



**Think About**

1. Is this an appropriate time for conducting fieldwork? Explain your answer.
2. List the safety risks when conducting coastal fieldwork.

**Field Work Plan**

1. In the field site, select a suitable location to set up a 12m transect by using the measuring tape.

**Coastal gradient**

1. By using abney level, ranging poles, level meters and measuring tape, measure the coastal gradient along the transect at every 1m interval.
2. Record the data in Table 1.1 and draw coastal profile of the field site in Figure 1.

**Think About**

Suggest other equipment/methods to measure coastal gradient.

**Longshore drift**

1. Throw the float provided into the sea near the shore.
2. Observe and measure the route and horizontal displacement of the float in 1 minute, and record them in Table 1.2.
3. At the same time, by using compass and anemometer, measure the maximum wind speed and wind direction in 1 minute.

**Load size and shape**

1. Using the swingometer, count the number and measure the maximum strength of the swash and backwash in 1 minute, and record them in Table 1.3.
2. Each group will be arranged to collect about 50g of surface load with a trowel and place them into a small plastic bottle.
3. Analysis of the load size and shape will be carried out in the laboratory, record them in Table 1.4.

**Laboratory work**

1. Add 50g of the collected load, and hand it to the assistant teacher for drying in the oven.
2. After drying, pour the dried load onto the column of sieves provided. (Place the sieves in order, with a decreasing openings' diameter from top to bottom.)
3. Put the lid back on the column of sieves and hold them firmly with both hands. Shake the column horizontally and softly for 5 minutes.
4. Measure the net weight of a crucible by using an electronic balance.
5. Measure the weight of the load from each sieve and pour them onto a piece of paper.
6. Use a 10 times magnifier to observe and compare the shape characteristics of the load at different location.
7. Calculate the percentages of each load size and record the data in Table 1.4.

## B. Data Collection

Complete the following table.

Primary Data Items	To Examine Hypothesis/ Enquiry Question			Data Collection Method			Equipment Required (Number on the Equipment Checklist)
	1	2	3	Observation	Counting	Measuring	
1. Coastal gradient							
2. Longshore drift displacement & direction							
3. Wind speed & wind direction							
4. Swash & backwash							
5. Load size & shape							

## Equipment Checklist

Items	Quantity	Checked	Returned
1. Base map (Individual)	x 1	<input type="checkbox"/>	<input type="checkbox"/>
2. Clipboard (Individual)	x 1	<input type="checkbox"/>	<input type="checkbox"/>
3. Compass (Individual)	x 1	<input type="checkbox"/>	<input type="checkbox"/>
4. Gloves	x 4	<input type="checkbox"/>	<input type="checkbox"/>
5. Measuring tap - 30m	x 2	<input type="checkbox"/>	<input type="checkbox"/>
6. Level meter	x 2	<input type="checkbox"/>	<input type="checkbox"/>
7. Abney level	x 2	<input type="checkbox"/>	<input type="checkbox"/>
8. Ranging pole	x 2	<input type="checkbox"/>	<input type="checkbox"/>
9. Small sampling plastic bottle	x 1	<input type="checkbox"/>	<input type="checkbox"/>
10. Trowel	x 1	<input type="checkbox"/>	<input type="checkbox"/>
11. Anemometer	x 1	<input type="checkbox"/>	<input type="checkbox"/>
12. Float	x 2	<input type="checkbox"/>	<input type="checkbox"/>
13. Swingometer	x 1	<input type="checkbox"/>	<input type="checkbox"/>
14. Plastic bucket	x 2	<input type="checkbox"/>	<input type="checkbox"/>

## Laboratory Work Equipment Checklist

1. Crucible	2. Sieves	3. Electronic balance	4. Oven
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### **Think About**

Name the sampling method adopted in fieldwork, and list their advantages.

**Data Recording Sheet (Field Site: : \_\_\_\_\_ )****Table 1.1 - Coastal gradient**

0-1m	1-2m	2-3m	3-4m	4-5m	5-6m	6-7m	7-8m	8-9m	9-10m	10-11m	11-12m

**Table 1.2 - Longshore drift**

	Float : _____	Float : _____
Wind direction (°)		
Wind speed (m/s)		
Direction of longshore drift	From _____ to _____	From _____ to _____
Horizontal displacement of longshore drift (cm)		

**Table 1.3 - Swash & Backwash**

Number of Swash : _____ / minute	Number of Backwash : _____ / minute
Strength of Swash : _____ (maximum)	Strength of Backwash : _____ (maximum)
Swash : Stronger / Weaker	Backwash : Stronger / Weaker

**Table 1.4 - Load size**

Sample from ( ) m	Weight of crucible (g) (A)	Weight of crucible & dried load (g) (B)	Net weight of load (g) (B) – (A)	Percentage (%) $\frac{(i) \text{ or } (ii) \text{ or } (iii)}{(C)} \times 100\%$
Diameter >2mm			(i)	
Diameter >0.063-2mm			(ii)	
Diameter ≤0.063mm			(iii)	
Total load (C)			(i+ii+iii)	100%

Percentage (%)	Summary : Load size							
	( ) m	( ) m	( ) m	( ) m	( ) m	( ) m	( ) m	( ) m
Diameter >2mm	%	%	%	%	%	%	%	%
Diameter >0.063-2mm	%	%	%	%	%	%	%	%
Diameter ≤0.063mm	%	%	%	%	%	%	%	%

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Diameter >2mm				(i)
Diameter >0.063-2mm				(ii)
Diameter <=0.063mm				(iii)
Total load (C)				(i+ii+iii) 100%

Percentage (%)	Summary : Load size							
	( ) m	( ) m	( ) m	( ) m	( ) m	( ) m	( ) m	( ) m
Diameter >2mm	%	%	%	%	%	%	%	%
Diameter >0.063-2mm	%	%	%	%	%	%	%	%
Diameter <=0.063mm	%	%	%	%	%	%	%	%

**Think About**

List the possible errors when collecting data.

**C. Data Processing, Presentation and Analysis**

Draw the most appropriate diagrams with graph paper, to show the data of Enquiry Question 1, Hypothesis 2 and 3.

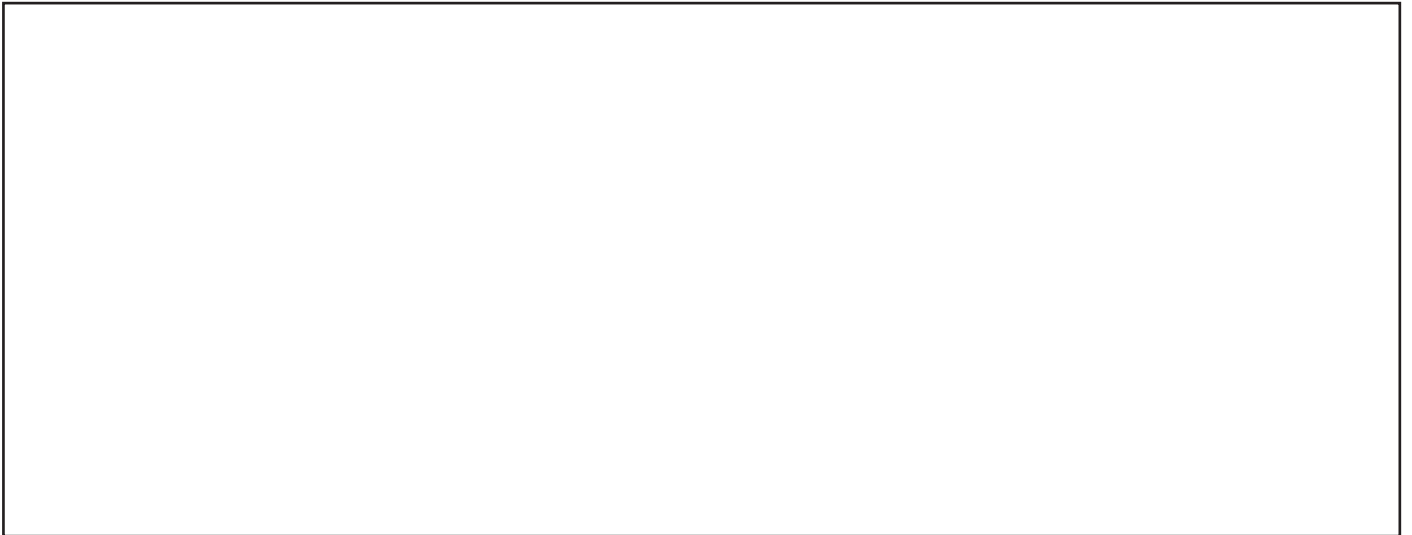
Diagrams appropriate for showing the data include:

Enquiry Question 1: \_\_\_\_\_

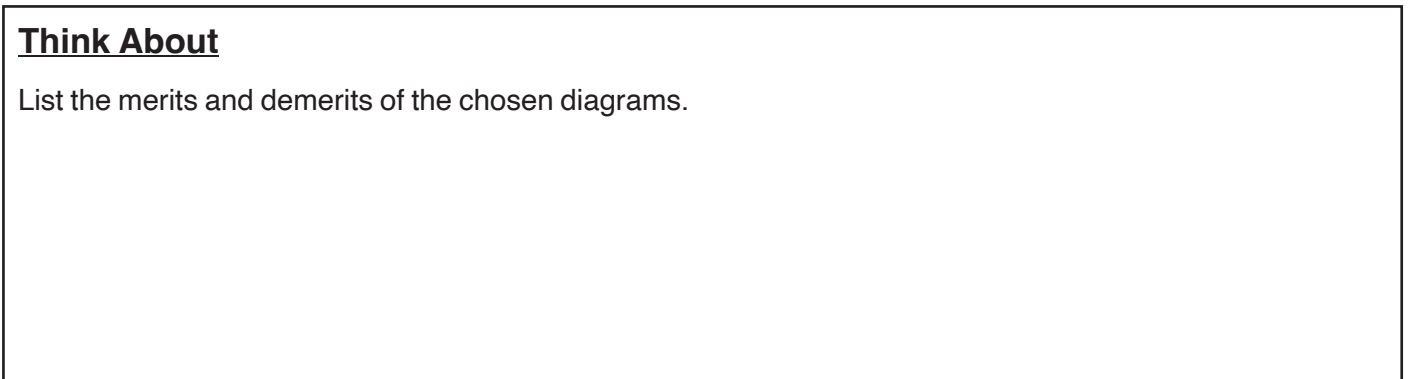
Hypothesis 2: \_\_\_\_\_

Hypothesis 3 : \_\_\_\_\_

**Figure 1 - Coastal Profile**

**Think About**

List the merits and demerits of the chosen diagrams.



## D. Interpretation and Conclusion

1. Use the collected information to respond Enquiry Question 1: “***Does the coastal gradient keep consistent along the shore?***”

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2. Does the fieldwork result support the Hypothesis 2 : “***The higher the wind speed, the farther the longshore drift displacement.***” Support your conclusion with the collected data and graph.  
(Extended question: What is the relationship between wind direction and longshore drift direction?)

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3. Does the fieldwork result support the Hypothesis 3 : “***The longer the distance from the backshore, the larger the size of load.***” Explain your conclusion with the collected data and graph.  
(Extended question: How do swash and backwash affect the deposition of loads along the shore?)

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