

PROGRESS
IN

SKILLS

GEOGRAPHY

DAVID GARDNER

KEY STAGE 3



 **DYNAMIC**
LEARNING

 **HODDER**
EDUCATION
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Learning objectives

- ▶ To use basic calculations – mean and range.
- ▶ To be able to draw a line graph and bar chart.
- ▶ To interpret statistics about Liverpool using enquiry questions.

Working out some basic calculations from data

The mean is calculated by adding up the total numbers and dividing by how many numbers there are.

E.g. $4 + 12 + 12 + 16 + 17 + 12 + 4 = 77$

The mean is 77 divided by 7 (the number of values) = 11.

The range is the difference between the largest and smallest values in a set of data. In the data set example above, $17 - 4 = 13$.

In Lesson 1.2, you were introduced to the term 'quantitative data'. Our twenty-first-century world is data rich; numbers and statistics are now an essential feature of life. A good geographer can understand and interpret this data. This lesson provides an introduction to using statistics and graphs to understand places.

Statistics

Statistics are all around us, on TV news, in newspapers, adverts, even on food packaging. Statistics are used to investigate new ideas or world events, and change. Exploring the use of statistical techniques helps geographers to analyse numerical data. Handling data properly can show trends and patterns, and help people reach conclusions about enquiry questions. Statistics only make sense if we can see a pattern or a trend in the data. This is why statistics are often converted into averages or graphs to make them easier to understand.

Graphs

As a geographer, you should also be able to construct and interpret graphs from statistics. You will be provided with opportunities to do this throughout this book. Line graphs are used to show change. Bar charts compare different quantities.

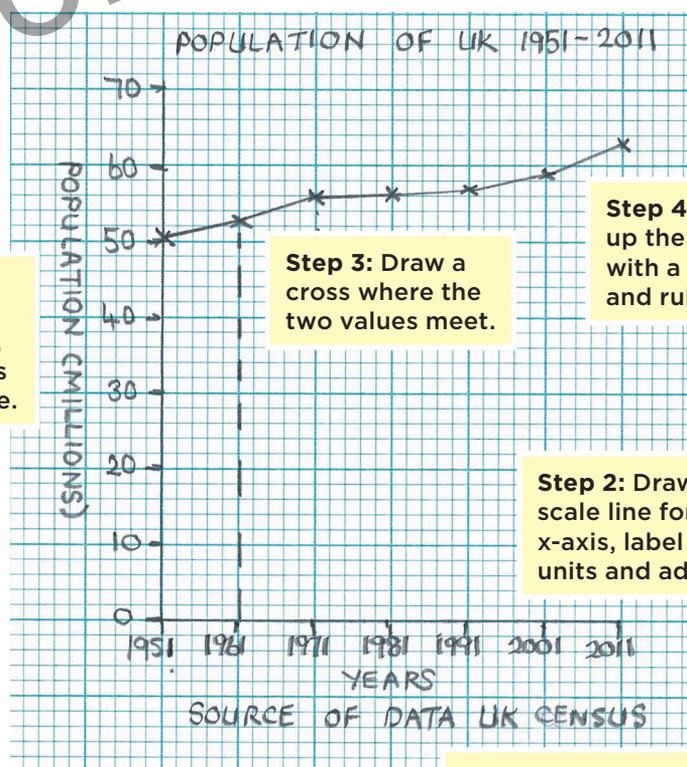
Step 1: Draw the scale line for the y-axis, label the units and add a title.

Step 3: Draw a cross where the two values meet.

Step 5: Add a title.

Step 4: Join up the crosses with a pencil and ruler.

Step 2: Draw the scale line for the x-axis, label the units and add a title.



Step 6: Identify the source of the statistical data.

A How to draw a simple line graph

AVERAGE RAINFALL MONTHLY UK

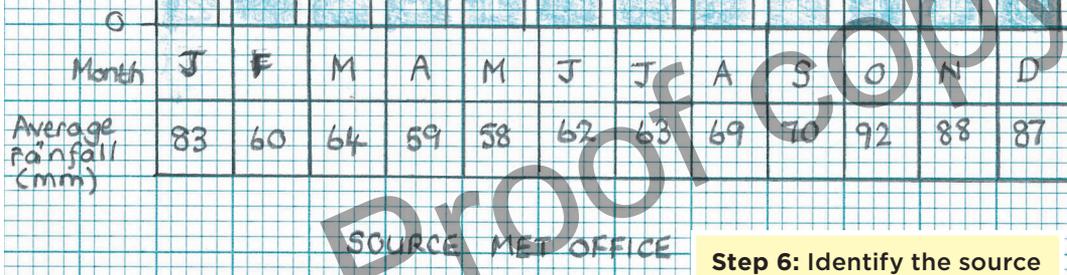
Step 5:
Add a title.

Step 1: Draw the scale line for the y-axis, label the units and add a title.

Step 3: Draw the first bar. The height of the bar shows the value it represents.

Step 4: Use a pencil and ruler to draw the bars, and shade each bar the same colour - rainfall is usually blue.

Step 2: Draw the scale line for the x-axis, label the units and add a title.



Step 6: Identify the source of the statistical data.

B How to draw a bar chart

C The population of Liverpool, 1951–2011

Year	Population
1951	765,641
1961	737,637
1971	595,252
1981	492,164
1991	448,629
2001	439,428
2011	466,415

D The average monthly rainfall for Liverpool

Month	Rainfall (mm)
J	75
F	54
M	64
A	54
M	55
J	66
J	59
A	69
S	72
O	97
N	83
D	89

Activities

- What is quantitative data?
- How do geographers make statistics easier to interpret?
- What is the mean?
 - Calculate the mean rainfall for the UK, using the data in graph B.
- What is the range?
 - Calculate the range of rainfall for the UK.
- Read the instructions in A.
 - Use the instructions to draw a line graph to show population change in Liverpool, using the data in table C.
 - Write three sentences to describe what the graph shows about how Liverpool's population has changed.
- Read the instructions in B.
 - Use these instructions to draw a bar chart to show the average monthly rainfall for Liverpool, using the data in table D.
 - Calculate the total annual rainfall for Liverpool and write the figure beside your bar chart.
 - Calculate the total annual rainfall for the UK as a whole using the data in graph B. How does it compare with the total annual rainfall for Liverpool?
 - Compare graph B with your bar chart. Write four sentences to describe how the monthly rainfall patterns for the UK and Liverpool are similar or different.

Carrying out fieldwork: How can I investigate a locality?

Learning objectives

- ▶ To locate photographs on OS maps of different scales.
- ▶ To compare ground-level photos with an OS map.
- ▶ To identify geographical features on a map and photo.

A good geographer investigates places by conducting fieldwork. When visiting a location, you can use maps and observation to collect, record and present data. A group of students conducted fieldwork at Swanage, a seaside resort on the Dorset coast. They used OS maps of different scales, 1:50 000 map-flap D and 1:10 000 map A, below. They marked locations along the route they walked on map A, 1–7, and took photographs to record physical and human features they saw, B–H.





Activities

- 1 Compare map A and map-flap D.
 - a) Identify the route shown on map A, on map-flap D.
 - b) Measure the distance the students walked along the route.
 - c) In which direction did they walk?
- 2 Look carefully at photos B–H and match them with the locations marked 1–7 on map A. There are clues on each photo which link to OS symbols and labels on the map. In each case, give evidence from the photo and map to justify your choices.
- 3 Compare map A with map-flap D. Give the six-figure grid reference for each location 1–7 on map A.
- 4 Write a description of the route the students followed, using the OS maps and photos, adding the name and six-figure grid reference of each location along the route.
- 5 Photo H was taken at 030793.
 - a) Locate this grid reference on map-flap D. In which direction was the camera pointing?
 - b) Draw a fieldsketch of the view, using the guidance in Lesson 1.13.
 - c) Label and name features 1–4 on your fieldsketch.
 - d) Add a title to your fieldsketch.
- 6 You could conduct similar fieldwork for the locality around your school.

Future learning

This unit has introduced geographical enquiry as well as a range of geographical skills, including atlas and OS maps, statistics, graphs, qualitative data, photographs, GIS and fieldwork.

You will be provided with opportunities to develop and progress these skills throughout *Progress in Geography Skills*.

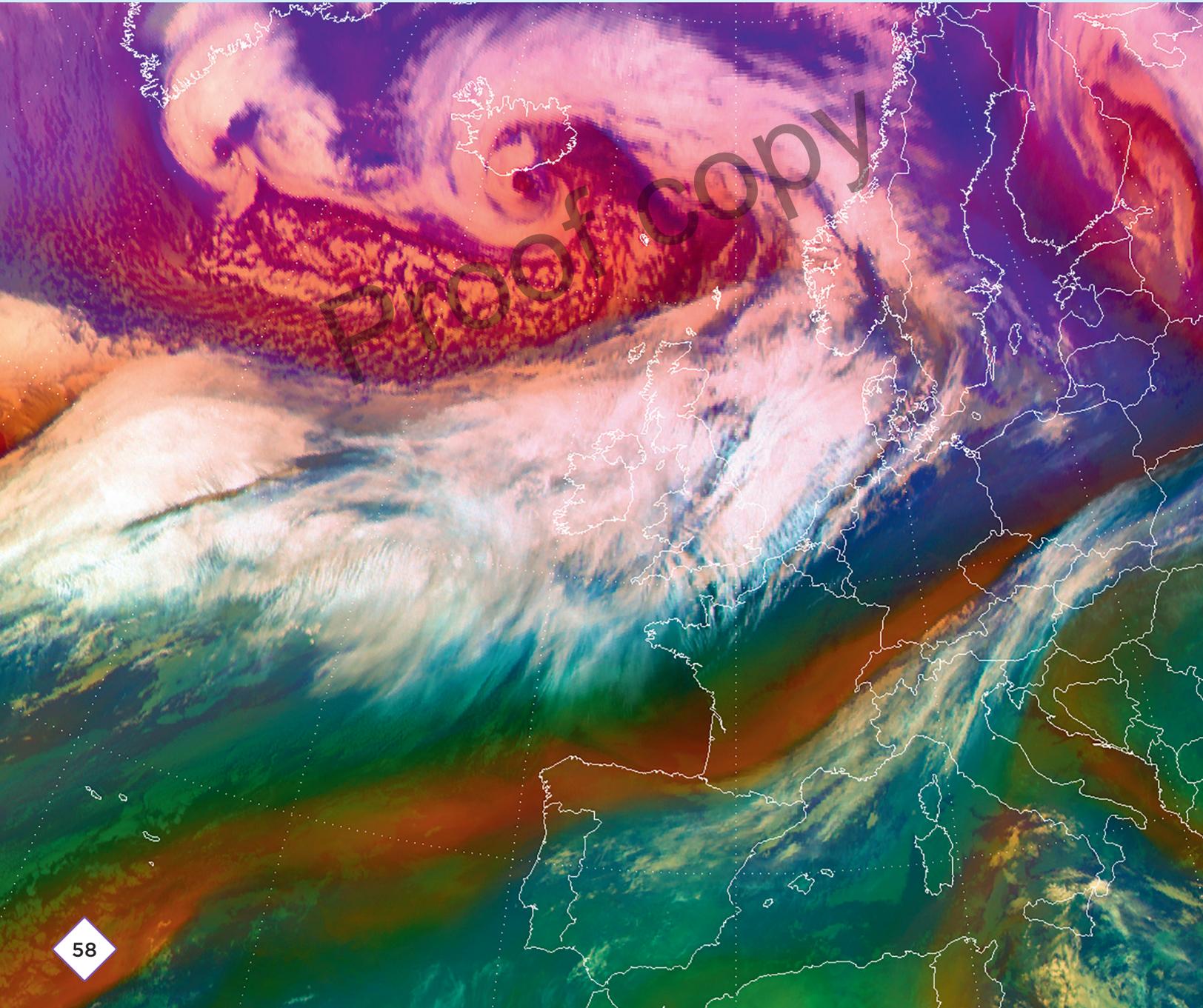
Enquiry skills: How can I conduct a geographical enquiry about a river flood? Part 1

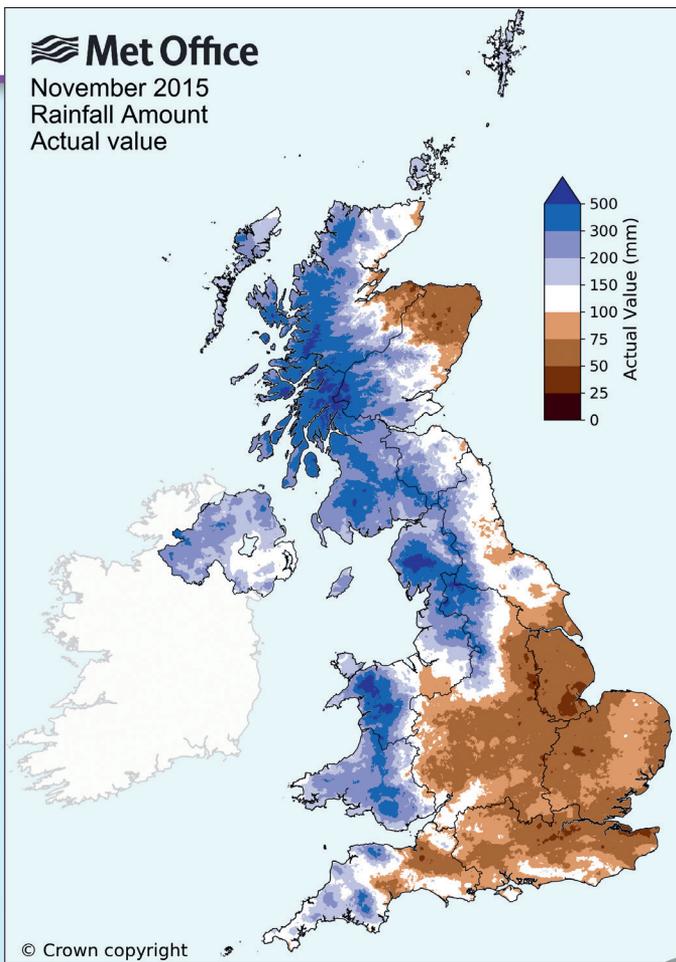
Learning objectives

- ▶ To identify enquiry questions.
- ▶ To be able to interpret a range of geographical data as part of an enquiry about a flood.
- ▶ To be able to reach conclusions consistent with the evidence and enquiry questions.

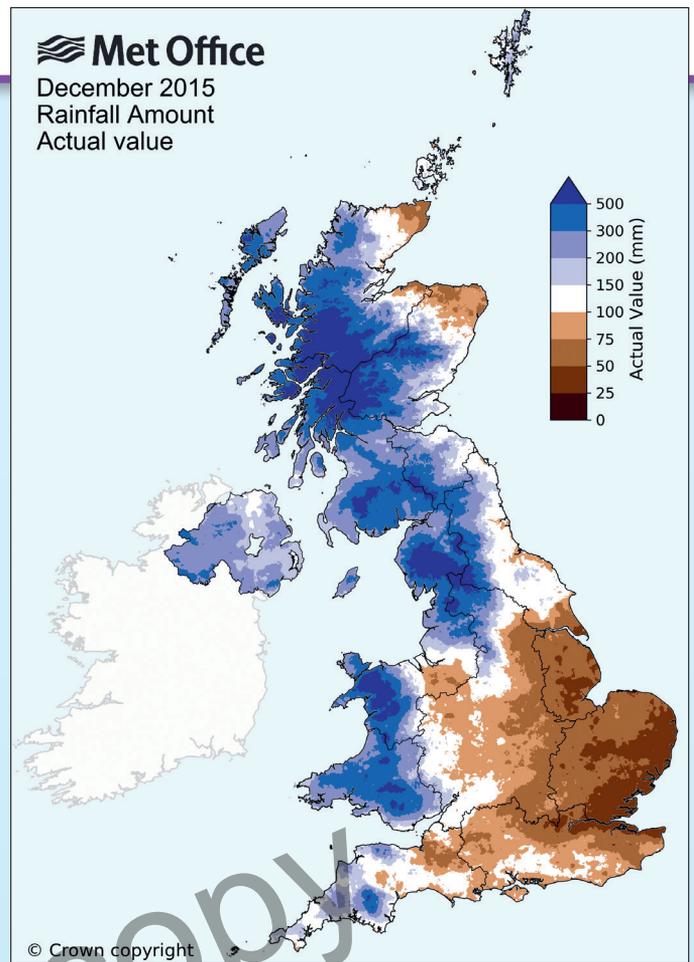
Cockermouth is a town in the county of Cumbria in the Lake District. It is located at the confluence of two rivers. The town has always been prone to flooding, with 15 flood events recorded since detailed records began in 1761. On 5 and 6 December 2015, the region experienced a major flooding event, affecting numerous towns in the county, the result of a major storm. In Cockermouth, 594 properties were flooded. As a result of a severe flood in 2009, flood defences for the town were improved by the Environment Agency. Unfortunately, these were over-topped in 2015, when the water level exceeded the height of the defences. In this double lesson, you will conduct an enquiry about the 2015 flood event.

A Satellite image of the 2015 Storm Desmond from EUMETSAT





B Met Office rainfall map for November 2015



C Met Office rainfall map for December 2015

Storm Desmond

The severe flooding in Cumbria was principally the result of Storm Desmond. This was a deep Atlantic low-pressure system. Desmond had strengthened and deepened as it travelled eastwards across the Atlantic, gaining a lot of moisture from the Caribbean as it passed over. It became a system of very moist air several thousand kilometres long and a few hundred kilometres wide (see satellite image A). Storm Desmond dragged this moisture-rich air over Cumbria. As it rose over the mountains, the air cooled, leading to

condensation of the water vapour. The cold front became stationary over Cumbria. The cold air appears blue on image A, and surrounding warm air green. This all led to very intense, prolonged and record-breaking rainfall – see C and D. Unfortunately, the ground in the north of England was already very wet. Many parts of north-west Britain had already recorded more than twice the monthly average rainfall during November (see B), the result of a succession of earlier, similar but less intense, storms like Desmond.

D Key weather statistics about Storm Desmond, Met Office

Highest 48-hour rainfall record for UK (405.0 mm at Thirlmere, Cumbria, in just 38 hours)

Wettest calendar month on record for UK (191 per cent of December average)

Highest 24-hour rainfall record for UK on 5 December (341.4 mm at Honister Pass, Cumbria)

The rain isn't letting up, and flood waters are rising at an alarming rate. Four of the six bridges in Cockermouth weren't passable at 4 pm, and it's getting worse now. People's homes and businesses are at risk. Dreadful.

We stayed in our house because after the 2009 flood we bought flood defences for our home so we thought we'd better stay in and try and mop up any leaks that come in, but we just got overwhelmed and we ended up leaving our house.

E Eyewitness accounts of the Cockermouth flood

How can I use OS maps and photos to describe a route at Cwm Idwal?

Learning objectives

- ▶ To locate photographs on OS maps of different scales.
- ▶ To compare ground-level photos with an OS map.
- ▶ To identify geographical features on OS maps at different scales and photos.

Cwm Idwal is located at 53.12° N 4.03° W, in the Snowdonia National Park, in North Wales. The area is popular with visitors walking along a footpath trail, maintained and promoted by the National Trust and the National Park. A family planned a walk in the area, using OS map A, 1:10 000, and map-flap A, 1:25 000, to follow a route. The route is marked on A, with numbers 1–8, where the family stopped to take photographs B–E and G–J. Other families shared their thoughts about the Cwm Idwal walk, with reviews on a tourist website, F and K.



A Cwm Idwal walk, 1:10 000 OS map

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B Footbridge (FB) over river from Llyn Idwal (llyn is Welsh for 'lake')



E Footpath looking towards Cwm Idwal



C Ogwen Cottage



D Milestone (.MS) on the A5

Spectacular views on well-made path (total ascent is around 130 metres and is all very gradual). The walk takes around 2hrs at a slow pace. There is a small National Trust car park with toilets and a cafe/snack bar sign-posted from the main road (A5) at the western end of Llyn Ogwen. However, when we visited on Good Friday there were hundreds of cars parked on either side of the A5.

F Visitor review

Activities

- Use maps on your phone or computer to plan a route from your house to Cwm Idwal. How many miles is it and how long would the journey take by car? Describe the route suggested by the map software.
- Look carefully at map A, map-flap A and photos B–E and G–J.
 - Match the photos to the stops on the route.
 - Give the six-figure grid reference for each location.
 - In each case, provide map evidence to justify your choice.
- Rewrite the description of the route followed, adding the six-figure grid reference, the direction they walked at each point and descriptions from photos B–E and G–J.
- Use map-flap A and the linear scale to measure the distance the family walked. Add this to your description of the route.
- Draw a fieldsketch of Cwm Idwal, photo I.
 - Label the following on the sketch: Llyn Idwal; the steep backwall; Devil's Kitchen; the footpath; the smoothed rock in the left-hand corner of the photo.
 - Add a title that includes the direction the camera was pointing and the six-figure grid reference for where the photo was taken.
- Read the reviews of visitors, F and K.
 - What problem do visitors often experience when arriving by car?
 - What health and safety factors need to be considered before walking the route?

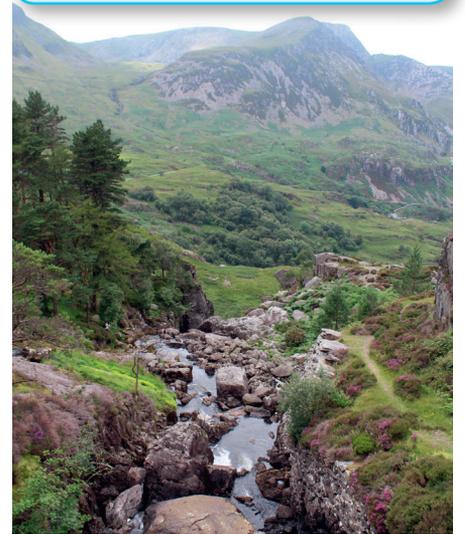
The family wanted to park their car at Ogwen Cottage, but when they arrived the car park was full, so they eventually parked at the first car park on the A5 on the southern side of Llyn Ogwen. The family walked along the A5 and passed Ogwen Cottage, to get a view of Ogwen Waterfall. On the way they noticed a milestone at the side of the road. They then visited the toilets before starting the trail. They crossed the footbridge and admired the smaller waterfall. Halfway along the footpath, they took a photo looking up to Cwm Idwal. They had a drink of water and admired the view at Llyn Idwal, before returning along the path and A5 back to their car.



G A5 alongside Llyn Ogwen, halfway from first car park to Ogwen Cottage



H Entrance to Ogwen car park



J Ogwen Waterfall from the A5



I Cwm Idwal and Llyn Idwal

Went up here for a geography course many years ago and decided to come here again. It is simply breathtaking. The area is beautiful. The paths are uneven and can be slippery when wet. I think that walking boots are a must and do check the weather as cloud can descend quickly resulting in poor visibility. It's not a place to visit wearing flip-flops!

K Visitor review