SOLVING MAP PROBLEMS 15 MAY 2014

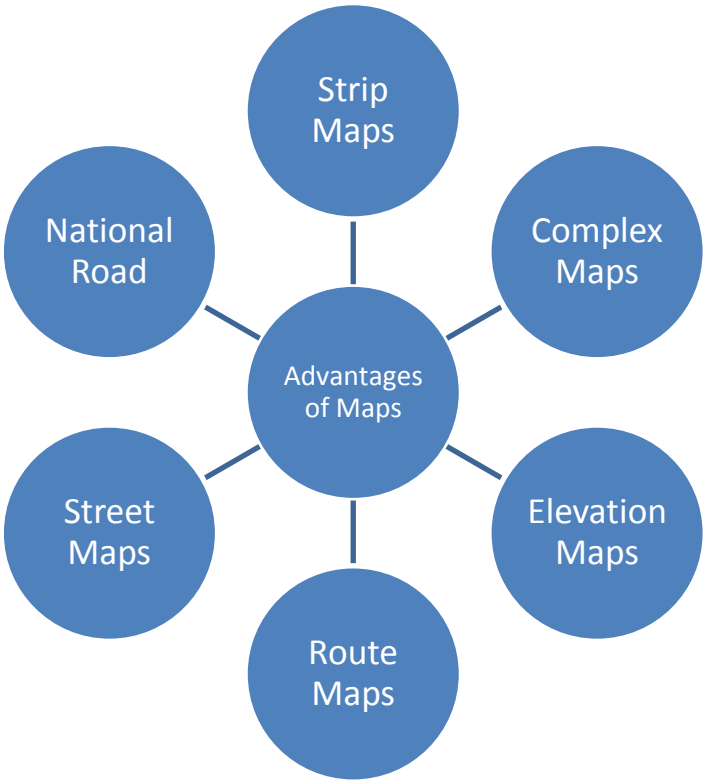
Lesson Description

In this lesson we

- Introduced and cover questions about:
  - Maps showing seating plans (classrooms, cinemas, etc)
  - Maps indicating the layout of a shopping centre or buildings and sports fields
  - National road maps
  - Strip maps
  - Street maps
  - Housing complex maps
  - Costs involved with travel
  - Time of travel
  - Scale
  - Direction

Summary

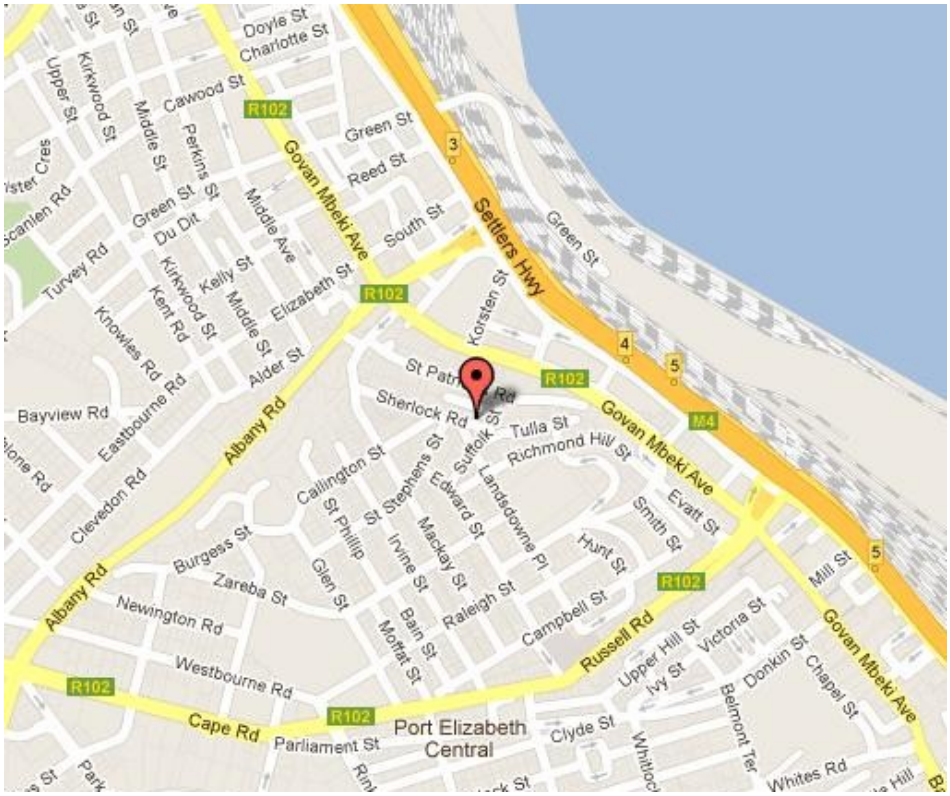
Advantages of Maps



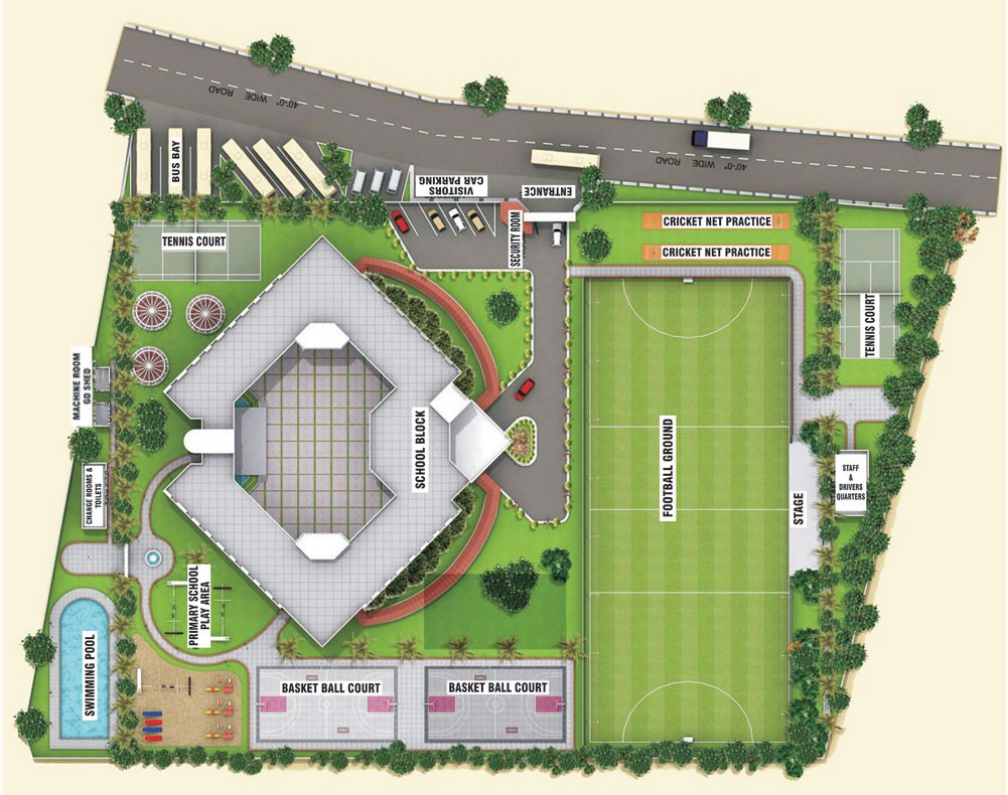
National Road Maps

Strip Maps

Street Maps

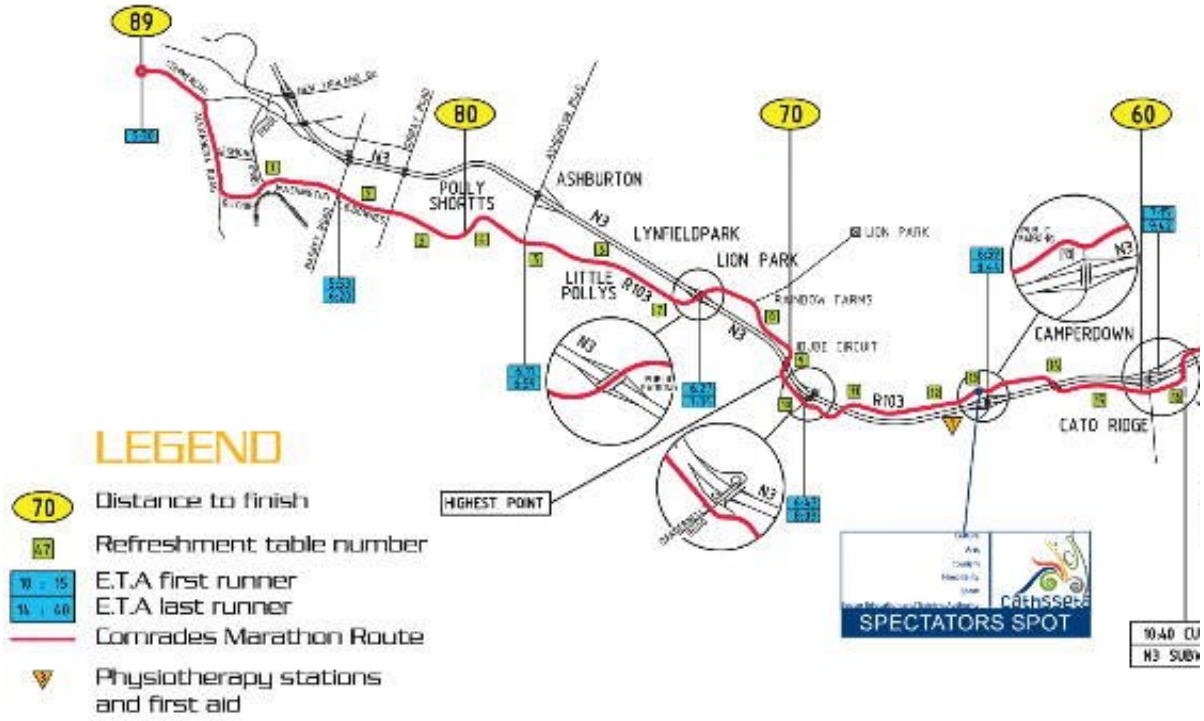


Complex Maps

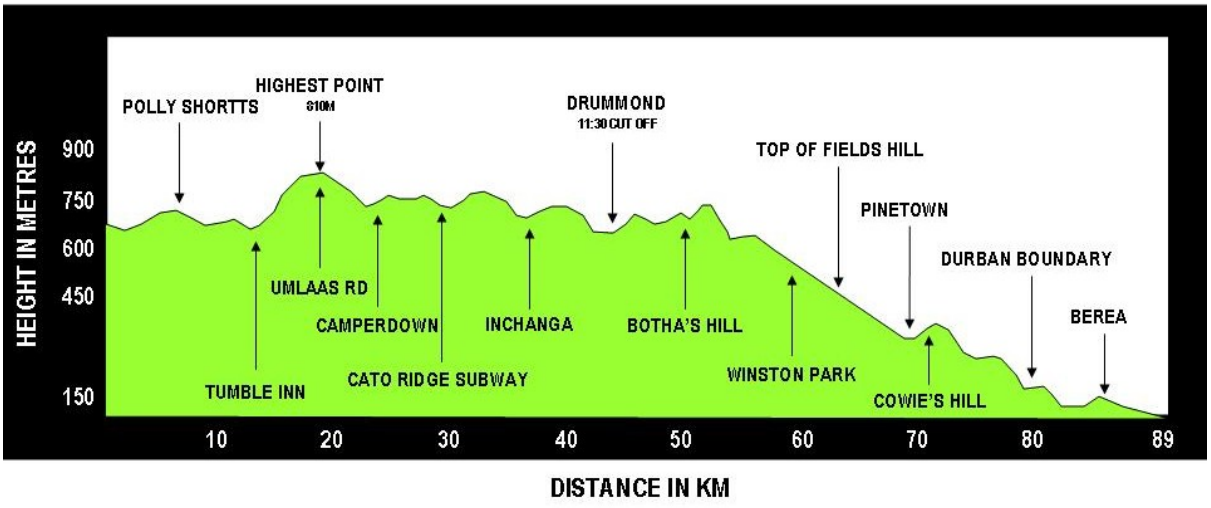


Route Maps

Comrades Marathon

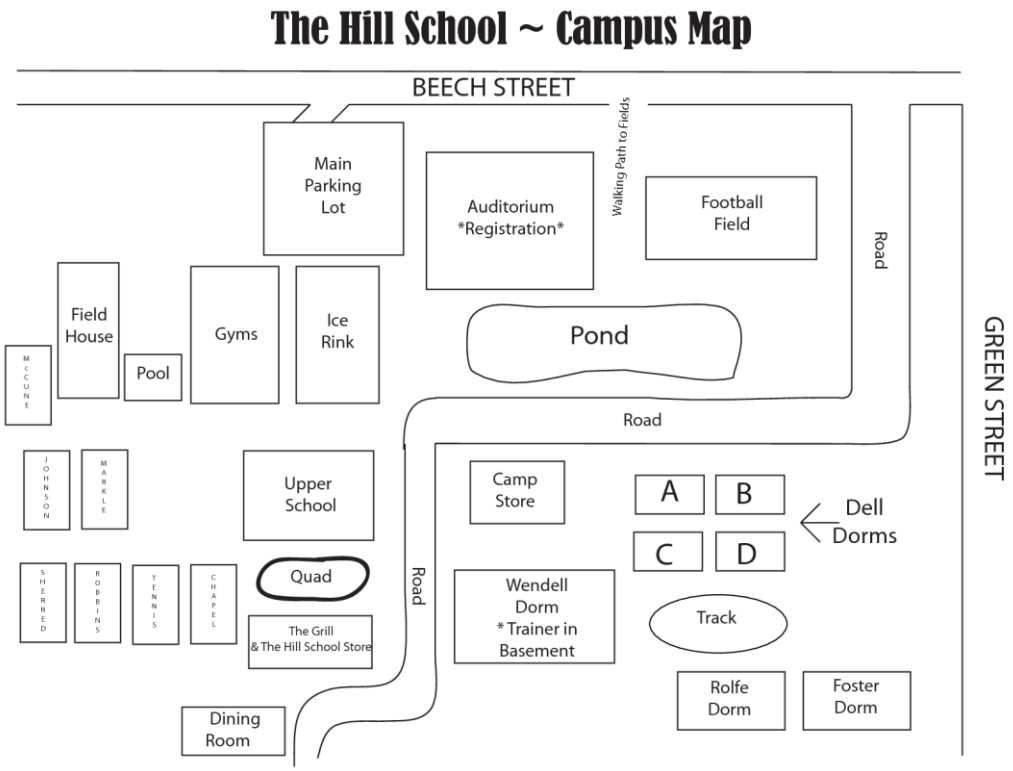


Elevation Maps



Test Yourself

Refer to the map when answering questions 1 - 5



Question 1

Which building is to the east of the main parking lot?

A Ice Rink

B Gyms

C Auditorium

D None of the above

Question 2

Is there a possibility that Hill school offers swimming as a sport?

A Yes

B No

C Not enough information to determine the answer

Question 3

How many Dorms are in the school?

A 1

B 2

C 3

D 4

Question 4

Where would the students who live in the dorms eat their meals?

A Auditorium

B The Grill

C Dining Room

D Upper School

Question 5

Do you think this school follows a Christian ethos?

A Yes

B No

C Not enough information to determine answer

Question 6

In which direction would you be facing if you rotate 225 degrees clockwise from North

A SW

B SE

C NW

D W

Question 7

Using a scale of 1 : 1 150 000, determine how many kilometres are represented by 5 cm on the map.

A 5 750 000km

B 57 500km

C 57,5km

D 57 500cm

Question 8

How long will a car take to travel 630km if it averages a speed of 100km per hour?

A 6 hours

B 6 hours 3 minutes

C 6 hours 18 minutes

D 7 hours

Question 9

If a car uses 1 litre of petrol to travel 12,25km, then how far can the car travel if the tank has a capacity of 60 litres?

A 4,90km

B 735km

C 0,2km

D 720km

Question 10

A car travels at an average speed of 100km per hour. The driver stops once for 45 minutes to fill up with petrol and get a snack and then again for another 20 minutes to take a break. The total distance of the trip is 600km. How long will the trip take?

A 1 hour 5 minutes

B 6 hours

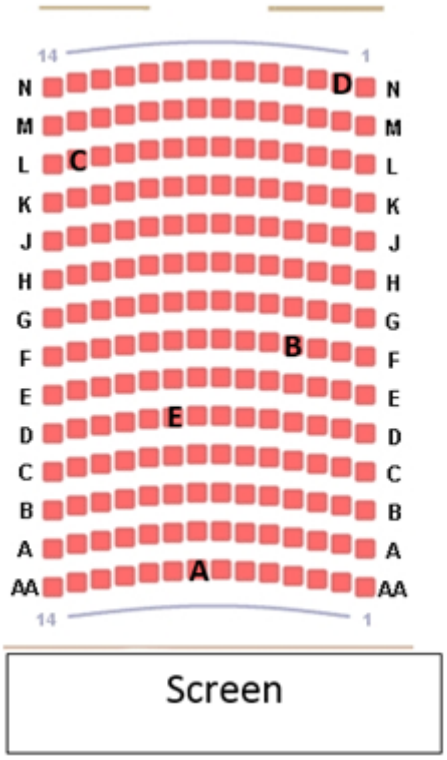
C 7 hours 5 minutes

D 4 hours 55 minutes

Improve your Skills

Question 1

Below is a copy of the seating plan of a cinema.



a.) How many seats are in this cinema? (1)

b.) Which row is furthest from the screen? (1)

c.) List the seat numbers of seats A – E show on the seating plan. (5)

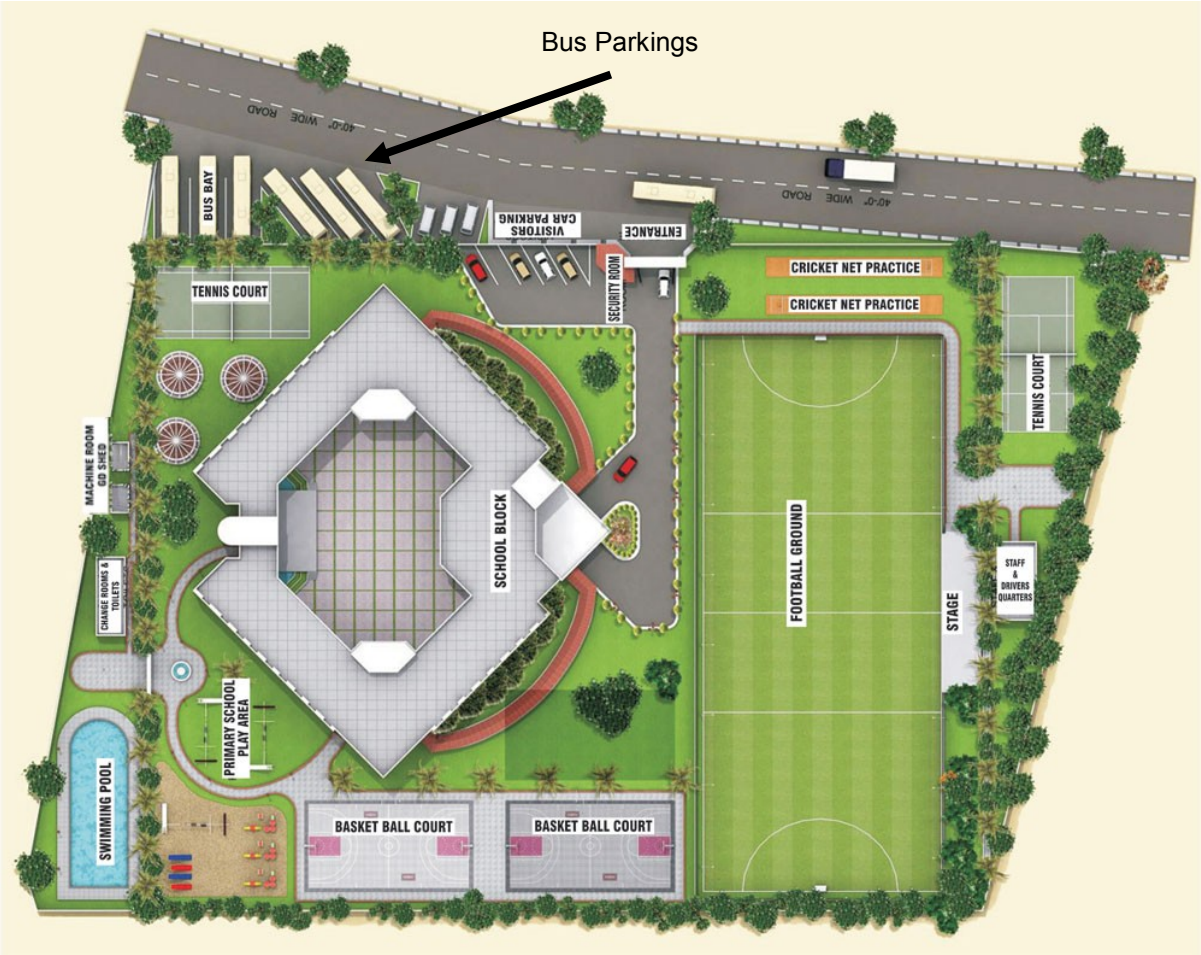
d.) You want to go to a movie with three friends.
You get to the cinema late so seats are limited. You are give the following three options:

Option 1 – D1, C1, C2 and C3
Option 2 – M14, M13, F5, F6
Option 3 – AA11, AA13, AA15, A12

Which option would you choose? Give a reason for your answer,
Explaining why you would not choose the other two options. (3)

Question 2

Consider the following map of a school:



a.) List five types of sport that students at the school could play. (5)

b.) Do some students live far from the school? Give a reason for your answer. (2)

c) What do you think this symbol  represents? (2)

Question 3

Consider the map below which shows a portion of Europe:

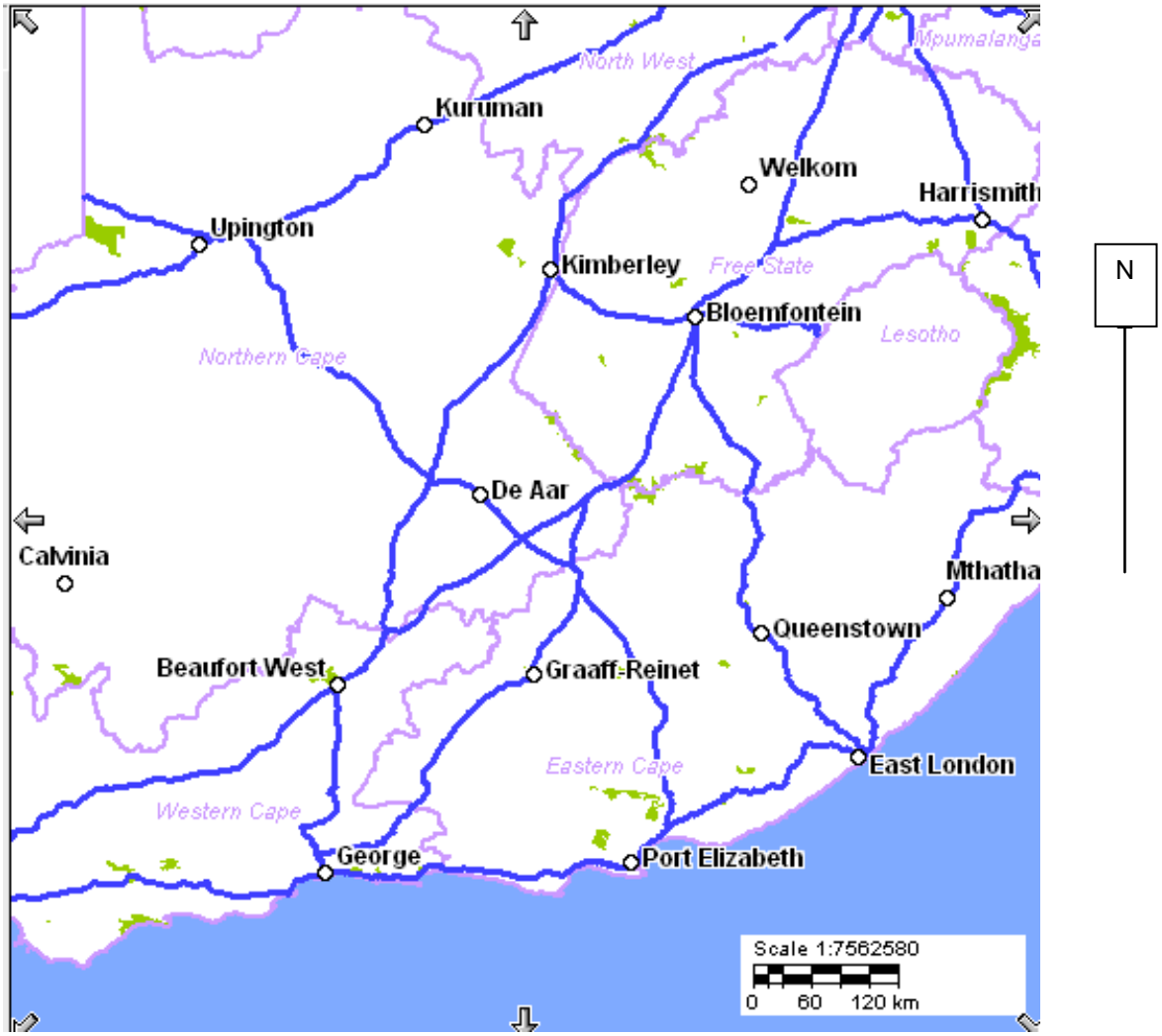
a.) Which sea is to the west of Italy?
b.) What separates The United Kingdom and France?
The capital of each country is indicated with a star.
c.) What is the capital city of Poland?
d.) Of which country is Budapest the capital?
e.) Which country is north of Slovenia?
f.) In which direction does the Seine River, in France, flow?

Question 4

Your friend is trying to find your house. You live on the corner of Reinett Road and Seaview Road. He is lost and phones you to let you know that he is currently on Goedehoop Road as indicated on the map. You are to give him clear directions on how to get to your home.

Question 5

Consider the map below:



5.1) In which direction would you be travelling if you were driving from:

5.1.1) Beaufort West to Bloemfontein

5.1.2) Queenstown to East London

5.2) Using the scale, determine the direct distance (as if you were flying by plane), in kilometres, between Kimberley and De Aar.

Question 6

With the use of the National Road Map and the Distance Chart answer the following questions:

DJ is preparing a trip from Upington to Durban. The route he is considering is to depart Upington, travelling along the N14 to Johannesburg and then along the N3 past Harrismith and Pietermaritzburg and into Durban.

DISTANCE CHART	BLOEMFONTEIN	CAPE TOWN	DURBAN	EAST LONDON	GABORONE	JOHANNESBURG	KIMBERLEY	MAFIKENG	MAPUTO	MASERU	MBABANE	MTHATHA	PORT ELIZABETH	PRETORIA
BEAUFORT WEST	540	463	1185	576	1004	940	873	855	1495	680	1320	705	561	1000
BLOEMFONTEIN	•	1004	634	584	622	398	177	464	862	157	677	570	677	456
CAPE TOWN	1004	•	1753	1079	1501	1402	962	1343	1865	1160	1680	1314	769	1460
COLESBERG	266	778	860	488	848	624	292	672	1085	383	903	517	451	682
DURBAN	634	1753	•	674	979	578	811	821	620	590	562	439	984	636
EAST LONDON	584	1079	674	•	1206	982	780	1048	1301	630	1238	235	310	1040
GABORONE	622	1501	979	1206	•	358	538	158	919	702	719	1192	1299	350
GEORGE	773	438	1319	645	1361	1171	762	1203	1670	913	1450	880	335	1229
GRAAF-REINET	424	787	942	395	1012	822	490	854	1283	599	1101	503	291	880
GRAHAMSTOWN	601	899	854	180	1223	999	667	1065	1478	692	1418	415	130	1057
JOHANNESBURG	398	1402	578	982	358	•	472	287	555	438	361	869	1075	58
KEETMANSHOOP	1074	995	1708	1468	1230	1296	897	1072	1851	1283	1657	1547	1431	1354
KIMBERLEY	177	962	811	780	538	472	•	380	1033	334	833	747	743	530
LADYSMITH	410	1413	248	752	755	365	587	597	529	366	386	517	1062	414
MAFIKENG	464	1343	821	1048	158	287	380	•	848	544	648	1034	1141	294
MAPUTO	862	1865	620	1301	919	555	1033	848	•	815	223	1064	1609	545
MASERU	157	1160	590	630	702	438	334	544	815	•	633	616	822	488
MBABANE	677	1680	562	1238	719	361	833	648	223	633	•	1003	1548	372
MBOMBELA	757	1762	707	1226	672	355	827	635	206	713	173	976	1434	322
MTHATHA	570	1314	439	235	1192	869	747	1034	1064	616	1003	•	545	928
PIETERMARITZBURG	555	1674	79	595	900	499	732	742	706	511	640	360	905	557
POLOKWANE	706	1710	886	1290	485	308	780	569	567	738	504	1181	1383	250
PORT ELIZABETH	677	769	984	310	1299	1075	743	1141	1609	822	1548	545	•	1133
PRETORIA	456	1460	636	1040	350	58	530	294	545	488	372	928	1133	•
UPINGTON	574	894	1208	968	730	796	397	572	1357	731	1157	1047	933	854
WELKOM	153	1156	564	737	479	258	294	321	775	249	451	718	830	316

6.1 The distance shown on the "Distance Chart" between Upington and Durban is 1208km. Show that this distance does not refer to the route that DJ is planning to follow. Show your working.

6.2 Give detailed explanations of a another route that DJ could take in order to travel from Upington to Durban.

6.3 Presume DJ is following the route from Upington to Durban via Johannesburg, a total distance of 1374km.

a) What would DJ pay for petrol from Upington to Durban (one way trip) if his vehicle used 9,5 litres of petrol for every 100km travelled and if the price of petrol is R12,85 per litre? Presume DJ starts on a full tank (exclude this from your costs) and fills up upon his arrival in Durban (include this in your costs).

b) How many kilometers could DJ travel on a full tank of petrol if his tank can hold 35 litres of petrol when it is full? (Round to the nearest whole km)

c) What is the minimum number of times that DJ will need to stop to fill up with petrol? (exclude the stop in Durban)

d) Calculate the time, to the nearest hour (show your working) it will take for DJ to travel from Upington to Durban, via Johannesburg if he:

- averaged a speed of 100km/hr,
- stopped on average for 20 minutes to fill up with petrol,
- stopped an additional time for a lunch break which lasted 50 minutes.

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

Give your answer in hours and minutes (to the nearest minute)