Glaciology case study – Sólheimajökull - assessment mat

1 **Describe the location** of the case study.	2 **Identify** one economic activity that can take place in this case study area.	3 **State** one threat faced by the case study glacier.	4 **Explain** how humans can use the glacier case study.	5 **Suggest** whether this glacier is advancing or retreating.
14 **Outline** how the glacier has changed since 1997.	 *Sólheimajökull glacier, Iceland – whose name means 'sun home glacier'*			6 **Identify** one piece of evidence from the image to prove your answer to Q5.
13 **State** two hazards that might be created by glacial melt.				7 **Suggest** an advantage and disadvantage of the growth of tourism to glaciated areas.
12 **Theorise** what will happen to Iceland's glaciers in future.	11 **Suggest** how modern technology is used to monitor the glacier.	10 **Outline** what impact global warming may have on glaciers in Iceland.	9 From the photograph, **describe** the landscape.	8 **Describe** the size and shape of the sediment in the image.

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1 Describe the location of the case study.
Sólheimajökull is an outlet glacier coming out from the Mýrdalsjökull icecap on the South Coast of Iceland. It is approximately 98miles from the capital city Reykjavík

2 Identify one economic activity that can take place in this case study area.
e.g. paid excursions, guided tours of glaciers, helicopter rides, guided hiking, superjeep tours, school trips, etc.

3 State one threat faced by the case study glacier.
e.g. difficult terrain for transport, crevasses, risk of falls, glacial melt and potential floods (jökulhlaups), etc.

4 Explain how humans can use the glacier case study.
e.g. recreation and leisure activities, scientific study,

5 Suggest whether this glacier is advancing or retreating.
The glacier is retreating / it is in recession.

14 Outline how the glacier has changed since 1997.
Since 1997 the glacier has retreated significantly, at approximately 50m per year on average. The ice has thinned and melted, creating a lagoon and the snout retreating inland exposing new land & depositing moraines.

Sólheimajökull glacier, Iceland – whose name means 'sun home glacier'

6 Identify one piece of evidence from the image to prove your answer to Q5.
e.g. there are meltwater streams visible from the snout, black sediment is exposed on the glacier due to melting, the snout is far behind the terminal moraine

13 State two hazards that might be created by glacial melt.
e.g. landslides, jökulhlaups glacial outburst floods, iceberg calving and iceberg collapse, subsidence, etc.

7 Suggest an advantage and disadvantage of the growth of tourism to glaciated areas.
e.g. increased income and employment
e.g. risk of footpath erosion, risk of ice collapse, pressure on fragile ecosystems

12 Theorise what will happen to Iceland's glaciers in future.
It is likely that most glaciers in Iceland will have melted within the next 150-200 years, with the only remaining ice being ice caps on the highest mountains.

11 Suggest how modern technology is used to monitor the glacier.
High-tech satellite imagery and GPS is used to routinely monitor glaciers. These images are analysed within GIS and GPS technology to measure ice dimensions and predict future changes.

10 Outline what impact global warming may have on glaciers in Iceland.
e.g. Global warming is likely to contribute to increased ablation in Icelandic glaciers with more melting and retreat as temperatures rise and accumulation decreases.

9 From the photograph, **describe** the landscape.
The glacier snout is visible behind an outwash plain of glacial till and terminal moraines. There are meltwater streams visible. The glacier has black sediment deposits becoming visible & crevasses. The valley sides are sloping showing a U shape.

8 Describe the size and shape of the sediment in the image.
The sediment is of mixed sizes and shapes, which means it is 'poorly sorted'. There are some angular rocks and some that are more rounded, some sand-like small particles and some larger.

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