Western Cape Government
Education

Directorate: Curriculum FET

TELEMATICS 2015

GEOGRAPHY

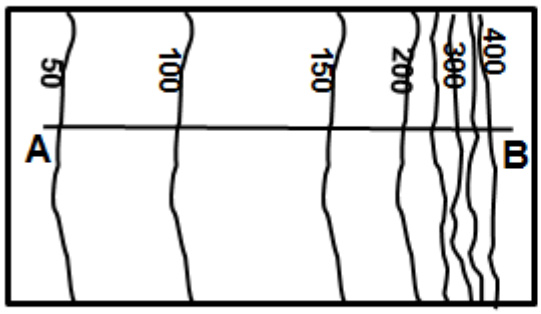
Grade 11

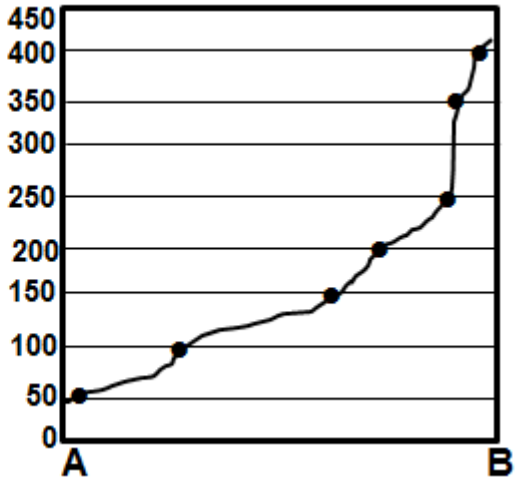
GEOGRAPHICAL MAPWORK SKILLS AND TECHNIQUES

1 CONTOURS AND SLOPES

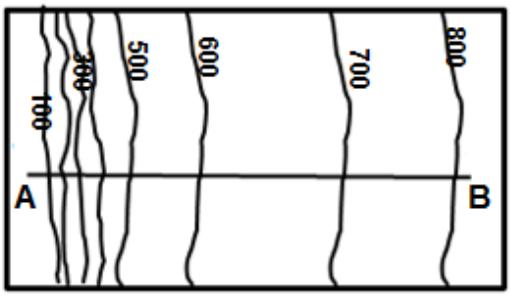
- Contour lines join places with the same height above sea level.
- Contours far apart show a gentle slope.
- Contours close together show a steep slope

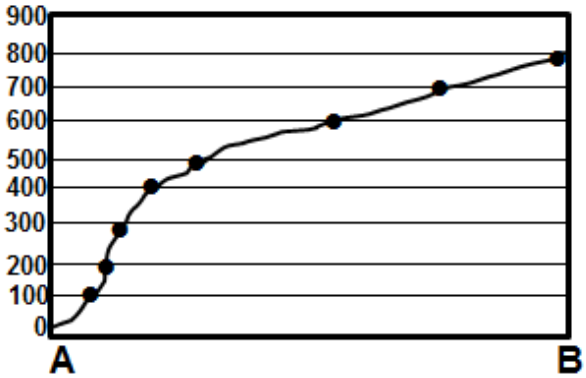
1.1 Concave slope



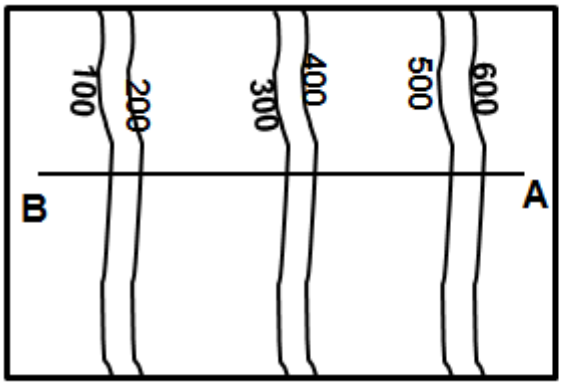


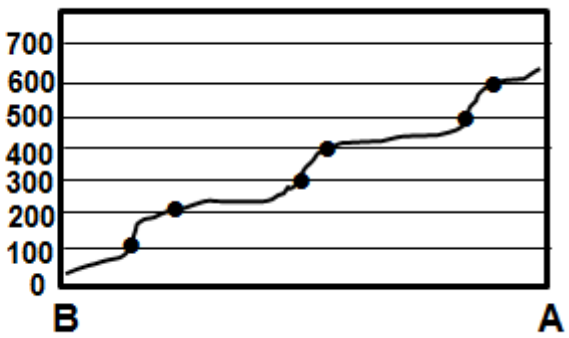
1.2 Convex slope



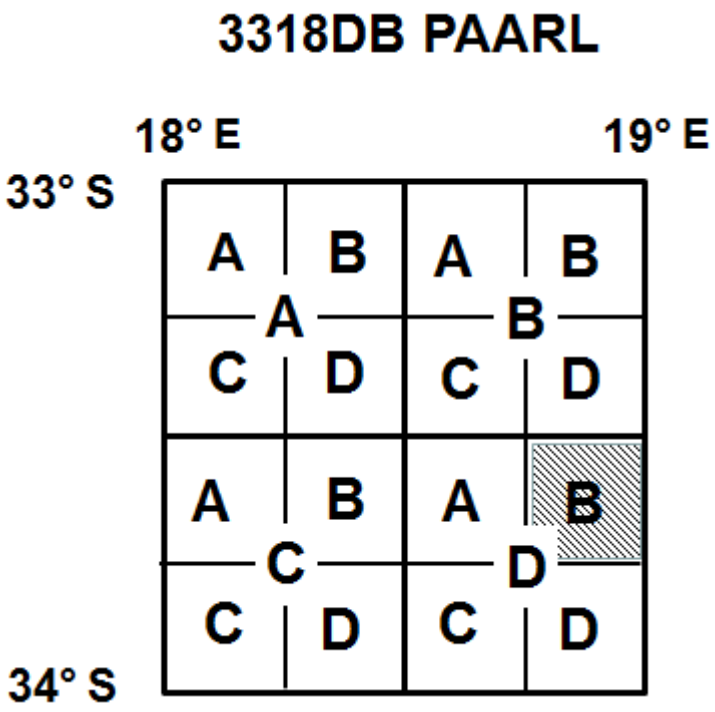


1.3 Terraced slope

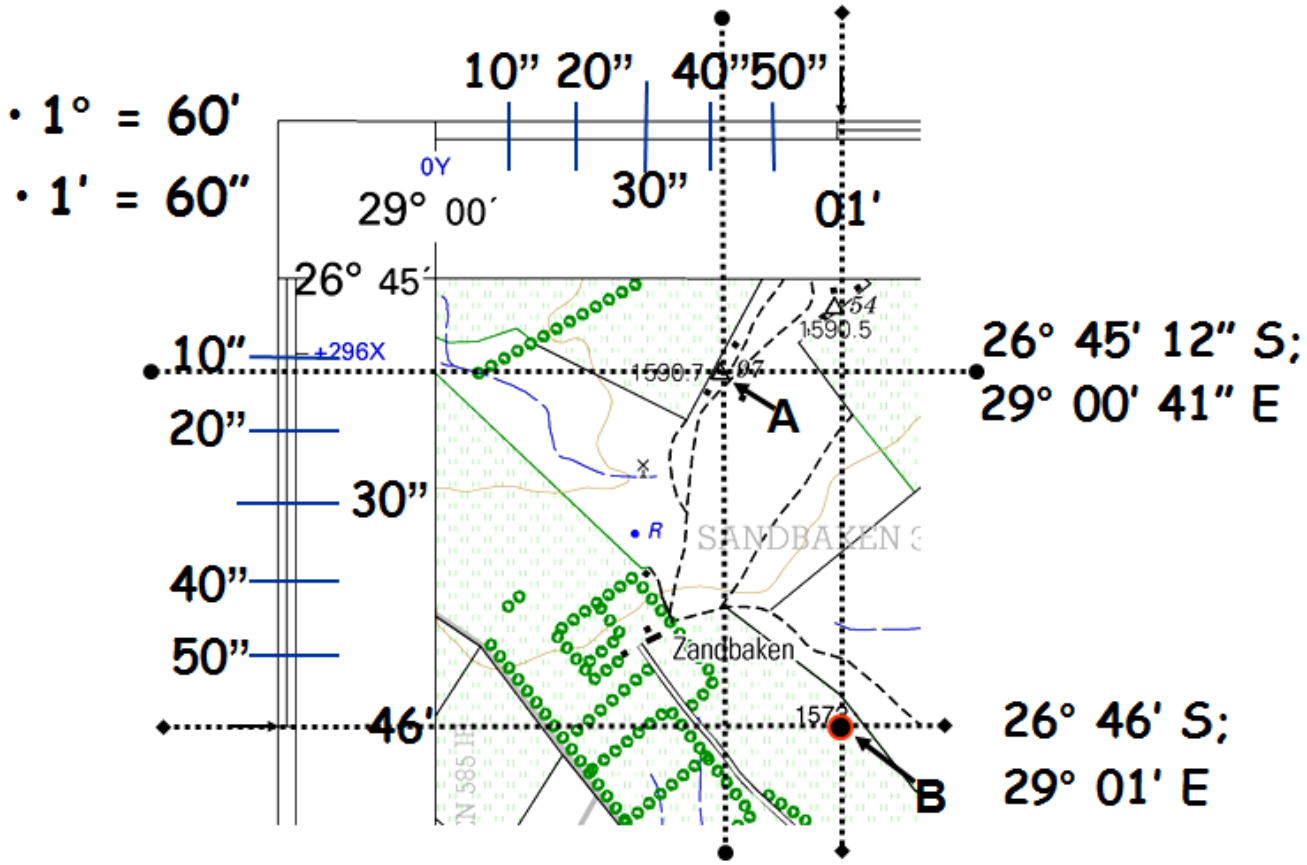




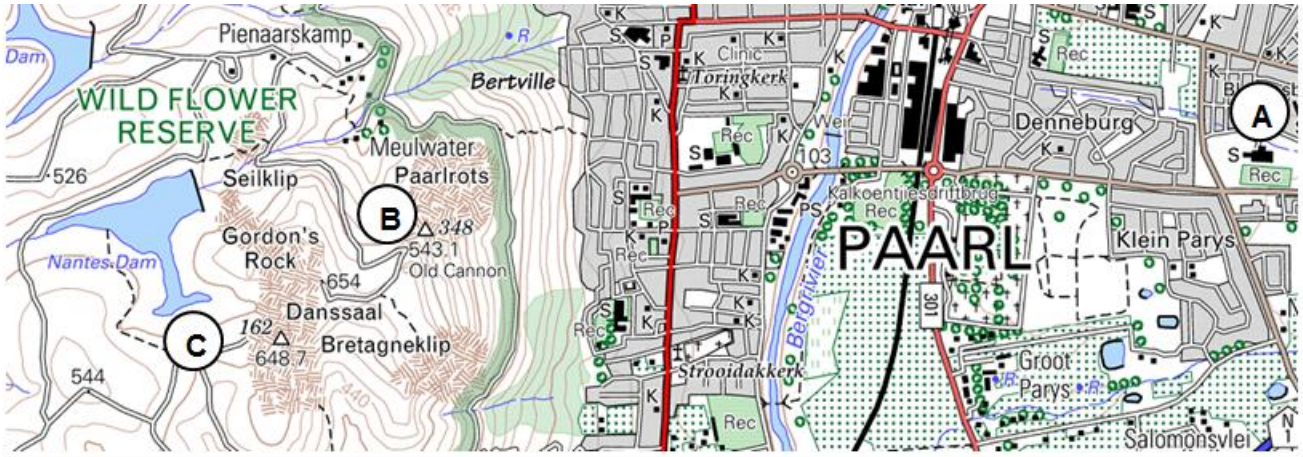
2 MAP REFERENCE

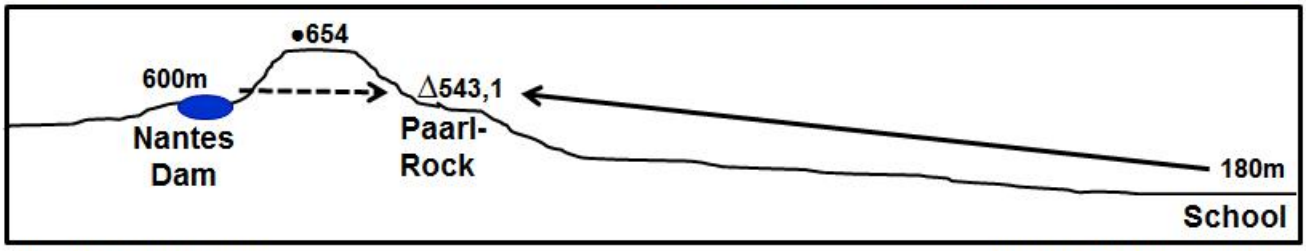


3 LOCATION IN DEGREES, MINUTES AND SECONDS



4 INTERVISIBILITY



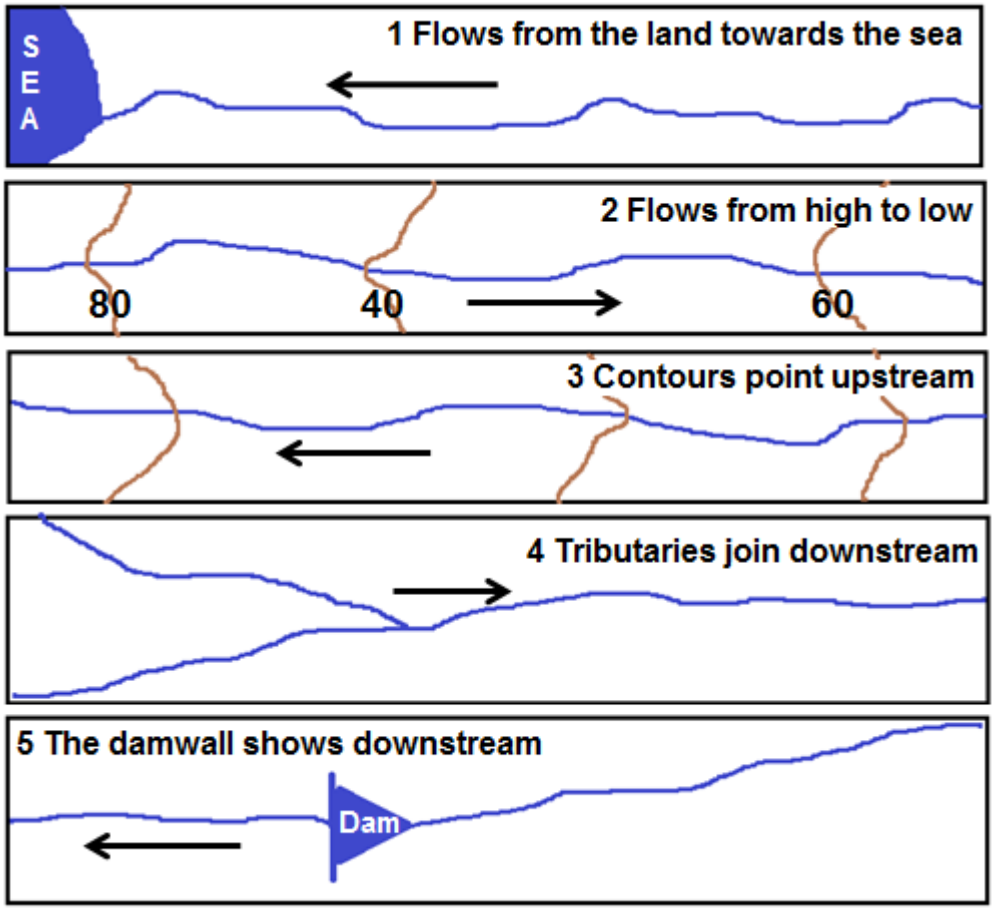


Paarl Rock is not visible from the dam

Paarl Rock is visible from the school

5 DIRECTION OF RIVER FLOW

The following methods can be employed in determining the direction of river flow.



READ AND INTERPRETATION OF MAPS AND ORTOPHOTOS

The goal of this guide is to empower you with regard to the answer of interpretation questions in mapwork. Remember that there is a large amount of information on the topographical- and ortophoto map. To answer these questions successfully, you must know what to look at to get to the answer. Most of these questions come from previous exam question papers. Other questions have also been included. Remember that this is not a memorandum which has been given with the questions, but an attempt **to show what you should look at to get to the answers.** It is important to take note that **ALL** content, modules and skills can be assessed in the mapwork paper. Use this guide to study and prepare yourself for the mapwork question paper (Paper 2).

CLIMATOLOGY

1 Does the area receive seasonal rainfall or rainfall throughout the year?
Seasonal: Non-perennial rivers/ dams/ cultivated lands near rivers/ irrigation/ furrows

2 Which slope is the warmest?
The northward-facing slope – identify the northward-facing slope

3 In which direction will an airplane take off and land?
(Remember that airplanes take off and land against the wind.)

GEOMORPHOLOGY

1 Physical aspects influencing the construction of railways and roads.
Mountains/ steep slopes/ marshes/ rivers/

2 In which direction does the river flow?
-To the sea
-Always from high to low
-Contours bend upstream
-Dam wall on downstream side
-Tributaries join at acute angles

3 Identify the landforms regarding structural landscapes:
-Horizontal layers: Mesas/ buttes/ conical hills
-Inclined layers: dip and escarp slopes
-Massive igneous rocks: dome-shaped landforms

4 In which direction do the layers dip?
Layers always dip in the direction of the GRADUAL slope

ENVIRONMENTAL STUDIES AND SUSTAINABILITY

1 Evidence of nature conservation
Nature reserve/ hiking trail/ fire break/ game reserve

2 Evidence of conservational farming.
Anti-erosion walls/ camps/ rows of trees to reduce wind/ contour ploughing

3 Are there sources of air pollution in the area??
-Air pollution: Industries
-Noise pollution: Airport
-Water pollution: Factories / camping sites/ Power station near river

ECONOMIC GEOGRAPHY

(a) <u>PRIMARY ACTIVITIES (FARMING / MINING)</u>

1 Commercial or subsistence farming?
Commercial: Good infrastructure/ irrigation/ large farms/ farm names/ cellar/ dipping tank/ experimental farm/ estate/ sugar mill/ service rail/ abbatoir/ dairy
Subsistence: Few roads/ footpaths/ no power lines/ small patches of cultivated land

2 Describe factors that advantage/disadvantage farming activities
Advantage: Rivers/ dams/ flat land/ power lines/ railway lines
Disadvantage: Steep slopes/ water scarce/ marshes

3 Identify mining activities
Excavations/ mine dump/ conveyer belt/ terraces/ names of mines/ old mines/ subsiding ground

4 Identifying of fishing activities
Fishing harbours/ fishermen's houses/ factories near coast

5 Identifying of forestry
Trees/ woodlands/ saw mill/ lookout towers/ fire break/ state forest

(b) SECONDARY ACTIVITIES (INDUSTRIES)

1 Describe the factors that influenced the location of the industries
Flat surface/ raw material/ Transport(name the types)/ power (power station, power lines, coal mines)/ water/ labour(residential areas)/ Market/ outskirts/

2 Heavy or light industries?
Heavy: Far from CBD/ railway transport/ Raw material-mining/ large spaces/
Light: close to CBD / road transport/ raw material - farming

(c) TERTIARY ACTIVITIES (SERVICES)

1 Tourist attractions, holiday resorts, camping sites
Close to beaches/ close to road railway/ wine tasting/ historical buildings/ monuments/ museums

2 Types of services found
Electricity supply/ telephone/ medical/ pot office/ educationl(school/ college/ university) transport (roads airport railway)/ police services etc. (buildings on map)

3 Recreation facilities?
Golf course/ athletics/ rifle range/ racing track/ etc

4 Factors that determined the location of the airport
Flat area/ far from built-up area for safety/ noise/ roads/

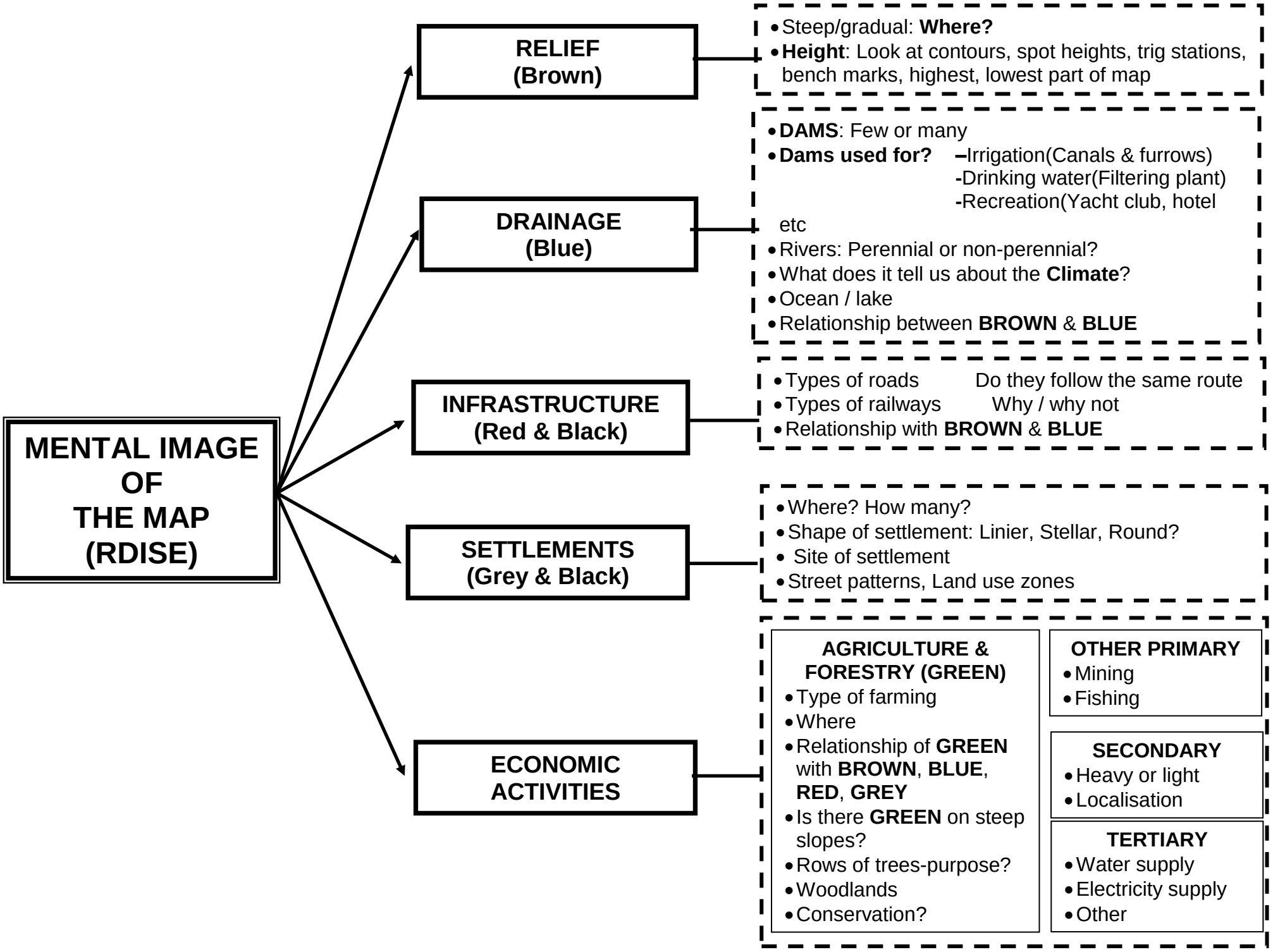
5 Does the railway line and the road follow the same routs? Why not?
The same? NB influence of topography
Road: through mountain pass . Railway around mountain (between Paarl and Worcester)

6 For what is the dam on the map used? Give reasons
Drinking water: Water purification works
Irrigation: cannels and furrows
Recreation: Yacht club, Hotels at dam, camping site, caravan park, slipway, etc.

SETTLEMENT

1 Why is the settlement located there?
Flat area/ roads/ river/ mountain/ sea/ etc

2 Is it an urban or a rural settlement?
Rural: Primary activities
Urban: Secondary and Tertiary activities

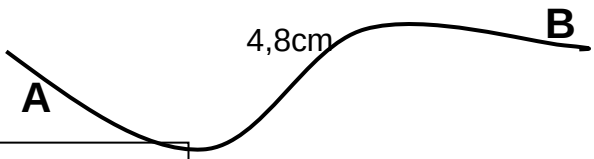

MENTAL IMAGE OF THE MAP (RDISE)
RELIEF (Brown)
• Steep/gradual: Where?
• Height: Look at contours, spot heights, trig stations, bench marks, highest, lowest part of map
DRAINAGE (Blue)
• DAMS: Few or many
• Dams used for? –Irrigation(Canals & furrows)
-Drinking water(Filtering plant)
-Recreation(Yacht club, hotel
etc
• Rivers: Perennial or non-perennial?
• What does it tell us about the Climate?
• Ocean / lake
• Relationship between BROWN & BLUE
INFRASTRUCTURE (Red & Black)
• Types of roads Do they follow the same route
• Types of railways Why / why not
• Relationship with BROWN & BLUE
SETTLEMENTS (Grey & Black)
• Where? How many?
• Shape of settlement: Linier, Stellar, Round?
• Site of settlement
• Street patterns, Land use zones
ECONOMIC ACTIVITIES
AGRICULTURE & FORESTRY (GREEN)
• Type of farming
• Where
• Relationship of GREEN with BROWN, BLUE, RED, GREY
• Is there GREEN on steep slopes?
• Rows of trees-purpose?
• Woodlands
• Conservation?
OTHER PRIMARY
• Mining
• Fishing
SECONDARY
• Heavy or light
• Localisation
TERTIARY
• Water supply
• Electricity supply
• Other

C A L C U L A T I O N S

1. DISTANCE

FORMULA: Distance = $\frac{\text{Map distance x Scale}}{100\ 000}$

Calculate the length of the national road from A to B.



STEP 1
Measure distance on map in **cm**

Distance = 4,8cm

STEP 2
Place in Formula

Distance = $\frac{\text{Map distance x Scale}}{100\ 000}$

= $\frac{4,8 \times 50\ 000}{100\ 000}$

= $\frac{4,8}{2}$

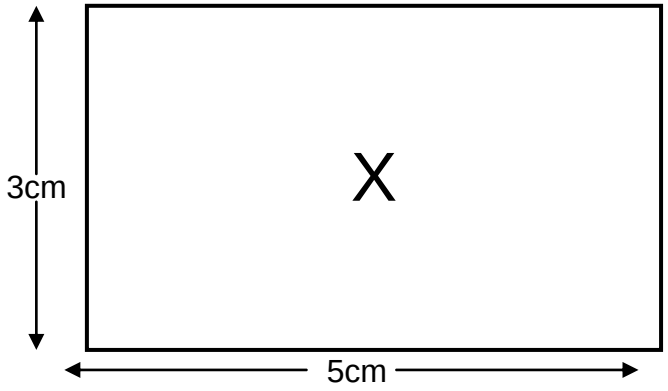
STEP 3
Answer in **km**

= 2,4 km

2. AREA

FORMULA: AREA = Length x Breadth

Calculate the area of Block X.



STEP 1
Calculate length of block in **cm**

Length = $\frac{5 \text{ cm} \times 50\ 000}{100\ 000}$

= 2,5 km

STEP 2
Calculate breadth of block in **cm**

Breadth = $\frac{3 \text{ cm} \times 50\ 000}{100\ 000}$

= 1,5 km

STEP 3
Place in Formula

Area = l x b
= 2,5 x 1,5

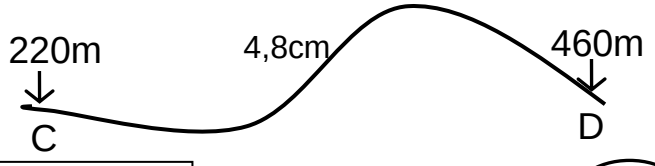
= 3,75 km²

STEP 4
Answer in **km²**

3. GRADIENT

FORMULA: Gradient = VI (Difference in height)
HE (Horizontal distance)

Calculate the gradient from C to D.



STEP 1
Calculate difference in height

460 – 340 = 120m

STEP 2
Calculate distance

Distance = Map distance x Scale / 100 000
= 4,8 x 50 000 / 100 000
= 2,4 km

STEP 2
Convert to **METERS**

= 2 400m

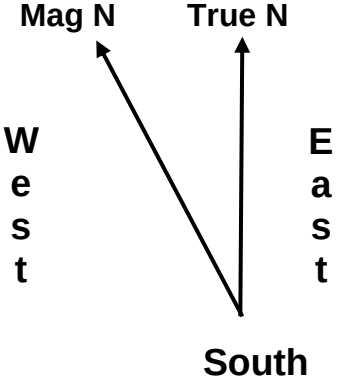
STEP 3
Place in formula and **SIMPLIFY**

Gradient = Difference in height (VI) / Distance (HE)
= 120m / 2 400m
= 1 / 20
= 1:20

STEP 4
Answer as a ratio

4. MAGNETIC DECLINATION AND MAGNETIC BEARING

Magnetic declination is the difference between true North and magnetic North (on compas).



NB The following when you work with Magnetic Declination
1. What is the mean mag. declination (in degrees & minutes?
2. In which direction is the magnetic declination?
3. In which year is the magnetic declination given?
4. What is the mean annual change?
5. In what direction is the average yearly change?
6. For what year must the mag. declination be calculated?

Mean magnetic declination 23° 53' West of true north (Julie 2002).
Mean annual change 6' Westwards.

Calculate magnetic declination for 2009.

STEP 1
Calculate difference in years

2009 – 2002
= 7 years

STEP 2
Calculate total change

6' x 7 years
= 42' West

STEP 3
Add or subtract from magnetic declination

23° 53' +
42'
23° 95'

STEP 3 NB: FOR SOUTH AFRICA
If the change is towards the **WEST**, it is **ADDED**.
If the change is towards the **EAST** it, is **SUBTRACTED**

STEP 4
Remember: Minutes cannot be more than **60** !

= 24° 35' West

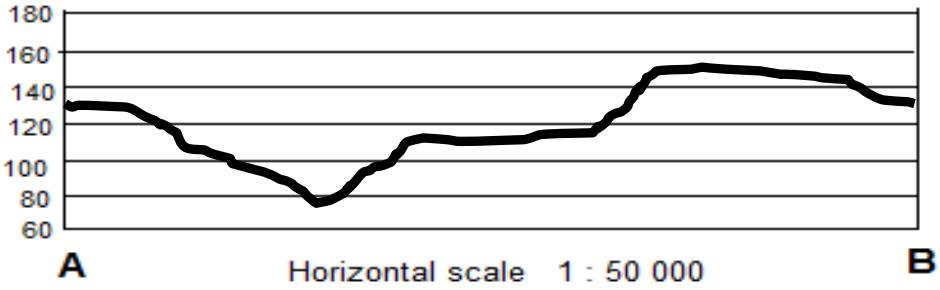
MAGNETIC BEARING
Magnetic bearing is calculated by simply adding the bearing

5 VERTICAL EXAGGERATION

FORMULA: V E = VERTICALE SCALE / HORIZONTAL SCALE

Calculate the vertical exaggeration of the following

Vertical scale
4mm = 20m



STEP 1
Convert VS to ratio scale

4mm = 20m
4mm = 20 000mm (same units)
4 : 20 000
1 : 5 000

STEP 2
Place in formula

V V = VERTICAL SCALE / HORIZONTAL SCALE

$$= \frac{1}{5\,000} \div \frac{1}{50\,000}$$

$$= \frac{1}{5\,000} \times \frac{50\,000}{1}$$

= 10 Times