will be there

35.6   Municipality for the supplying of water and electricity, as well as roads leading to the
           Complex

Activity 36

36.1 The contour lines shows **height** of the land above **sea** level.
36.2 The contours are numbered in **metres**

Highest
point

36.3 The lines run in intervals of **5** metres

36.4 The dark black lines is called **index** lines

36.5 If there are a few contour lines on the othophoto map , it shows that the area is **flat**.

36.6 The **closeness** of contour lines shows us how steep the slope is.

36.7 If the contours are **widely** spaced, the slope is gentle.

36.8 Areas coverd by an orthophoto map is **large**r that areas on a Topographic map.

36.9 Identify the highest area with a green high lighter.

36.10 Identify the valley with an yellow high ligher.

36.11 Give this orthophoto map your own vales and identify the height, acording to your values, of the Hill

Valley

Activity 37

Draw the colums in your book and describe the different features found on Orthophoto

	Discription
Steep slope	**Contourlines close together**
Gentle slope	**Contour lines far apart**
Regular slopes	**Evenly spased contour lines**
Irregular slopes	**The contours do not have the same distance between them**
River valley	**v-shape conours point towards higher land**
Spur	**v-shape contour point away from higher land**

Activity 38

a. **area**	b. **point**	**c. Area**	d. **line**	e. line
f. **point**	g. **area**	h. **point**	i. **Area/point**	j. **point**

k. **line**	l. **point**	m. **point**	n. **area**	o. **point**

Activity 39

39.1 Eastern Cape.
39.2 **Area covered on the Topographic map is larger while the area covered on the Orthophoto is smaller**
39.3 Use a highlighter and identify the followings places on the Orthophoto and Topographic map
39.4
39.5 **Indian Ocean**
39.6 **Warm Mozambique current**
39.7 **A transparent tank of water in which lice fish and other water creatures and plants are kept. Or a building containing tanks of live fish of different species.**
39.8 **Enclosed area of water in a port for the loading, unloading, and repair of ships.**

Activity 40

40.1. **Coastal rocks, light house, other roads, buildings, recreation grounds, excavations, national freeway, main roads, trig beacon, contour lines, post Office, Church, row of trees, school**

40.2 With a green highlighter or pencil indicate all the natural symbol
40. 3With a pink highlighter or pencil indicate all the manmade symbols
40.4 Western Cape
40.5 **80 m**
40.6 . **352.3 meters**
40.7 **Indicate importance or danger**
40.8 Athens 1865. **Passenger liner from Britain that sank because of rough weather / gale strong winds on 17 May 1865 with 29 crew members on board and a cargo of iron . The captain was David Smith.**
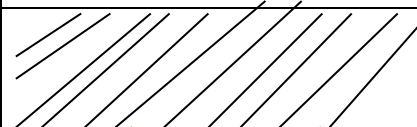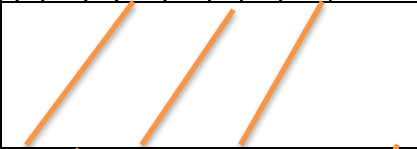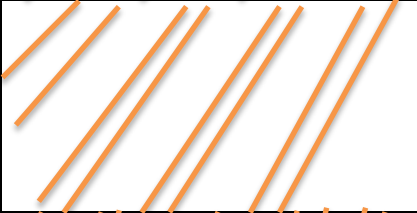40.9 **The harbour forms part of an industrial area.**

Activity 41
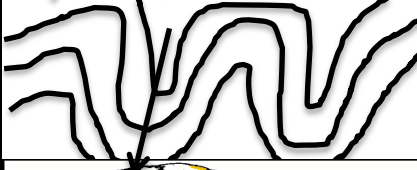
A	B	C	D	E
Natural	Constructed	Constructed	Constructed	Constructed
F	G	H	I	J
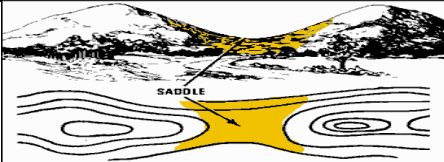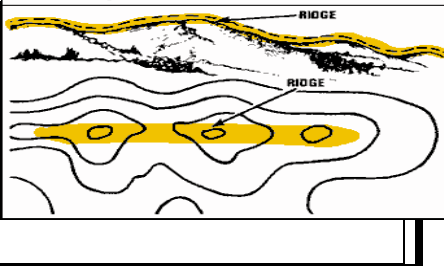
Constructed	Constructed	Constructed	Constructed	Natural
K	L	M	N	O
Constructed	Natural	Constructed	Natural	Constructed
P	Q	R	S	T
Constructed	Constructed	Constructed	Natural	Natural

Redraw the table in your workbook and complete the table on the different height clues to be found on Topographic maps.

Name	Drawing	Description
Spot height	.1250	▪ **Dot** with a number
Trig beacon	123 450 △	▪ **Triangle** with two numbers. ▪ One number represent the **height** ▪ Other number represent the **number** of the trig beacon
Bench mark	_____**1234**_____	▪ **Arrow** next to a road with a value
Contour lines		▪ **Brown** lines that run in intervals of 20. ▪ Index contour lines are **darker** brown.

Activity 43

	Name	Discribtion	Drawing
1	Steep slopes	**when contours on a map are close together, the slope is steep**	
2	**Gentle slopes**	contours on a map are far apart, the slope is gentle.	
3	Regular slopes	can either be gentle or steep, but the contours are evenly spaced. The contours have the same distance between the lines.	
4	Irregular slopes	The contours do not have the same distance between the lines.	
5	**River valley**	on a contour map, this looks like an arrow head or V-shape pointing towords the higher land	
6	Spur	on a contour map, this looks like and arow head or a V-shape pointing away from the higher land. Spurs are found on both sides of a river valley.	

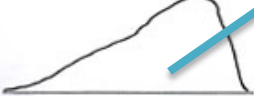| 7	Mountain	a mountain will have many contour lines, steep and genlte slopes. A mountain is a large area that is high above sea level.	
8	**Ridges**	a ridge can be a hill or a mountain. It can only be caled a ridge if the one side of the mountain is a steep slope and the orher side is a less steep or gentle slope.	

Activity 44

Indicate answers on sketch

Activity 45

Indicate answers on sketch

45. 1.1 See label sketch

45.1. 2   8 848m

45.1. 3 See label sketch

45.1.4   See label sketch

45.1.5   Polar bears, jackals, wolves.(Any other relevant)

45.1.6 High rainfall, extreme temperature, forests regions

45.1. 7 See label sketch

45.2

45.2.1 Learners indicate the plateau on the sketch

45.2.2 An area of fairly level high ground.

45.2.3 A long steep slop,especially one at the edge of a plateau.

45.2.4 Drakensberg, Magaliesberg, Swartberg, Outeniqua Mountains, Groot Winterhoek
        Sneewberge, Hottantots Holland Mountains Roggeveld, Langeberg

45. 2.5 Soutpansberg, Magalisberg and Pilansberg

Paragraph

45. 3. Temparature should be moderate for farming. Soil should be fertile or improved soil let grass grow for cattle farming.Mountain areas has more rocky grounds. Water shloud be in nearby area such as rivers or dams. To transport prodructs at low lying areas are easier than on highlying areas.

Activity 46

46.1.A   M x S   M x S

9,8cm x 0,5km   9,8cm x 50 000
= 4,9 km   100 000

                                            = 4.9 km

46.1.B M x S   M x S

10,5cm x 0,5km   10,5cm x 50 000
5, 25km   100 000

                                          = 5.25km

46.2 A.   M x S   M x S
9,8cm x 500m   9.8cm x 50 000
=4900m   100 000

                                          =4900m

46. 2 B.   M x S   M x S
10,5cm x 500m   10.5cm x 50 000
= 5250m   100 000
                                          = 5250m

46. 3 C – East
       D- Southwest
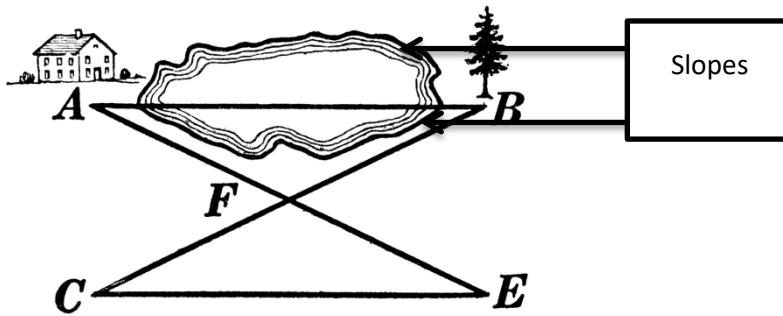   E - Southeast

46.4   ▇▇▇   buildings

          ∘∘∘∘∘∘∘∘   Trees

126

46.5

Activity 47

1cm = 1km(using the line scale) depending on the printing measurement will change

47.1 A. M x S   M X S

    =10.4cm x 1km $\frac{104mm \times 1\,000\,000}{1000\,000}$
    = 10.4 km   10.4 km

 B. M X S   M x S

    = 2.4cm x 1km $\frac{2,4cm \times 100\,000}{100\,000}$
    = 2,4km   = 2.4 km

C.   M x S   M x S

  2,5cm x 1km $\frac{2,5cm \times 100\,000}{100\,000}$
  = 2,5km   = 2.5km

47.2 A. M X S   M x S

    5.5cm x 100m $\frac{5.5cm \times 100\,000}{100\,000}$
    = 550m   = 5,50km

                                        = 550m (convert to m)

 47.3

| 47.4 Gentle slope | 47.5 1700m | 47.3 Steep slope |
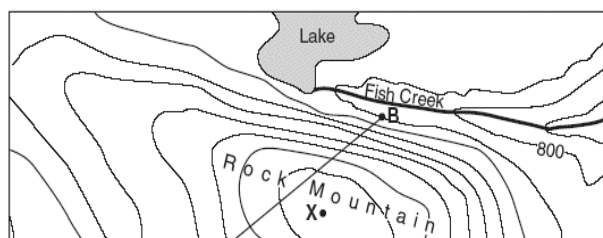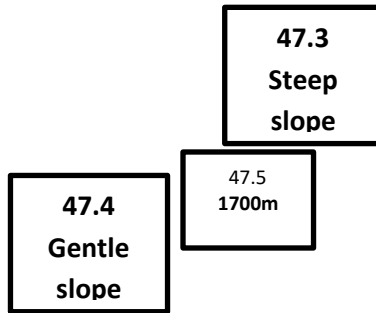
47.6.1 Northeast

47.6.2 Southwest

47.6.3 Southeast

 Activity 48

48.1.1 Yes- Contour lines show a Valley pattern
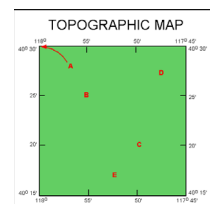
48.1.2 Yes- Oval shape and green areas indicated sports grounds

48.1.3 Mountains- valleys and spurs shaping the mountains.

Activity 49

49.1 Write down the degree   and minutes for label A – E

TOPOGRAPHIC MAP

49.1.1

| A 40°S,118°E | B 40°S,118°E | C 40°S,118°E | D 40°S,118°E | E 40°S,118°E |

49.1.2

A	B	C	D	E

40°30´ S	40°25´S	40°20´S	40°30´S	40°20´S
118°54´E	118°55´E	118°50´E	118°50´E	118°55´E

49.1. 3 Write down the degrees , minutes and second for label A – E

A	B	C	D	E
40°30´ S	40°25´S	40°20´S	40°30´S	40°20´S
118°54´E	118°55´E	118°50´E	118°50´E	118°55´E

49.1.4 Give the following direction

49.1.4.1 From B to D   **NE**

49.1.4.2 From C to B   **NW**

49.1.4.3 From A to E   **SW**

49.2 M x S
   5cm x 50 000
    100 000
   = 2.5km

Activity 50

50.1   Fill in 17°34´South

50.2   Fill in 25°47´East

50.3   Write down the co-ordinates of the following places

50.31   The letter I   17° 34´ "S ; 25°47´ " E

50.3.2   The T-junction in the road   17° 34" S; 25°47´E

50.3.3   17°34´ " S; 25° 47´ "E

50.3.4   17°33´ " S; 25°47´ "E
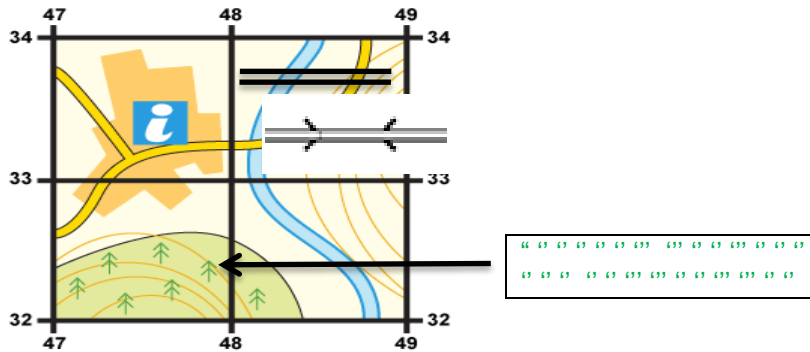
50.4   Perennial river, trees , contour lines

50.5   Road. built-up area

50.6   Draw the following symbols:

50.6.1

50.6.2

Activity 51

51.1 Is a perennial river cause is shown by the solid line   Shows it flows through the year

51.2 To support with water during dry seasons

51.3 For up building/Residential areas

51.4   Contour lines show the relief of an area

51. 5 20 meters

51. 6   It shows vegetation

51.7   No, indication of any green colour along the area.

51. 8   3200m

51.9   Is the contour index

51.10 **Both show steep cause contours are close to one another- they have some ring or round contours indicating the hill.**

Illustrations and photographs of various resources on the Internet.

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