

Measuring: Geography

by Keith Kelly

AGE: Teenagers
LEVEL: Intermediate
TIME NEEDED: Approx. 90 minutes
OBJECTIVES: to learn about different ways of measuring the weather; listen to, watch and make notes from a presentation about methods for measuring weather; read and check notes; record and write up data for an aspect of weather monitored over the course of five days
KEY SKILLS: listening and note taking; reading; writing; presenting data
MATERIALS: the presentation *Measuring the weather* (PowerPoint format); one copy of the worksheet per student; one copy of the reading text *Measuring the weather* and one copy of *Making a weather chart* per student

Content focus

Measuring the weather

Warm-up: 5 minutes
Activity 1: 10 minutes
Activity 2: 10 minutes
Activity 3: 10 minutes
Activity 4: 20 minutes (including a homework task)

WARM-UP

1. Get students to talk about what the weather is like today, and how they would record this weather.

Guide the discussion towards sunshine, rain, wind (speed and direction), humidity and temperature.

ACTIVITY 1

2. Tell students they are going to watch a presentation on measuring weather and that they should complete the table with information they hear during the presentation. Show the presentation and read through the information. You can add any information you like from the reading text *Measuring the weather*. You could also find videos online showing the different measurement instruments in use to add to the presentation.

Tip: Deliver your presentation at normal speed and don't provide any extra help with completing the table. The aim of the task is to practise making notes and

not to complete all the information. Students will read a text to check their information and they will have time in pairs to share their notes in Activity 2.

Key _____

Measuring the weather		
Aspect of weather	Measurement instrument	Unit of measurement
Temperature	Thermometer	Degrees Celsius
Wind direction	Wind vane	Compass directions
Wind speed	Anemometer	Kilometres per hour
Wind strength	Beaufort scale	Effect on landscape
Relative humidity	Hygrometer	Percentage
Precipitation	Rain gauge	Millimetres (mm)
Sunshine	Campbell–Stokes recorder	Hours per day

ACTIVITY 2

3. Hand out the text *Measuring the weather* and get students to individually read and check their tables again, adding any information that is missing.

4. Let students get into pairs and compare their tables, adding anything extra that they can while sharing information.

ACTIVITY 3

5. Get the students, still in pairs, to find the words that correspond to the explanations in the list.

Key

1. monitor; 2. measure; 3. forecasts; 4. degrees (Celsius); 5. maximum; 6. minimum; 7. record; 8. calculate; 9. ranges; 10. speed; 11. strength; 12. scale; 13. indicate; 14. rotates; 15. gauge; 16. expresses

ACTIVITY 4

6. Get students to choose one aspect of the weather from the list that they will measure over the course of five days, Monday to Friday.

Hand out one copy of *Making a weather chart* to each student. Get students to record their chosen aspect over the course of five days. Stress the need to represent their data in a chart or diagram. Briefly review the structure of the paragraph to check that the students are clear about the task. You may want to direct students to [Your CLIL Line graphs: Geography](#) and [Measuring: Geography](#) for extra language ideas.

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Language focus

Measuring

Activity 1: 15 minutes

Activity 2: 15 minutes

Activity 3: 10 minutes

ACTIVITY 1

1. Get students to look at the adjectives for measurements and match the opposites.

Key _____

1. far; 2. thick; 3. heavy; 4. short; 5. narrow; 6. deep;
7. slow; 8. low

2. Ask students to form nouns from the measurement adjectives by adding suffixes (-th, -ness, -ment). Remind students that the spelling of some of the adjectives might need to be changed. Let them use a dictionary if necessary.

Key _____

1. depth; 2. length; 3. width; 4. hardness; 5. thickness;
6. nearness; 7. richness; 8. openness; 9. height;
10. weakness; 11. coarseness; 12. smoothness;
13. steepness; 14. heaviness; 15. development; 16.
movement

ACTIVITY 2

3. Ask students to complete the crossword on measurement nouns.

Key _____

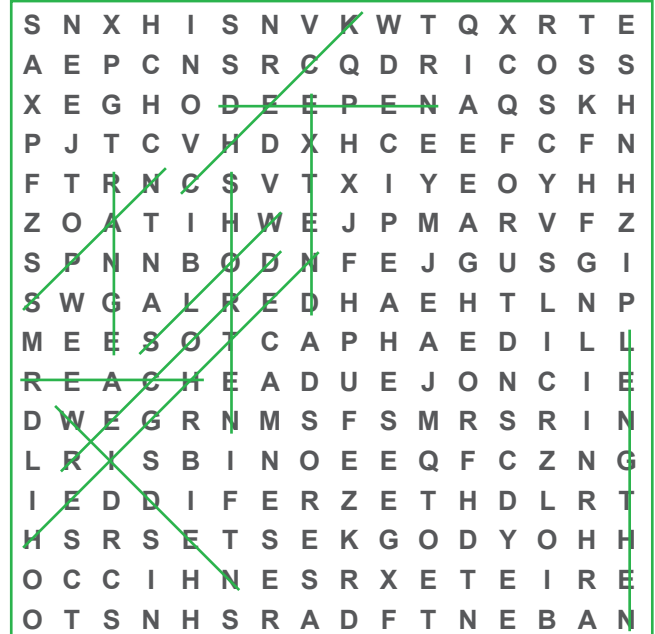
Across: 1. amount; 4. average; 7. range; 8. scales;
10. span

Down: 2. measurement; 3. radius; 5. extent; 6. check;
8. stage; 9. levels

ACTIVITY 3

4. Ask students to complete the wordsearch to find the verbs.

Key _____



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Content focus
Measuring the weather

ACTIVITY 1

You are going to watch a presentation on measuring weather.

Complete the table below with information you hear during the presentation.

Measuring the weather		
Aspect of weather	Measurement instrument	Unit of measurement

ACTIVITY 2

Read the text *Measuring the weather* and check your table. Add any missing information. Then share your table with a partner and quickly check that you both have all the information.

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ACTIVITY 3

Read the text *Measuring the weather* again. In pairs, find the words which match the explanations below.

Hint: The explanations are in the order that the words appear in the text. Two examples have been done for you.

1. watch closely _____
2. to count something using an instrument, to show how much or how high something is

3. reports on what the weather will be like _____
4. the units used to show temperature _____
5. the top or highest number _____
6. the lowest or smallest number _____
7. make a note of something, or write something down _____
8. work out, find the answer to a number problem _____
9. between the lowest and the highest numbers _____
10. how fast something travels speed _____
11. how strong something is _____
12. a range of numbers used to measure something _____
13. show, represent _____
14. spins round, turns round _____
15. an instrument used for measuring quantity, e.g. rain gauge _____
16. shows, indicates an amount _____

ACTIVITY 4

Choose an aspect of weather from the list below. Measure this aspect in the town where you live over the course of five days (Monday to Friday). Use the handout *Making a weather chart* to record and present your data.

- temperature
- sunshine
- wind speed and strength
- wind direction
- precipitation
- relative humidity

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Language focus

Measuring

ACTIVITY 1

a. Look at the list of adjectives for measurements, then match the opposites.

thick low deep far narrow short heavy slow

1. near _____
2. thin _____
3. light _____
4. long _____
5. wide (broad) _____
6. shallow _____
7. fast _____
8. high _____

b. Form measurement nouns from the words given by adding a suffix (*-th*, *-ness*, *-ment*). Use a dictionary if you need to.

1. deep _____
2. long _____
3. wide _____
4. hard _____
5. thick _____
6. near _____
7. rich _____
8. open _____
9. high _____
10. weak _____
11. coarse _____
12. smooth _____
13. steep _____
14. heavy _____
15. develop _____
16. move _____

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ACTIVITY 2

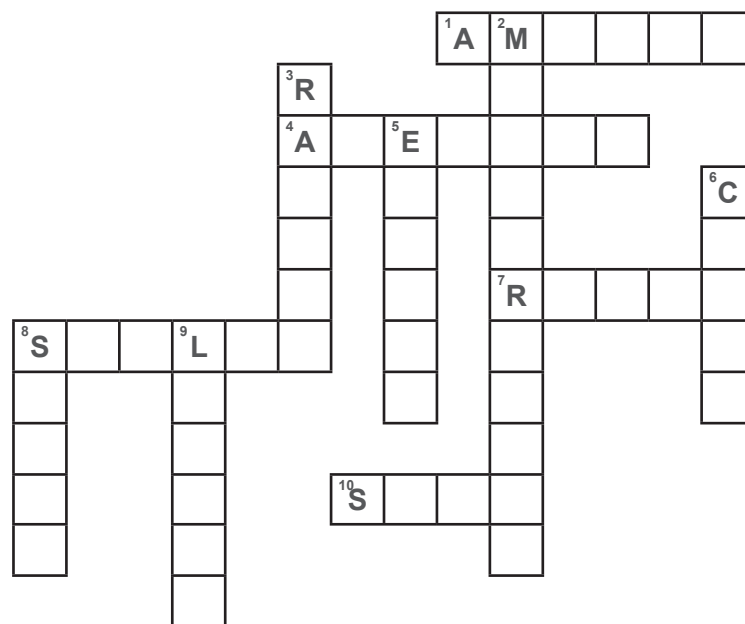
Look at the sentences and complete the crossword with the missing measurement words.

Across

1. The _____ of abrasion depends on the ability of the waves to pick up rock fragments from the shore.
4. The North has suffered higher than _____ unemployment rates than other areas.
7. A wide _____ of services, such as financial, legal and marketing, supports industrial development.
8. City street maps are made in a variety of _____, depending on the size of the area and the level of detail.
10. Each age group in the graph covers a twenty-year _____.

Down

2. A gradient of 1:10 means the slope rises or falls one unit of _____ for every 10 similar units horizontally.
3. Most of the city's major facilities are within this area, which has a _____ of about 20 km.
5. The _____ of the damage caused by an earthquake depends on the magnitude of the earthquake and the location of its epicentre.
6. Surveys are carried out each year to _____ the fish population size.
8. Rivers receive waters from many tributaries before they reach the mature _____.
9. When the Ice Age ended, sea _____ rose again.



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ACTIVITY 3

Complete the wordsearch to find measurement verbs.

reach

check

record

span

extend

range

slow

widen

shorten

lengthen

deepen

heighten

S	N	X	H	I	S	N	V	K	W	T	Q	X	R	T	E
A	E	P	C	N	S	R	C	Q	D	R	I	C	O	S	S
X	E	G	H	O	D	E	E	P	E	N	A	Q	S	K	H
P	J	T	C	V	H	D	X	H	C	E	E	F	C	F	N
F	T	R	N	C	S	V	T	X	I	Y	E	O	Y	H	H
Z	O	A	T	I	H	W	E	J	P	M	A	R	V	F	Z
S	P	N	N	B	O	D	N	F	E	J	G	U	S	G	I
S	W	G	A	L	R	E	D	H	A	E	H	T	L	N	P
M	E	E	S	O	T	C	A	P	H	A	E	D	I	L	L
R	E	A	C	H	E	A	D	U	E	J	O	N	C	I	E
D	W	E	G	R	N	M	S	F	S	M	R	S	R	I	N
L	R	I	S	B	I	N	O	E	E	Q	F	C	Z	N	G
I	E	D	D	I	F	E	R	Z	E	T	H	D	L	R	T
H	S	R	S	E	T	S	E	K	G	O	D	Y	O	H	H
O	C	C	I	H	N	E	S	R	X	E	T	E	I	R	E
O	T	S	N	H	S	R	A	D	F	T	N	E	B	A	N

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Measuring the weather

National weather stations continuously monitor and measure the weather and prepare forecasts so that we have an idea what to expect of the weather in the near future. You can measure the weather locally too. Using simple techniques you can measure the following aspects of the weather:

- temperature
- sunshine
- wind speed and strength
- wind direction
- precipitation
- relative humidity

Temperature

Thermometers measure temperature in degrees Celsius. There are two types of thermometers: a maximum thermometer records the highest temperature of the day; a minimum thermometer records the lowest temperature of the day. Maximum and minimum thermometers are also used to calculate the difference between the highest and the lowest temperatures. These differences are called temperature ranges. A Stevenson screen is used to record shade temperatures in degrees Celsius. It always has a white colour to reflect the sun's rays and prevent them from interfering with shade temperature.

Sunshine

A Campbell–Stokes sunshine recorder measures the times and hours of sunshine each day. A solid glass ball concentrates the sun's rays on to a removable strip of card, which is placed behind the ball. The sun's rays scorch the card. As the sun's position changes, different parts of the card are

scorched. The card is marked off in hours, so that the scorch marks reveal when and for how long the sun was shining.

Wind speed and strength

Wind speed is measured with an anemometer in kilometres per hour. Three cups spin in the wind. They rotate more quickly when the wind is strong.

Wind strength may be measured by using the Beaufort scale. This scale uses visual effects on land to indicate wind speed. The stronger the wind, the greater the effect is on objects such as people, trees and buildings etc.

Wind direction

Wind direction is indicated with a wind vane. The wind catches and rotates the arrow until it points towards the source of the wind.

Precipitation

Rainfall is measured in millimetres using a rain gauge. A rain gauge has three parts; a funnel, a cylinder and a measuring jar. The purpose of the funnel is to prevent evaporation of the water in the jar.

Relative humidity

A hygrometer is used to measure relative humidity, which expresses the amount of water vapour in the air as a percentage. One common type of hygrometer uses wet and dry bulb thermometers. These two thermometers stand side by side in the Stevenson screen.

Adapted from *New Complete Geography 3rd edition* by Charles Hayes, pp. 76-80 © Gill & Macmillan 2002

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Record your data.

Place _____	Day 1 Date: _____	Day 2 Date: _____	Day 3 Date: _____	Day 4 Date: _____	Day 5 Date: _____
Temperature					
Sunshine					
Wind speed and strength					
Wind direction					
Precipitation					
Relative humidity					

Present your data in a chart or diagram.

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Write a paragraph to describe the data you recorded over the five days, including any differences in your data. (Refer to Your CLIL [Line graphs: Geography](#) and [Measuring: Geography](#) for language ideas to help you present your data.)

Say something about your daily results.
(On Monday ...)

Say something about your lowest and highest results.
(The lowest ..., The highest ...)

Say something about your average results over the week.
(The average ..., On average ...)
