Ecole du Nord
Village Labourdonnais
Mapou
Ile Maurice

Flying over Mauritius

Mathematics Geography Biology Science Art English

2012 – 2013

FLYING OVER MAURITIUS

► PROJECT :

A tourism investment company wants to develop a new offer in Mauritius for Ecotourists.

You got hired as a crew (4 to 5 people) to fly over Mauritius island and find the ideal place to build Eco-lodges.

☞ Teachers will play the role of investors... convince them!

► INSTRUCTIONS :

All members of the crew must be involved in all the stages of the collective work and should be able to give an oral presentation to the investors. However, you should share the work and organize your presentation based on each member's skills.

Some of you are hired by the investment board as a PILOT and a CO-PILOT. You will be asked to design a flight plan to fly over locations of Mauritius island that will eventually be of great interest to the investors.

The other members are hired as experts (a geographer, a biologist and a sportsman) to find the best site to build the Ecolodges and fulfill the Ecotourists' expectations.

The crew	Name of members
Pilot	
Co-pilot	
Geographer	
Biologist	
Sportsman	

STAGE 1

□ *See Mr Rouanet investor (HG)*
□ *See Mlle Mahieux or Mme Budloo investor (SVT)*

Some documents are provided by the investors. Each team should therefore indicate on the map of Mauritius 8 to 10 sites suitable for the Ecolodges establishment. So each member should propose 2 sites on the map.
You should place a minimum of 1 site in each area (urbanized, littoral, rural, natural) (please see Map 1).

ECOLODGE

Many people are curious about what is meant by the word "ecolodge". The word came into being in the 90's and was coined to describe a type of lodge that was distinguished from others by the way it was either constructed or operated, or both.

The ecotourism concept is to operate the enterprise of tourism so that a fair share of the monetary benefits stick in the local host community while reducing the environmental impact and providing the visitor with more fulfilling experience.

Many countries and regions have embarked on creating certifiable green or sustainable tourism standards, but only recently has there been any collective agreement on an international basis.

Criteria

An ecolodge must usually meet the following criteria:

- **Dependence on the natural environment.**
  It is located in a natural area, or in a rural area within a short distance to a natural area, and is not significantly impaired by a townsite, noise, traffic, fog or pollution.

- **Ecological sustainability**
  It is small, usually less than 30 rooms.
  It employs systems that protect the environment from pollution and degradation.
  It often employs energy saving tactics and possibly renewable energy technology (see Green Hotel below).

- **Proven contribution to conservation of biodiversity / training programs**
  It provides books, posters, maps, photographs, orientation talks or other ways to inform guests and visitors about the biology of the area.
  It employs, or has access to, interpretive nature guides who are either trained in biology or have significant local knowledge of the habitat.
  It helps inform guests, staff and visitors on the importance and value of a healthy ecosystem and; describes how to best enjoy the area without impairing it.

- **Incorporation of cultural considerations**

- **Provision of an economic return to the local community**
  It contributes the local economy and helps demonstrate that ecotourism is a more sustainable long term way to earn income than destroying or altering habitats for short term gains.
  It helps train and employ local people at fair wages

Types of Ecolodges

There are many variations in the types of ecolodges in terms of their purpose, history and expression of ecological values. Here are some of them:

Ecoresorts: These are often design built but differ slightly in their purpose and location from model ecolodges. They are often based near the ocean and offer more recreational activities and other personal services as opposed to natural history based ecolodges.

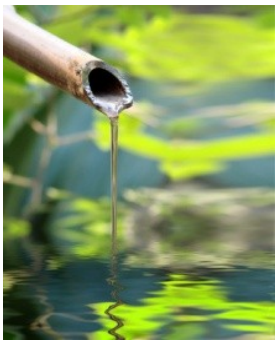
Nature Lodges and camps: These small lodges or camps which are located in natural areas, often in beautiful areas, but were designed in earlier times or for other purposes. Many do adhere to most ecotourism principles. Services may be limited, for example they may have no onsite guides, or they may be simple alpine huts or camp sites.

Rural Ecolodges: These are usually simple, privately owned accommodations located in rural areas or in small villages which are near a nature reserve. Down-to-earth hospitality staff and guides that are local people (as opposed to trained career professionals). You can often still see exotic wildlife, but you may not have the feeling you have truly escaped from civilization.

What is a Green Hotel?

The basic definition of a green hotel is an environmentally-responsible lodging that follows the practices of green living. Green hotels follow strict green guidelines to ensure that their guests are staying in a safe, non-toxic and energy-efficient accommodation. Here are some basic characteristics of a green hotel:

- Energy efficiency with the use of renewable energy sources (green vehicle, solar or wind energy…)
- Recycling programs
- Water conservation
- Housekeeping uses non-toxic cleaning agents and laundry detergent
- Have eliminated the use of chemical pesticides throughout facility and grounds.
- 100% organic cotton towels and towels re-use
- Serve organic and local-grown food



ECOTOURISM

Ecotourism has become one of the fastest-growing sectors of the tourism industry, growing annually by 10–15% worldwide (Miller, 2007). One definition of ecotourism is "the practice of low-impact, educational, ecologically and culturally sensitive travel that benefits local communities and host countries" (Honey, 1999).

Ecotourism is a form of tourism involving travel to areas of natural or ecological interest, typically under the guidance of a naturalist, for the purpose of observing wildlife and learning about the environment. Therefore, ecotourism typically involves travel to destinations where flora, fauna and cultural heritage are the primary attractions. Ecotourism also focuses on socially responsible travel, personal growth, and environmental sustainability.

The responsible ecotourist:

- ✗ Minimize their waste
- ✗ Moves and camps on durable surfaces
- ✗ Leave intact what they discover
- ✗ Respect the flora and fauna
- ✗ And...Enjoy nature activities!

http://www.aventurequebec.ca/code-ecotouriste

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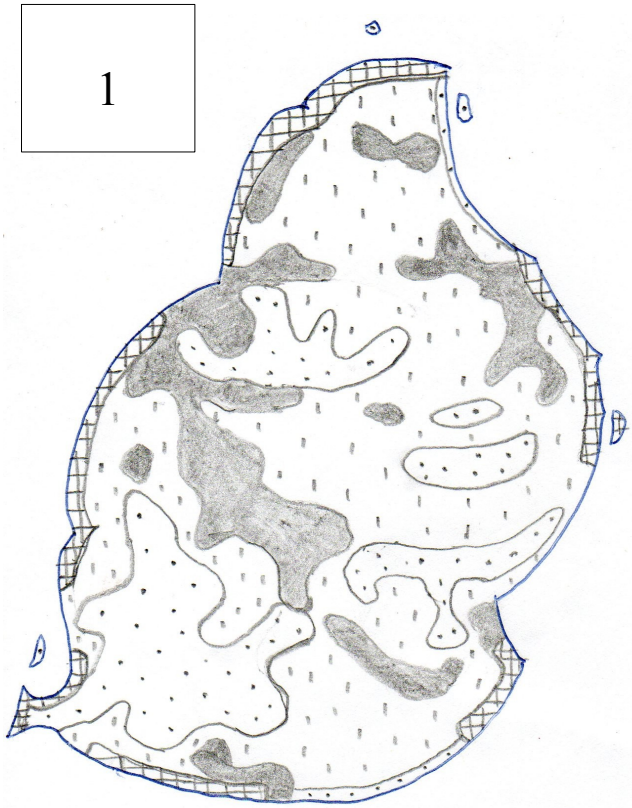

Mauritius : spatial organization

: urbanized and industrialized areas

: littoral developped for tourism: hotels, leisure complexes, seaside resorts

: rural areas: vilages and fields, mainly sugar-cane

: natural areas: forests and mountains

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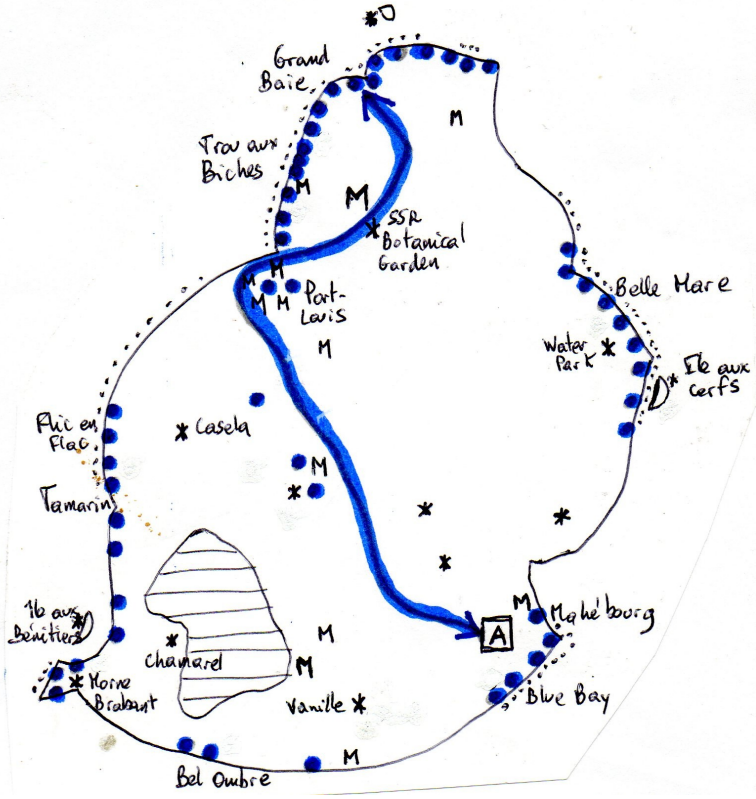
TOURISM IN MAURITIUS

: Sandy beaches
: Main hotels
M : Museum
: Places of interest
: National park
A : Airport
: Motorway



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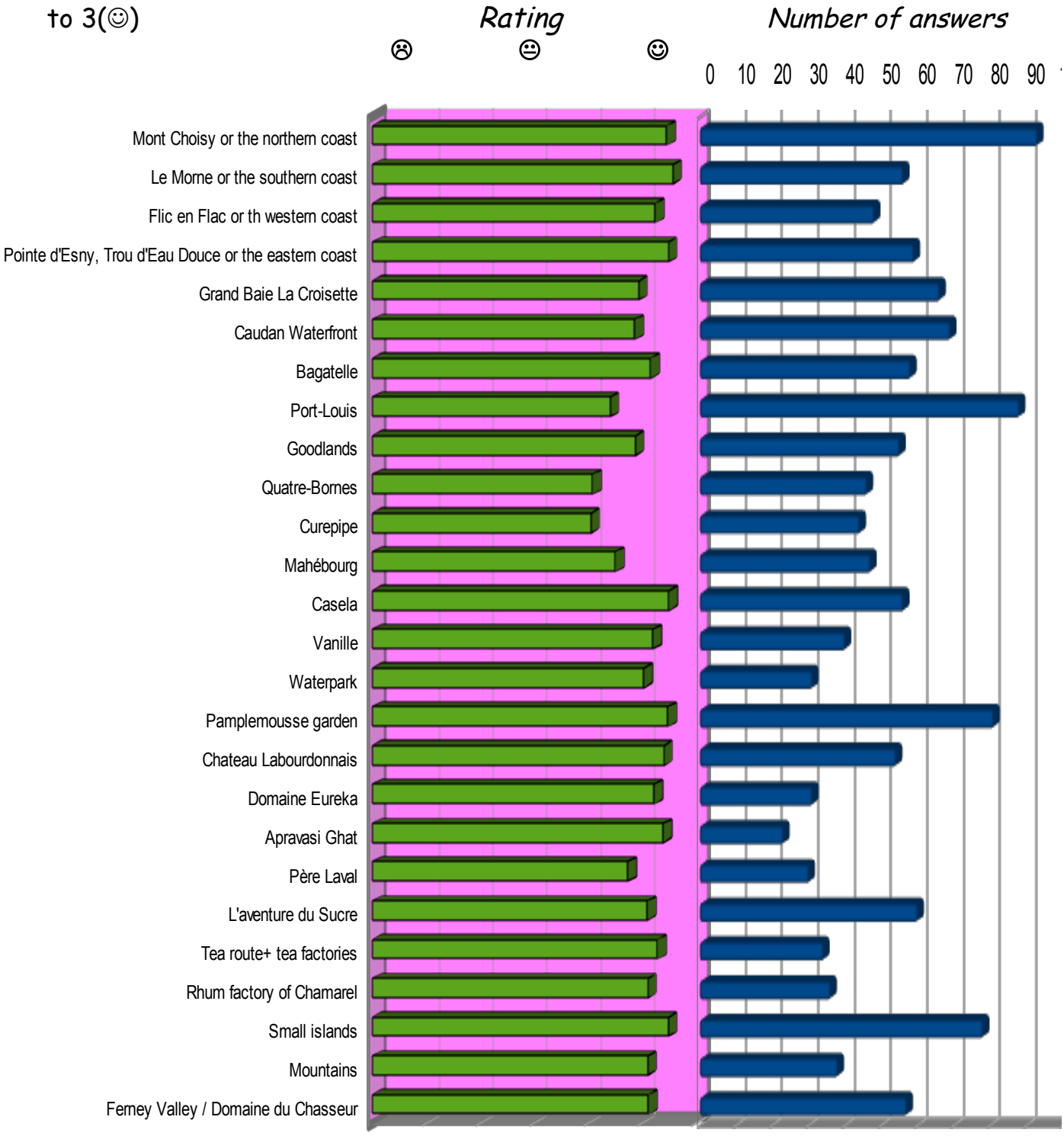
Did you go to the following places? How did you like it? Give a mark from 1 (☹) to 3(☺)



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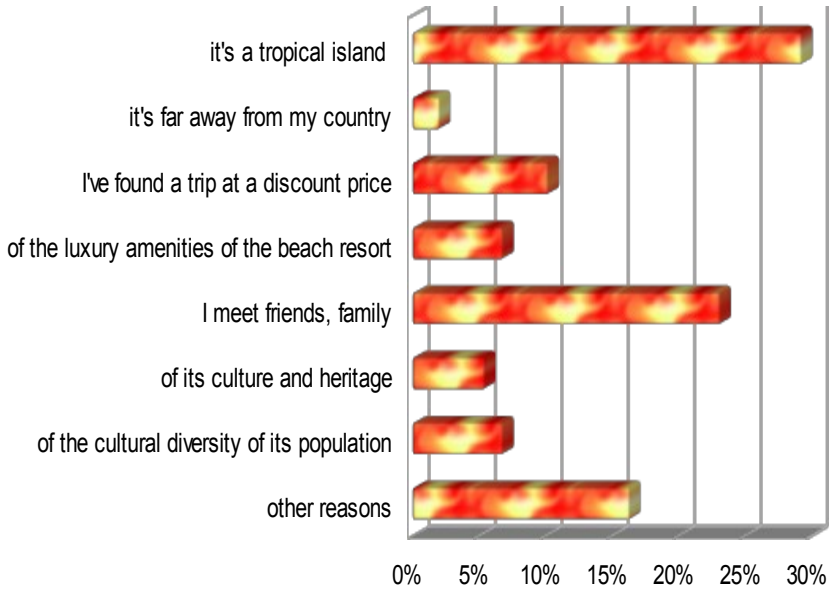
Why did you choose Mauritius? Because ...



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Survey results

How do you spend most of your time in Mauritius ?

Relaxing at the beach, the pool, in the hotel	31
Nautical activities including boat trips	20
Site seeing / visiting places of interest	17
Being with friends	4
Hiking	3

What do you prefer in Mauritius ?

Beach/Sea and nautical activities	67
Climate	40
Food	36
People: welcoming	34
Landscape	24
Culture (museum, temples, sega, ...)	14
Shopping	13
Nature	8
Hotels	4
Nightlife	3
Safety	2
Low prices	2
Spas / massages	2

What do you dislike ?

Poor quality of roads / traffic jams	40
Transports: quality, drivers' behaviour	36
Pollution / Garbage	36
Mauritian mind: rude people, discrimination again tourists	15
Strong inequalities	10
Services : police / hospital / banks / internet	9
High prices	7
Climate (too hot, too rainy, ...)	7
Urbanization: too much buildings / infrastructures / shopping malls	6
Food	6
Stray dogs	5
Nothing	4
Too many tourists	2
Not safe	2
Mosquitoes / insects	2

Here are the 4 selected sites :

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<u>The flight plan must include these 4 locations.</u>

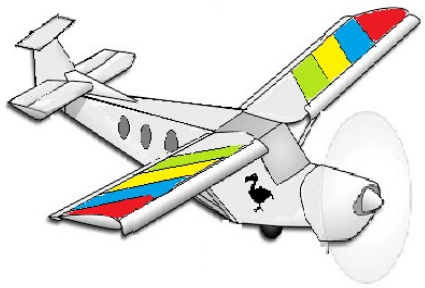
STAGE 2

□ See Mr Bucard or Mme Lagesse investor (Maths)

The aircraft must fly at least over the 4 selected sites.

THE PLANE

The Flying Dodo is a 100% Mauritian aircraft.



General characteristics	**Performance**
Crew: 5 Capacity: 10 passengers Length: 25 ft 3 in Wingspan: 36 ft 3 in Height: 9 ft 12 in Wing area: 174 sq ft Aspect ratio: 7.32	Cruise speed (best average speed) : 150 km/h Stall speed (minimum speed) : 75 km/h Never exceed speed: 220 km/h Service ceiling (highest altitude): 3,000 m

FLIGHT DATA

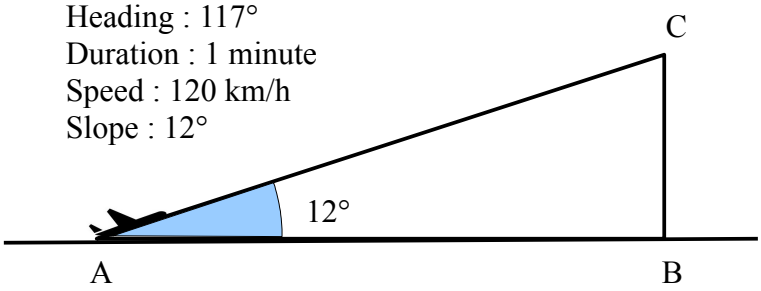
Airport	Sir Seewoosagur Ramgoolam International Airport (MUR)
Departure time	10:42 am.
Flight Number	EDN2013

1. Designing your flight plan

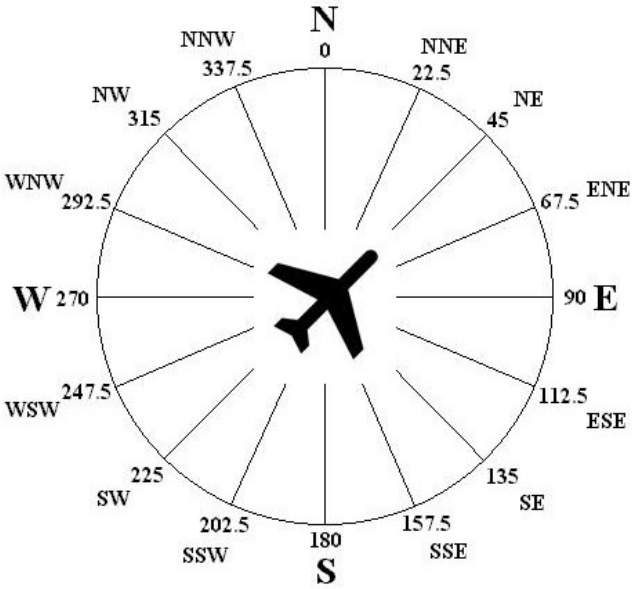
(a) Place the selected locations on the map (accurate position and altitude)

(b) Draw the take-off on the map

Departure time : 10h42 am
Heading : 117°
Duration : 1 minute
Speed : 120 km/h
Slope : 12°



The *take-off* is a *straight line*.
The *slope* is the angle of climb, it is the angle between the horizontal axis and the aircraft *flight path* (line AC).
The *heading* (or *bearing*) is the angle measured from facing North and turning clockwise. It is a three-figure number.

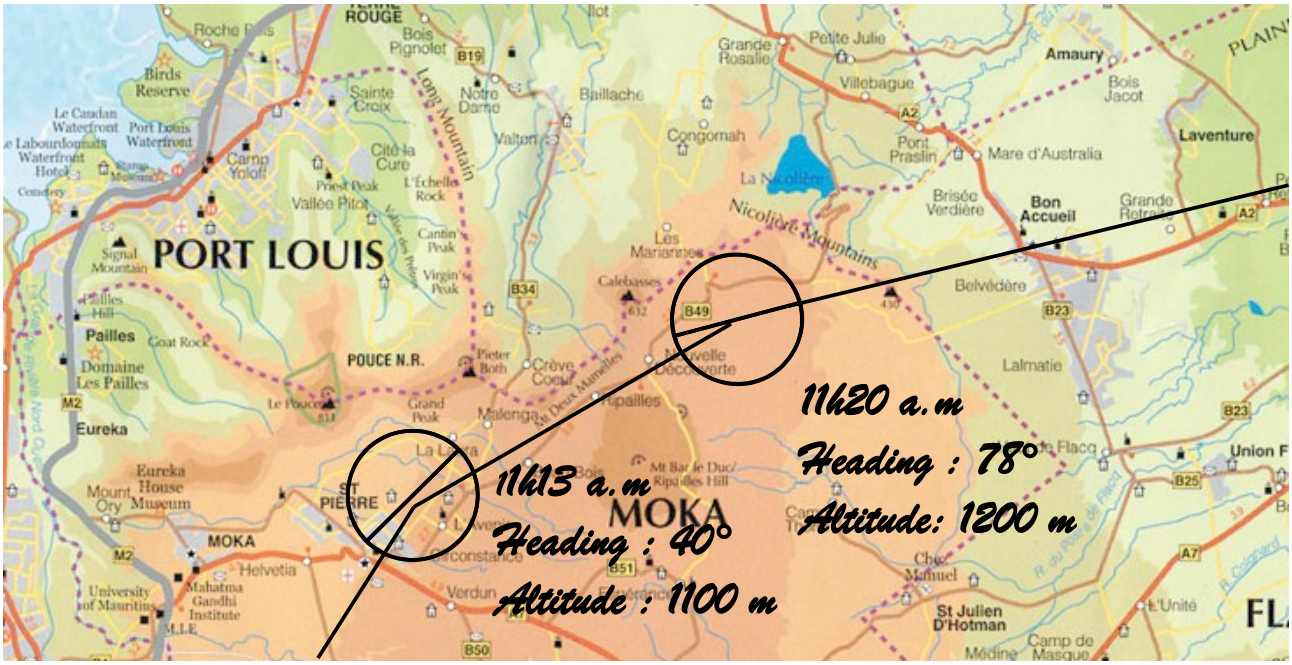


Example:
On this compass, the bearing of the plane is 045°

The *Ground Track* is the line AB (what you draw on the map)
The *flight path* (line AC) is the path followed by the aircraft to go from one point to another. It is declared in the flight plan provided to air traffic control (altitudes, bearings).

- Work out the length of AC (Use the speed and the duration)
- Use the slope to work out the ground track (line AB)
- Use AB and AC to work out the altitude BC
- Draw the line AB on the map and write down:
  - the altitude at point C (B on the map)
  - the time at point A and at point B

(c) Draw the flight plan on the map



To draw the flight plane you can use :

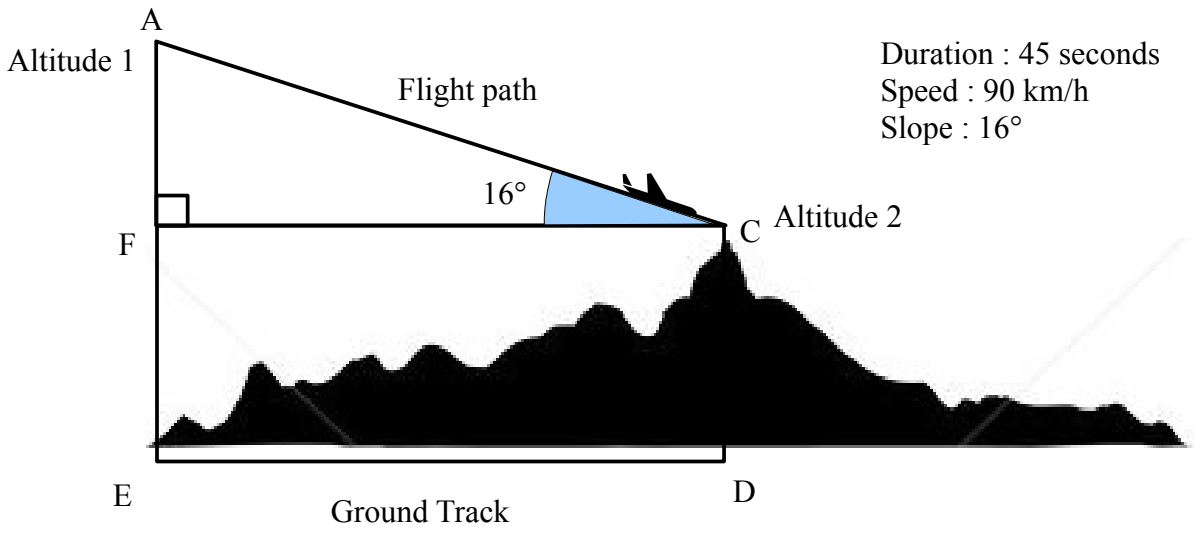
- straight lines to reach a point
- straight lines flying up or down to visit an interesting place (at least four lines)
- circular arcs (optional)

Straight lines to reach a point:

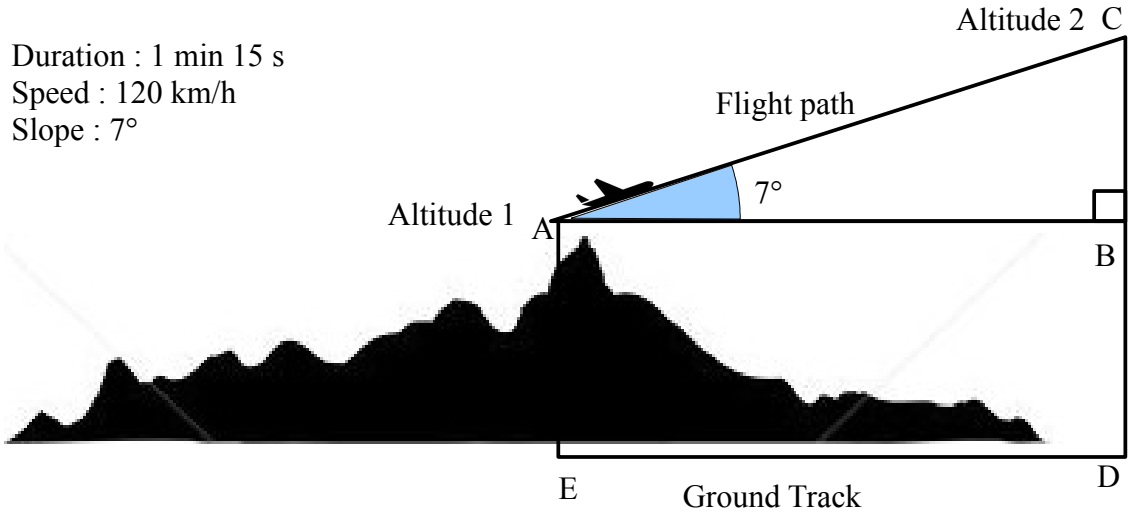
- Draw the line on the map
- Write down the heading at the beginning of the line (use the protractor)
- Choose the altitude at the end of the line (it should be rather between 500 m and 1000 m) and write it down on the map
- Choose the average speed (it should rather be between 120 km/h and 180 km/h)
- Use the length of the line and the speed to work out the duration of the flight from the first point to the second and write down the time at the end of the line (rounded to the nearest minute)

Straight lines to visit an interesting place (at least four lines)

1- Flying Down



2- Flying Up



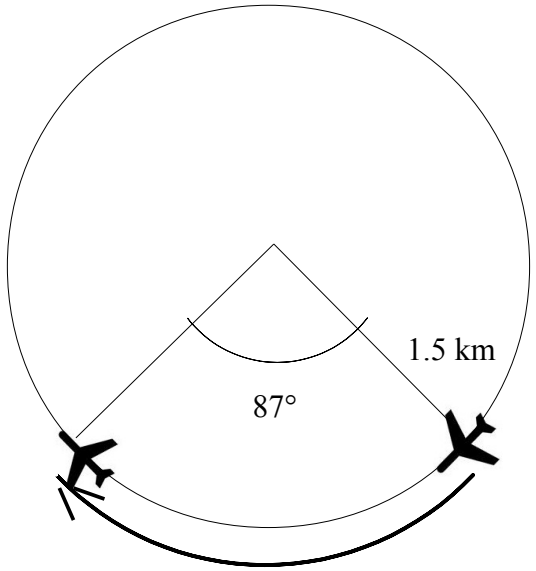
The *Ground Track* is the line ED (what you draw on the map), the *flight path* is the line AC

- Use duration and speed to work out the length of AC
- Use AC and the slope to work out the length of FC (when flying down) or AB (when flying up)
- Use AC and ED to work out BC (flying up) or AF (flying down)
- Work out the altitudes 1 and 2 (Be careful: the altitude cannot be less than150m above the ground)
- Write down on the map the time (given that the total duration is 2 minutes) and the altitude at the end of the line.

Circular arcs (optional)

Circular arcs are used to change the heading or to visit an interesting place

On circular arcs, the slope is 0°. So the altitude remains the same.

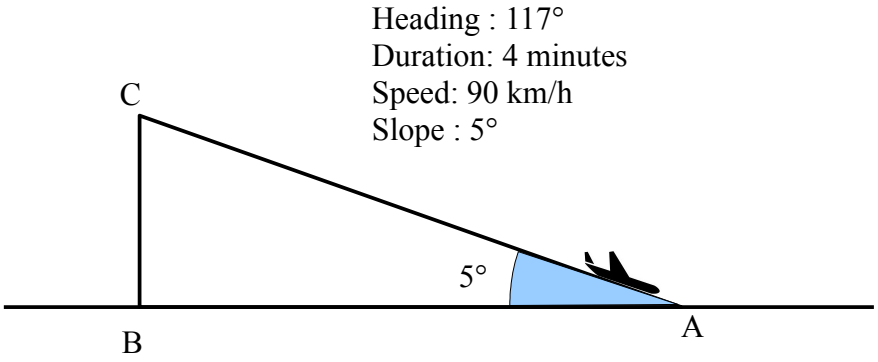


Example:
To work out the length of the circular arc (87°), first calculate the length of the whole circle (360°)

Circular arc length

- Draw the arc on the map
- Work out the length of the arc
- Choose the average speed (around 150 km/h)
- Work out the duration and the time and write down on the map the time and the altitude at the end of the arc.

(d) Draw the landing



The landing is a straight line

- work out the length AC
- work out the ground track (line AB)
- work out the altitude (BC)
- draw the line AB on the map and write down the time at the end of the landing

The job is over. Call the teacher !

2. Controlling a flight plan

You are now asked to control a flight plan designed by another crew.
On their map the information is the ground track, the altitude, the heading and the time for each point.

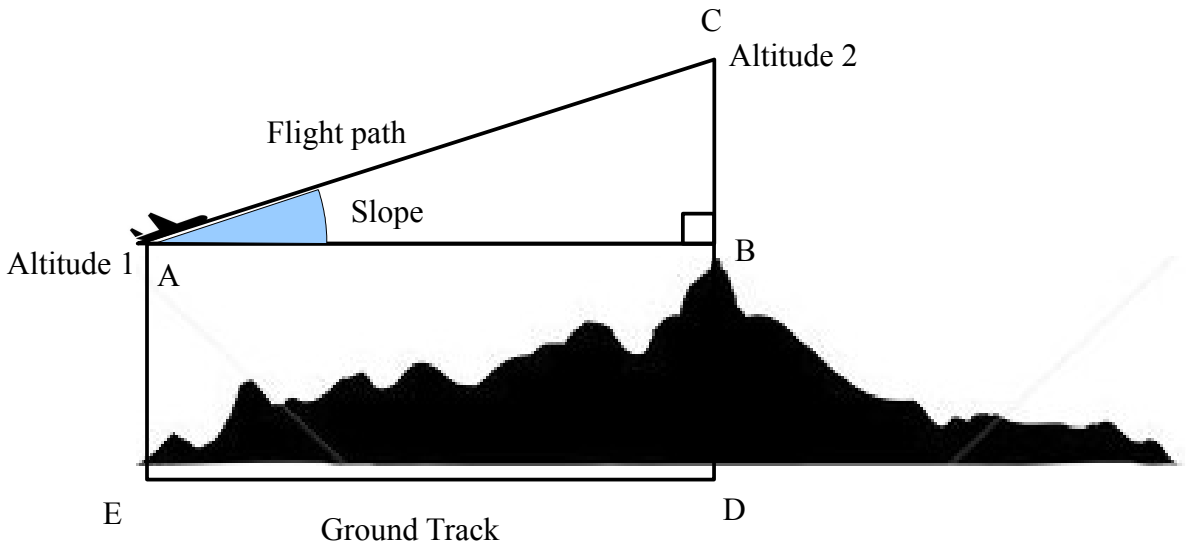
Fill the flight plan form on next page and check that :

The speed never exceeds : 120 kn
The speed is never less than 40 kn
The altitude is never less than 500 ft above the ground and more than 10,000 ft
The slope never exceeds : 30° (flying up or down)

Units of measure

1 nautical mile = 1,852 metres
1 km = 1,000 m
1 foot (ft) = 0.3048 metres
1 hour = 60 minutes = 3600 seconds
1 knot (kn)= 1 nautical mile per hour

Working out the slope (only for take-off, landing and interesting places):



- Use the map to read the length ED (=AB)
- Use the altitudes to work out the length BC
- Use AB and BC to work out AC
- Use AB and AC to work out the slope

FLIGHT PLAN

Departure airport:

Arrival airport :

Flight number :

Crew :

Controllers :

Date: Time:

Time	Altitude (m)	Altitude (feet)	Heading	Slope	Average speed (km/h)	Average speed (m/s)	Average speed (knots)

Controllers' approval

Your flight plan is now designed. Investors will fly over the 4 sites selected for the Ecolodges establishment.

STAGE 3

□ **Team's work**

Prepare your arguments to debate the pros and cons of the 4 sites which are the right places to invest for Ecolodges.

Choose YOUR IDEAL SITE and explain your choice clearly to the investors. Be convincing!

STAGE 4

□ **Give an oral presentation to the investors : Mme Lagesse, Mme Budloo, Mme Mahieux, Mr Bucard, Mr Rouanet.**

INSTRUCTIONS :
The investors get on board and are welcomed by the crew.
The plane takes off from Mahebourg airport. The pilot and co-pilot should give indications about the speed, the altitude, ...during the flight.

Each time the plane is flying over a chosen site, the crew will have to provide arguments about their respective choices. The crew should give a maximum of accurate information regarding THE IDEAL SITE. Passengers (investors) will ask you some questions during the flight.

To make the flight real, you will use Google Earth to record and show the different locations. You can also project pictures regarding the ideal site (powerpoint presentation).

Seaside resort	A town located on the coast, developed for seaside tourism, where the beach is the primary focus for tourists.
Developments	Infrastructures that have been built in order to promote tourism.
Attractiveness	Special qualities that can arouse the tourist's interest.
Facilities	Buildings, services or equipment provided by hotels for tourists.
Amenities	A useful or desirable feature of an hotel or a tourist place.
Receipts	Earnings, the money that a person, a company or a country earns.
Seaside tourism	A kind of tourism that mainly offers coastline activities.
Assets	Natural/human features that can attract tourists.
Infrastructures	The big structures built in order to satisfy the needs of the population like motorways, harbours...
Coastline	The shore of the sea that can be a sandy beach, a cliff or rocks.
Mass tourism	A kind of tourism characterized by a large number of people on a small place and for a short time.
Green tourism	A kind of tourism based on the discovery of landscapes and nature, respectful of the environment.
Cultural tourism	A kind of tourism based on the discovery of a population, its lifestyle, its culture, its heritage.
Heritage	Valued buildings from the past.
Sustainable development	The balanced progress of the economy, of the wellness of the population and the environment at the same time.
Water shortage	A lack of water during a drought period so that water can't be provided to anyone for a given time.
Environmental impact assessment	An assessment of the possible positive or negative impact that a proposed project may have on the environment, together consisting of the environmental, social and economic aspects.
Renewable energy	Energy that comes from resources which are continually replenished such as sunlight, wind, rain, tides, waves and geothermal heat.
Biodiversity	Variety of life in the world or in a particular habitat or ecosystem.
Ecosystem	Community of living organisms (plants, animals, microbes...) in conjunction with the non-living components of their environment (air, water, mineral soil...), interacting as a system.It refers to salary levels that are right regarding the work and that provide a good living level for workers.
Fair wage	This refers to level of salary that must be right regarding the work and provide a good standard of living for workers.
Recreational activities	Refreshment of one's mind or body after work through activity that amuses or stimulates. Recreational activities can be communal or solitary, active or passive, outdoors or indoors.
Nature reserve	A protected area of importance for wildlife, flora, fauna or features of geological or other special interest, which is reserved and managed for conservation and to provide special opportunities for study or research. Nature reserves may be designated by government institutions in some countries, or by private landowners regardless of nationality.
Energy efficiency	Energy efficiency is the goal to reduce the amount of energy required to provide products and services.
Organic products	Grown without the use of any synthetic agricultural chemicals such as fertilizers or pesticides.
Naturalist	A person who studies or is an expert in natural history, especially a zoologist or botanist.