

Creating Futures

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Lesson 1

Climate and weather



Outline

Children:

- explore how we collect information on the weather;
- design a weather investigation; and
- sort weather and climate statements.



Key Question: How do we measure weather and climate?



Key points of learning relating to climate change

- That there is a **difference between weather and climate** (weather reflects short-term conditions and changes day to day, while climate is the average weather over a long period of time).
- That we can **measure weather with specialist equipment** (including anemometers, thermometers, rain gauges and weather vanes).
- That we have been **systematically collecting data** from weather stations for over 150 years (we can calculate averages of weather recordings).
- That we know about the climate and climate change from **looking at weather** over a long period of time (30 years).



Curriculum integration

	Strand	Strand Unit
Maths	Data	Representing and interpreting data
Science	Environmental awareness and care	Science and the environment Environmental awareness
Geography	Natural environments Environmental awareness and care	Weather, climate and atmosphere Environmental awareness Caring for the environment



Resources

- Knowledge Leaves and Question Drops, *more than one of each per pupil.*
- Measuring Weather Mind Map, *one per group.*
- Weather Data Sheets with clipboards, *one per pair.*
- Beaufort Scale, *one per pair.*
- Weather or Not Example, *teacher copy.*
- Weather or Not Sheets, *one per pair.*
- Weather Proverb Cards, cut up, *one card per pair.*
- Umbrellas Needed for the School Fair: Weather or Climate?, *one per pair.*
- Umbrellas Needed for the School Fair: Answer Sheet, *teacher copy.*
- A Week of Weather Sheet, *one per class.*

For additional activities

- A Day's Temperature Graph, *one per pupil.*
- 24 Hour Temperature Graph, *one per pupil.*



Other resources

Equipment for measuring weather: anemometer, thermometer, rain gauge, weather vane and clipboards.



LESSON PLAN

1. Children develop a climate change learning wall

Children brainstorm what they know about climate change and questions they have.

Using the **Knowledge Leaves** and **Question Drops** children each write something they know and a question they have and stick these to the Wall.

See *To Start: Building a climate change learning wall* for further information.

2. Children discuss how we measure the weather

Either through whole-class discussion or working in groups, using the **Measuring Weather Mind Map**, children brainstorm how we measure the weather.

3. Children measure the weather

Children examine the equipment for measuring weather including the Beaufort scale.

Using the **Weather Data Sheets** they go outside, set up measuring equipment, and record the weather together. They could make two recordings for wind speed, one using the anemometer and one using the **Beaufort Scale** and observation.

See www.met.ie/education for more ideas.

Class Discussion Questions

Would the data be different if it had been collected differently, e.g. if the thermometer had been positioned in the shade?

Does the data give all the information needed to describe weather in Ireland today? Or weather in Ireland generally?

4. Children investigate proverbs about the weather

The class discusses what a proverb is and children share any proverbs they know about the weather.

Reading some of the **Weather Proverbs Cards** provided, the class discusses which is the most unusual proverb.

The class plans an investigation that would test whether this proverb were true of Irish weather.

Children repeat this exercise, in pairs, using one of the proverbs from the **Weather Proverbs Cards** and the **Weather or Not Sheets**.



LESSON PLAN (continued)

5. Children explore the differences between weather and climate

The class discusses how weather describes the short-term temperature, rainfall, wind, etc., and climate describes the average over a long period of time.

In pairs, children are given the **Umbrellas Needed for the School Fair: Weather or Climate Sheet**. Children cut up the comments and divide them into those related to weather and those related to climate. Children write their own comments and decide whether they relate to weather or climate.

Discuss the differences between weather and climate.

6. Children consider information needed to describe climate

Discussion Questions

What information would need to be collected to be able to describe the Irish climate?

How could this information be obtained?



Weather stations in different locations all over Ireland and throughout the world collect information on the weather on a regular basis. They track the weather every hour every day. We have this information dating back over 150 years. For further information on Irish weather stations see www.met.ie

7. Children observe weather over a week

As a class, children observe, record and display weather phenomena over a week using the **Week of Weather Sheet**.

In lesson 3, children calculate the averages for this data.

8. Children review their climate change learning wall

Can any questions be answered?

Can new knowledge about climate change be added to the wall?

Can any new questions be added to the wall?

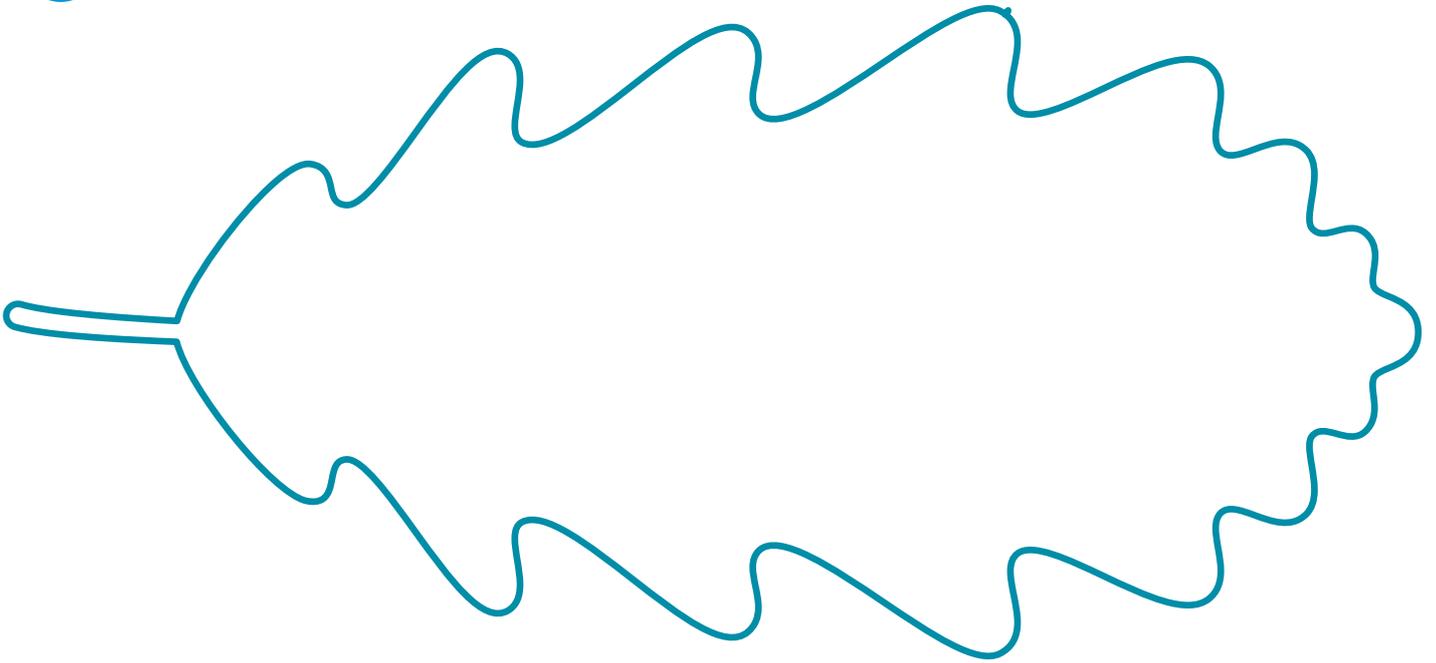
Additional Activities

1. Using the **Day's Temperature Graph** children mark on the graph the temperature at the time it was taken. Children speculate what the temperature was for every other hour in the day where they do not have data collected. What is usually the hottest part of the day in Ireland? What is the coldest? How were they able to speculate?
2. Children look at a **24 Hour Temperature Graph**, using either the one provided or a current one downloadable from www.met.ie. Children look at the warmest and coldest points in the day, and calculate the mean temperature for the day. How does the shape of the graph compare to their speculative graphs?

Knowledge Leaves



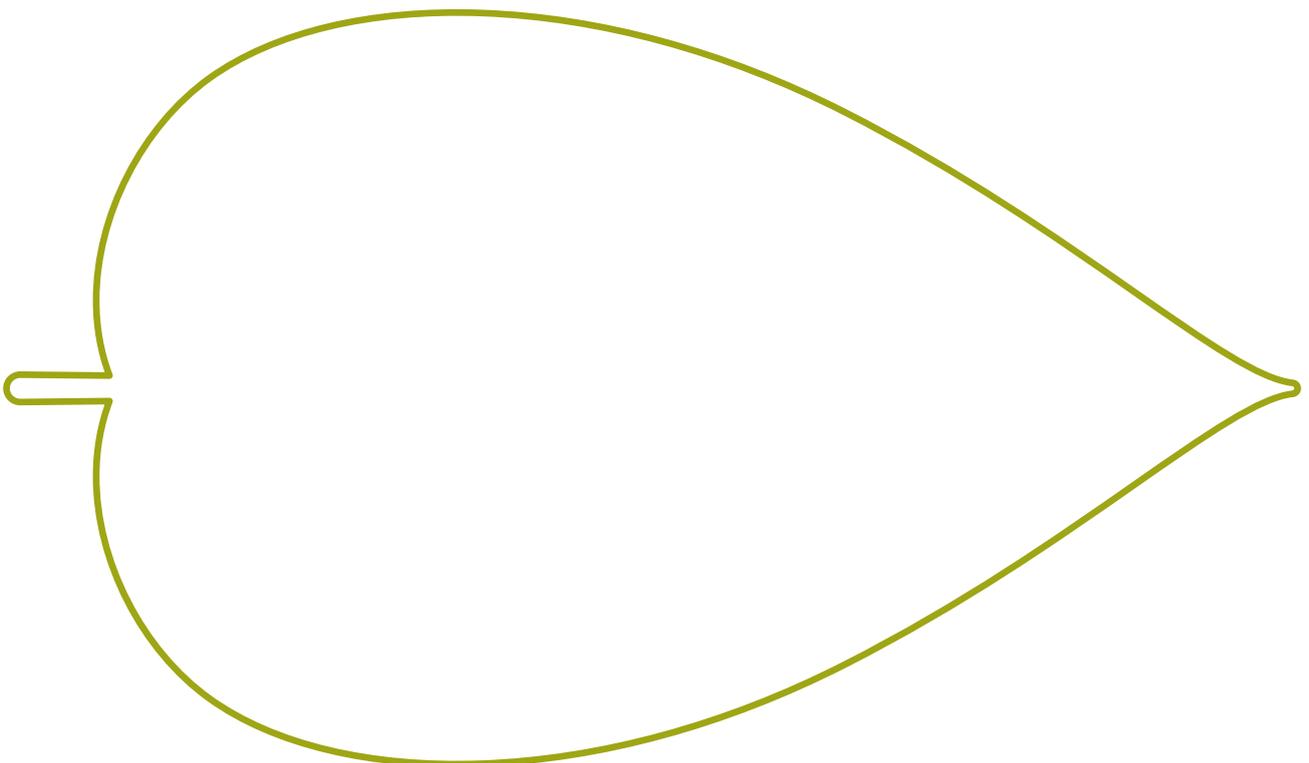
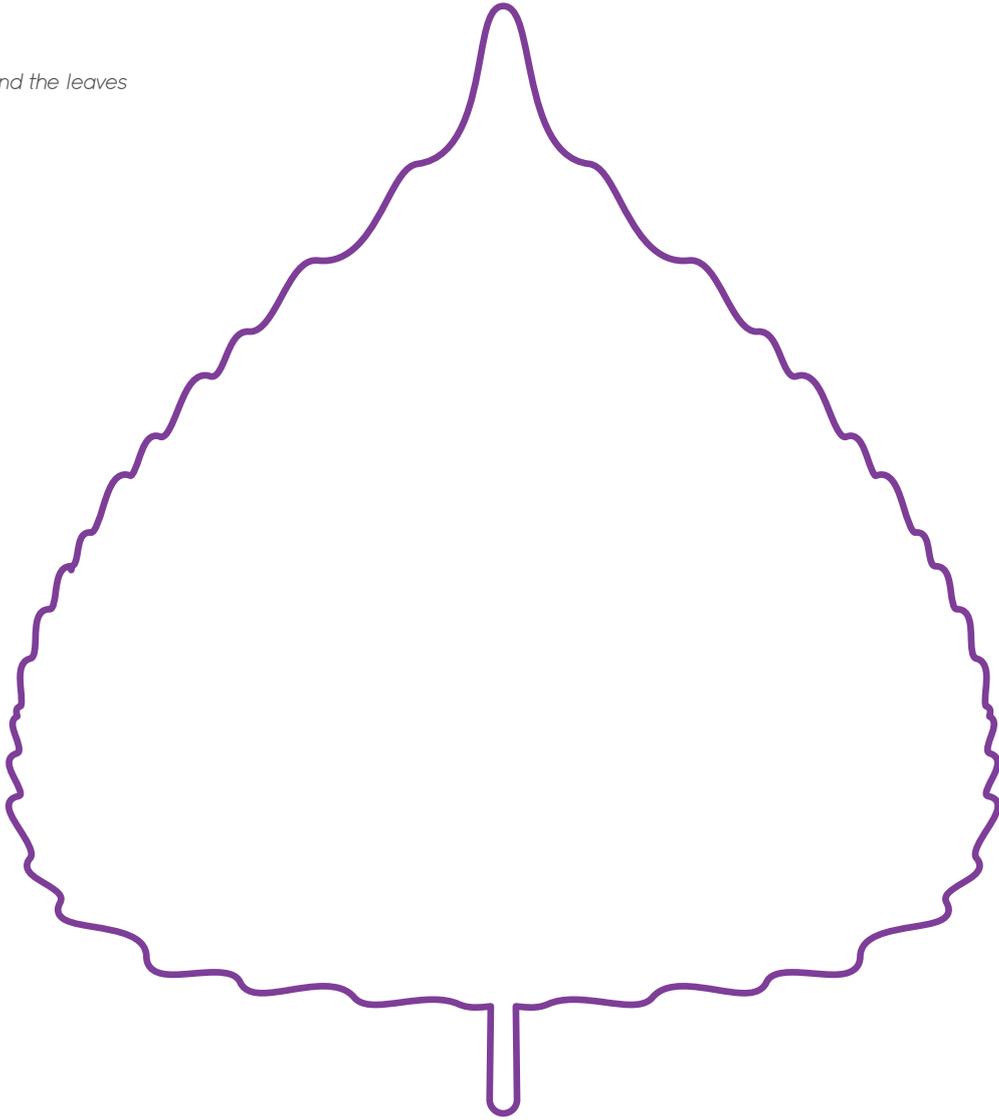
Cut around the leaves



Knowledge Leaves



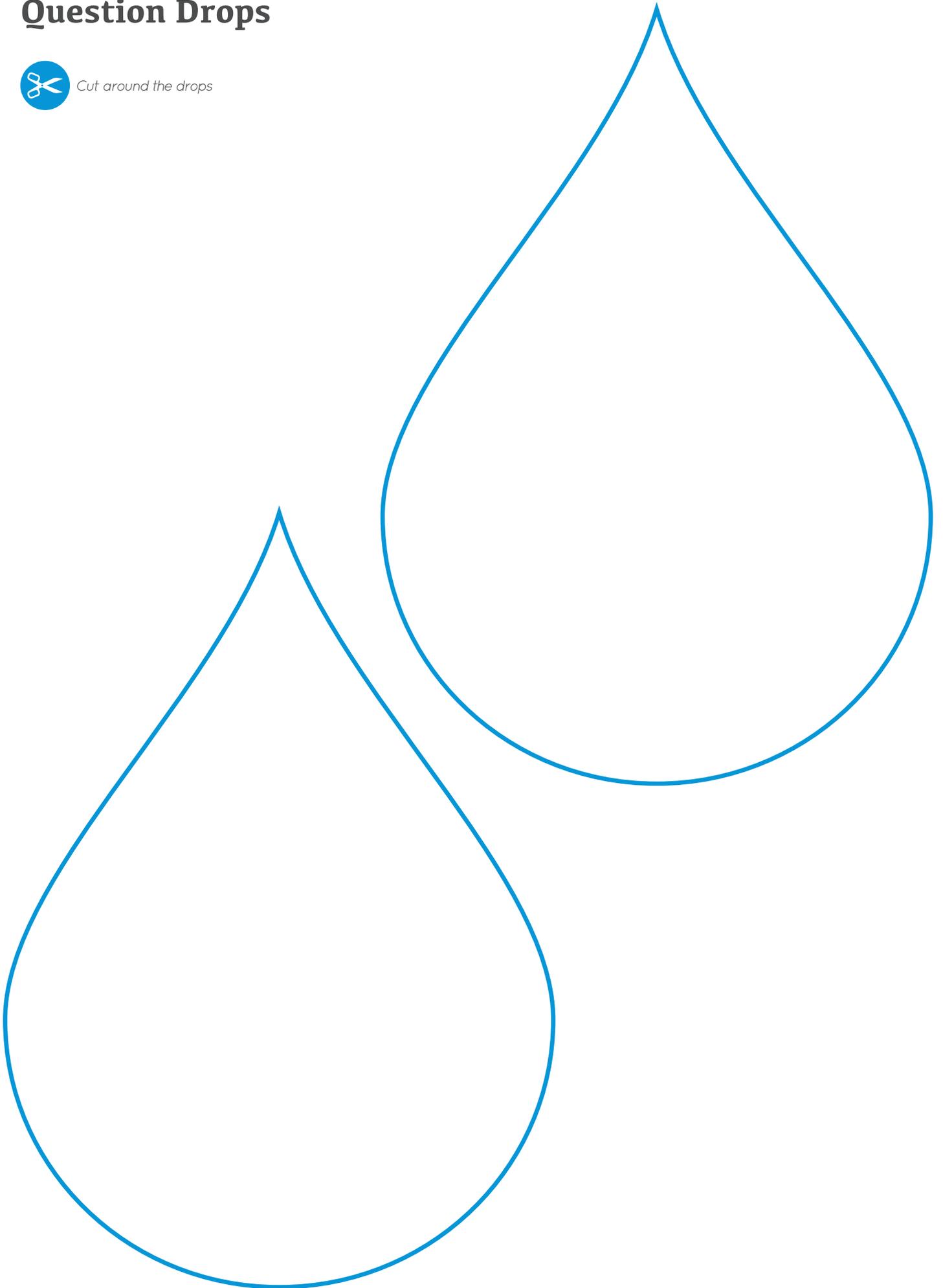
Cut around the leaves



Question Drops



Cut around the drops



Measuring Weather Mind Map



Weather Data Sheets

 Place	
 Date	
 Time	
 Temperature	
 Cloud cover	
 Wind speed	
 Wind direction	
 Rainfall	
 Other observations	

The Beaufort Scale

Category	Description
0	Calm – Smoke rises vertically
1	Light air – Direction of wind shown by smoke but not by wind vane
2	Light breeze – Wind felt on face, leaves rustle
3	Gentle breeze – Leaves and small twigs in constant motion
4	Moderate breeze – Raises dust and loose paper, small branches are moved
5	Fresh breeze – Small trees in leaf begin to sway, crested wavelets form on inland waters
6	Strong breeze – Large branches in motion, whistling heard in telegraph wires, umbrella used with difficulty
7	Near gale – Whole trees in motion, inconvenience walking against the wind
8	Gale – Breaks twigs off trees, generally impedes progress when walking
9	Strong gale – Slight structural damage occurs (chimney pots and slates removed)
10	Storm – Seldom experienced inland, trees uprooted, considerable structural damage occurs
11	Violent storm – Very rarely experienced inland, accompanied by widespread damage
12	Hurricane

Weather or Not

<p>Proverb</p>	<p>What does this proverb suggest about the weather?</p>
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How would you test it? Set out the design for your investigation.

<p>1</p>	<p>2</p>
<p>3</p>	<p>4</p>

Weather or Not (continued)

What would you need for your investigation?

How long would your investigation take?

How reliable is your investigation?

Weather Proverb Cards



Cut around each proverb

If the cat washes her face over her ear, the weather is sure to be fine and clear.

If birds fly low, then rain we shall know.

Clear moon, frost soon.

Evening red and morning grey are two sure signs of one fine day.

If March comes in like a lion, it will go out like a lamb.

The winds of the daytime wrestle and fight longer and stronger than those of the night.

When ants travel in a straight line expect rain; when they are scattered, expect fair weather.

Rain before seven, fine before eleven

When grass is dry at morning light look for rain before the night.

Chimney smoke descends, our nice weather ends.

If sheep ascend hills and scatter, expect clear weather.

Birds on a telephone wire predict the coming of rain.

When clouds appear like rocks and towers, the earth will be washed by frequent showers.

Red sky at night, shepherds' delight. Red sky in the morning, shepherds' warning.

Weather or Not Example

Proverb

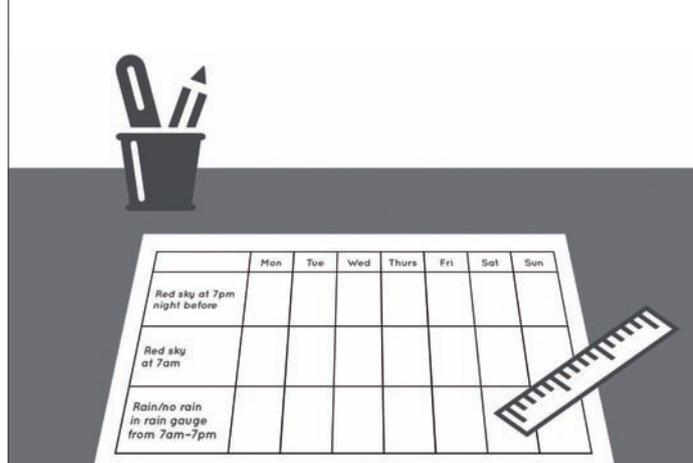
Red sky at night, shepherds' delight.
Red sky in the morning, shepherds' warning.

What does this proverb suggest about the weather?

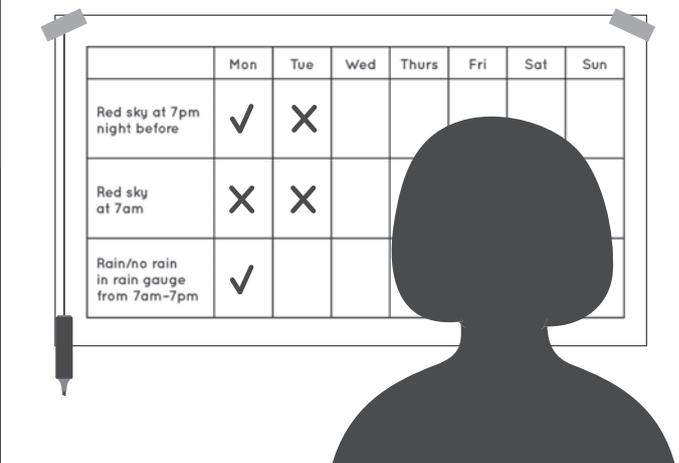
That if the sky is red during sunset it will be nice the next day but if there is a red sky in the morning it will be bad weather.

How would you test it? Set out the design for your investigation.

1 Design our chart



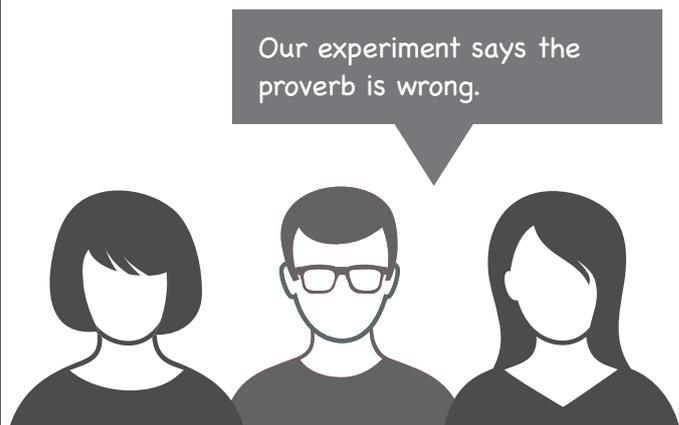
2 Observe sky and fill in chart.



3 Look at data

	Mon	Tue	Wed	Thurs	Fri	Sat	Sun
Red sky at 7pm night before	✓	✗	✗	✓	✗	✗	✗
Red sky at 7am	✗	✗	✓	✓	✓	✗	✓
Rain/no rain in rain gauge from 7am-7pm	✓	✓	✓	✗	✓	✗	✗

4 Decide whether proverb is right or not



Weather or Not Example

What would you need for your investigation?

1. Clip board
2. Pens
3. Two charts
4. Rain gauge
5. Watch

How long would your investigation take?

One week

How reliable is your investigation?

It would be more reliable if we did it for longer and at different times of year.

Umbrellas Needed for the School Fair: Weather or Climate?

Saturday is the school fair. Rory's class have been asked to organise some activities in the school yard. They are coming up with ideas but are concerned about the weather. Some of their ideas relate to the weather, some to climate. Discuss the comments. Circle 'CLIMATE' or 'WEATHER' depending on which of these the comment relates to.

'We could sell ice-creams, but I think it's going to be bad at the weekend.'

CLIMATE or WEATHER

'We could sell ice-creams if it's hot, and umbrellas if it is raining.'

CLIMATE or WEATHER

'It's stupid having things in the school yard; it's always too cold this time of year.'

CLIMATE or WEATHER

'It would be better to have the school fair at the end of June. We could do more outside then as it tends to be hotter.'

CLIMATE or WEATHER

'Look at it out the window now; the sun is shining through the clouds and it looks lovely.'

CLIMATE or WEATHER

'We could dress up as our favourite film characters.'

'There's no way I am dressing up; it's way too cold.'

CLIMATE or WEATHER

'We could paint people's faces for a few euros each and give the money to those affected by the recent floods.'

CLIMATE or WEATHER

'My granny says it was always snowy in the winter when she was a child. Sometimes she couldn't get to school because of the snow.'

CLIMATE or WEATHER

'My friend in Australia had a water fight at her school fair, but it's always hot there.'

CLIMATE or WEATHER

'It's freezing at the moment. It's impossible to plan for the fair.'

CLIMATE or WEATHER

'I wish I lived in New York where it's cold in winter and hot in summer. We could have snowman building competitions in winter or races in summer.'

CLIMATE or WEATHER

Umbrellas Needed for the School Fair: Answer Sheet

Weather

'We could sell ice-creams, but I think it's going to be bad at the weekend.'

'We could sell ice-creams if it's hot, and umbrellas if it is raining.'

'It's freezing at the moment. It's impossible to plan for the fair.'

'We could dress up as our favourite film characters.' 'There's no way I am dressing up; it's way too cold.'

'We could paint people's faces for a few euros each and give the money to those affected by the recent floods.'

'Look at it out the window now; the sun is shining through the clouds and it looks lovely.'

Climate

'It's stupid having things in the school yard; it's always too cold this time of year.'

'My friend in Australia had a water fight at her school fair, but it's always hot there.'

'I wish I lived in New York where it's cold in winter and hot in summer. We could have snowman building competitions in winter or races in summer.'

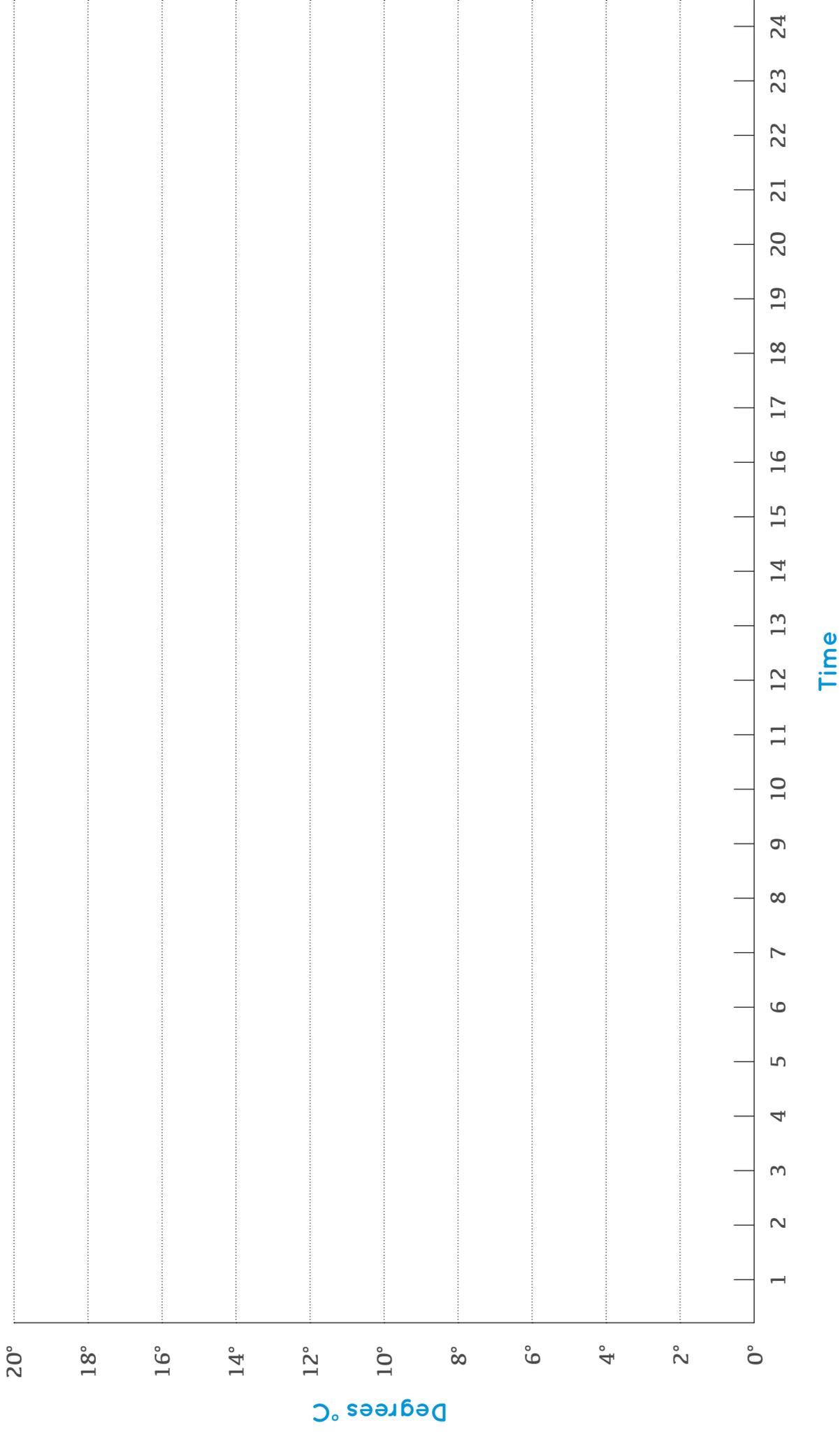
'My granny says it was always snowy in the winter when she was a child. Sometimes she couldn't get to school because of the snow.'

'It would be better to have the school fair at the end of June. We could do more outside then as it tends to be hotter.'

A Week of Weather

 Date	 Time	 Temperature	 Rainfall	 Windspeed

A Day's Temperature Graph



24 Hours of Weather

