Fieldwork (Section A)

Fieldwork

Topic	Requirements
General skills	● Formulate hypothesis + guiding question ● Form conclusion
Global Tourism	● Data collection + sampling ● Data presentation (graphs) ● Data presentation (maps) ● Accuracy and reliability of data collected
Variable Weather and Changing Climate	● Data collection ● Data presentation (graphs) ● Accuracy and reliability of data collected

General skills

1. Formulate hypothesis + guiding question

Note:

- Identify **independent variable** and **dependent variable**

Hypothesis: a statement

The further the distance from the shoreline [***independent variable***], the smaller the size of beach sediments [***dependent variable***].

Guiding question: a question

How does the distance from the shoreline [***independent variable***] affect the size of beach sediments [***dependent variable***]?

2. Form conclusion

Note:

- Take note of patterns / trends when describing relationship between 2 variables
- Must support answer with relevant data
- Refer to the correct axis for the 2 variables
- Address 'how far' element: state anomalies as counterargument

What conclusion can be drawn from the data, in response to the student's hypothesis?	
State conclusion (ATQ)	Generally, the shorter the travelling distance to Yogyakarta, the more visitors.
Quote data that complies with trend	• Visitors from Indonesia, which is the nearest to the Borobudur Temple, has the highest number of visitors at 19. • Similarly, Malaysia, which is near Borobudur Temple, has the second highest number of visitors at 12. • France and UK, which are further away from Borobudur Temple, have fewer visitors at 2 each. • Brazil, which is further away than France and UK, has the least visitors at 1.
Anomalies + data	**However,** • Though USA is as far as Brazil from Borobudur Temple, it has more visitors at 9, compared to Brazil at 1. • Singapore and Thailand are nearer to Borobudur Temple than USA, but have fewer visitors at 7 and 8 respectively, fewer than USA at 9. • China is further away from Borobudur Temple than Singapore, but has more visitors at 10 compared to Singapore at 7.

One student stated that temperature and relative humidity might be inversely related. How far does the information confirm this?	
State stand (ATQ)	Data largely supports / confirms that temperature and relative humidity are inversely related.
Quote data that complies with trend	For most of the time in January and April, as temperature increases, relative humidity decreases. ● Fig. 2: from 07:00 to 11:00, as temperature increases from 25°C to 28°C, relative humidity decreases from 94% to 75%. ● In Fig. 3, from 07:00 to 11:00, as temperature increases from 27°C to 32°C, relative humidity decreases from 89% to 64%.
Anomalies + data	**However,** there are exceptions/anomalies for both January and April. ● Fig. 2: from 11:00 to 13:00, temperature remains constant at 28°C but relative humidity increases from 75% to 77%. ● Fig. 3: from 11:00 to 13:00, temperature remains constant at 32°C but relative humidity decreases from 64% to 59%.

Global Tourism

1. Data collection + sampling

Surveys

1. Questionnaire

1. Questions related to (variable) + e.g. of a question
2. Sampling (e.g. systematic sampling, where every 5th visitor is chosen OR random sampling, where numbers are generated using random number generator)
3. Decide on location (e.g. entrance / exit) + time → high volume of visitors
4. Control measures

2. Bipolar survey

Also known as a perception survey – to study how people perceive and evaluate places
Advantage of using bipolar survey – allows for collection of quantitative data about people's perceptions.
E.g perceptions about the effectiveness of coastal management measures.
To collect such data, a survey using pairs of contrasting attributes to investigate respondents' perception
about the environment.
A score will be given to each attribute included in the survey
The standard bar graph is drawn to represent the results so that conclusions can be drawn

Bipolar survey on environmental perception of Little India

Positive aspects	+2	+1	0	–1	–2	Negative aspects
Pleasant surroundings	0	2	0	8	0	Unpleasant surroundings
Many shops and services	0	3	0	1	6	Few shops and services
Vibrant business environment	1	0	5	2	2	Dull business environment
Display of cultural elements	1	1	4	3	1	No display of cultural elements
High pedestrian count	0	3	3	3	1	Low pedestrian count
Little litter	2	2	4	1	1	Much litter
Well-kept buildings	1	3	4	2	0	Buildings in poor state of upkeep
All buildings used	1	1	6	1	1	Boarded up or empty buildings

3. Land use survey

Data collection method to find out the types and distribution of land uses in a particular area
Data collected is presented in a LAND USE MAP
Select appropriate categories of land use

Interview

Tally method (pedestrian / traffic count)

Note and record the time, date and duration of the task
When counting, items can be recorded by using a tallying method also known as the “five bar gate”.
o Each item is recorded by a stroke as shown below.
o At the end count up the number of 5 bar gates and multiply by five for the total.
o Then add on any spare strokes.
o In the example below the tally is 17

Alternatively, a tally counter can be used to record each person or vehicle as it passes to get an overall total.

Sampling

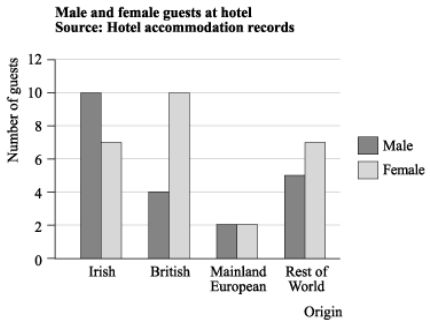
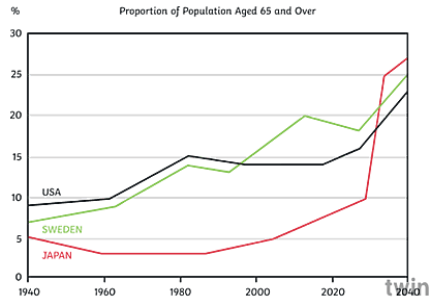
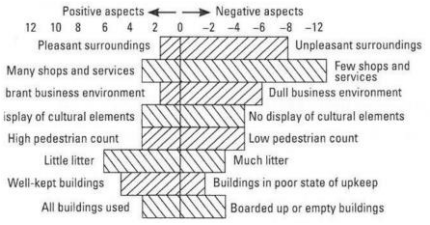
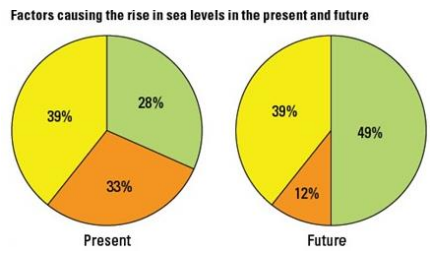
Type	Steps
1. **Random sampling**	Generate random numbers using random number generator
2. **Systematic sampling**	Choose samples in predetermined regular / systematic interval ● Spatial interval: every 2 m along road ● Time interval: every 30 mins or at set timing (9 – 11 am) ● Regularly numbered: every 10th person / 5th house
3. **Stratified sampling**	Choose person to interview based on sub-groups ● country of origin ● gender ● income level

Determine graph / map

Aspect	Graph	Map
Identify relationship	● Scatter graph	● Annotated sketch map ● Annotated photograph
Identify difference / change		● Isoline map ● Choropleth map ● Dot map ● Sketch map ● Cross-section ● Transect
Describe spatial pattern	● Line graph ● Bar graph ● Pie chart	● Isoline map ● Choropleth map ● Dot map

	● Histogram	● Map with proportional symbols

2. Data presentation (graphs)

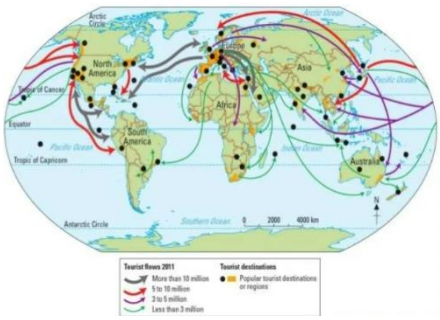
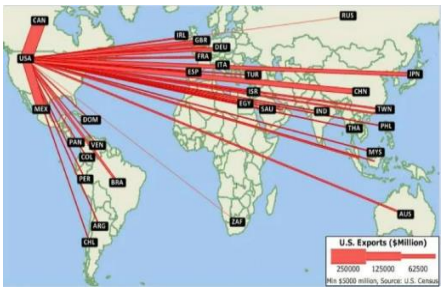
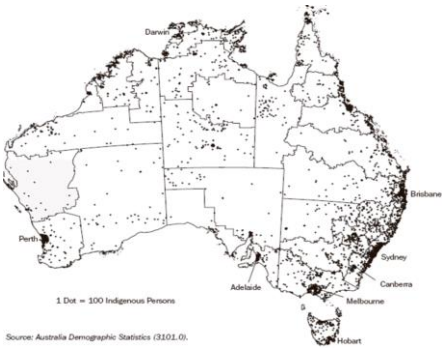
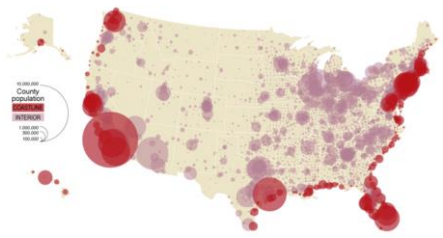
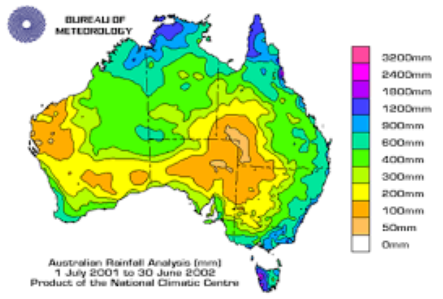
Graph	Steps	Figure
Scatter graph	1. (independent variable) plotted on x-axis 2. (dependent variable) plotted on y-axis 3. Draw line of best fit to determine positive / negative correlation	
Simple / comparative bar graph (discrete data)		
Simple / comparative line graph (continuous data)		
Standard bar graph	1. Overall positive / negative 2. Compare total score for positive & negative aspects (greater / smaller)	
Pie chart	Note: use percentage when supporting data, degree of angle measured	

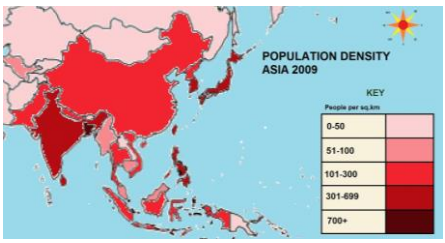
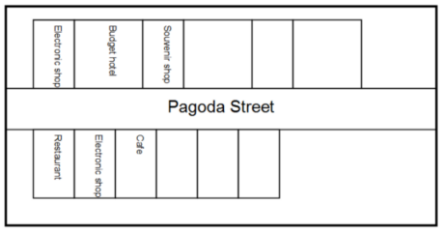
Note: be specific – differentiate b/w simple & comparative graphs

3. Data presentation (maps)

◦ Choropleth maps –

Map	Steps	Figure

Flow line map	Represent value + distance from palace of origin to destination 1. Lines are drawn from (country) to (country) 2. Length of lines represent travelling distance 3. Width of lines is proportional to number of visitors	
Desire line map	Represent value + distance from palace of origin to destination 1. Lines are drawn from (country) to (country) 2. Length of lines represent travelling distance 3. Width of lines is proportional to number of visitors	
Dot map	Show distribution 1.	
Map with proportional symbols	Symbol with diff sizes to represent value 1. Proportional circles drawn at countries 2. Size of circles is proportional to number of visitors 3. Travellling distance from country of origin is measured + written on map	
Isoline map	Lines joining places that have same measurement of weather element 1.	

Choropleth map	Use colours to represent information, typically shows distribution 1.	
Land use map	Data colllected from land use survey	 Sample Landuse Map of Pagoda Street

Note: a base map (world/regional/country) is required

Recording sheet	1. Have questions to find out where visitors come from / country of origin 2. Data collected is tallied using traditional tally method 3. Data collected is recorded in table on recording sheet according to country of origin 4. Include location + date of survey	Site: Date: Weather: Time from: to: No of vehicles on far side of road / No of vehicles on near side of road Tally Total

4. Accuracy and reliability of data collected

Aspect	Mistake	Remedy

Variable Weather and Changing Climate

1. Data collection

Measurement	Instrument	Steps
Rainfall	**Rain gauge**	1. Place rain gauge at suitable location in open area, away from obstructions → rainfall X intercepted by obstructions 2. Sink rain gauge into ground (30 cm protuding above ground) → X fall over → rain water X splash (inaccurate readings) 3. Pour collected water into measuring cylinder 4. Read water level at eye level → X parallax error
Temperature	**Maximum and minimum thermometer**	Place in Stevenson screen where it is kept out of direct sunlight
Relative humidity	**Sling psychrometer**	1. Dip wick of wet bulb thermometer in water 2. Swing psychrometer at consistent + comfortable pace + hold far from body → X pick up body heat 3. Read temp on wet bulb thermometer after 1 min swinging + take reading at eye level → X parallax error 4. Calculate diff b/w wet & dry bulb temp → obtain wet bulb depression 5. Use conversion table to determine RH
Wind speed	**Anemometer**	1. Hold up anemometer in open area, away from obstructions where wind flow freely 2. Read wind speed off display on anemometer
Wind direction	**Wind vane**	1. Hold away from body, above head in open area, away from obstruction where wind blow directly 2. Use compass to determine positioning of wind vane (‘N’ points north) 3. Record direction wind vane points to = direction where wind blow **FROM**
Air pressure	**Barometer**	1. Check that movable pointer arranged over measuring hand to mark current pressure 2. Determine pressure (measuring hand moves according to pressure)

	Data logger	

2. Data presentation (graphs)

3. Accuracy and reliability of data collected

Accuracy	Reliability
● Proper handling of instrument ● Minimal parallax error	● Wider data scope (collect data from more sites) ● Higher data frequency (more samples / readings per site) + take average ● Take readings on more days

Measurement	Accuracy	Reliability
Rainfall (rain gauge)	1. Sink into ground 30 cm protuding above ground → rainwater X splash (inaccurate readings) 2. Place in open area → dripping from eaves / leaves X enter bottle (higher readings) 3. Take reading at eye level → X parallax error	
Temperature (max min thermometer)	Stevenson screen: 1. Place 1.5 m above ground → X absorb long-wave radiation 2. X place too close to building / heat source Thermometer: 3. Place away from body → X capture body heat 4. Read meniscus 5. Take reading at eye level → X parallax error	
Relative humidity (sling psychrometer / wet-and-dry bulb thermometer)	1. Hold a distance away from body → prevent body heat from affecting readings 2. Have same student swing + take reading → ensure consistency in readings + minimise reading error 3. Collect data at same location →	

	ensure consistency 4. Swing at steady, consistent pace → too quickly causes more evaporation, resulting in lower temp for wet bulb reading 5. Avoid standing near building / under direct sun → more evaporation, resulting in inaccurate readings 6. Take reading at eye level → prevent parallax error	
Wind speed (anemometer)	1. Place in open area → X block flow of wind 2. Hold above head → free flow of wind	
Wind direction (wind vane)	1. Place in open area → X block flow of wind 2. Hold above head → free flow of wind 3. Use compass to determine positioning → record accurate directions	
Air pressure (barometer)		