

# TIMSS 2011 released items:

## Science

The items shown in this document are real items that were administered to Fourth class pupils who took part in TIMSS in 2011.

Each item is shown in the format that it was presented in Ireland, along with the correct answer and the percentage of pupils who answered the item correctly in Ireland and at the international average<sup>1</sup>.

### **NOTE:**

If the responses and percent corrects for items are not clearly visible (in green and yellow boxes), you may need to change the default settings for viewing PDFs in your browser or to use a different browser.

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<sup>1</sup> In a small number of cases, the international average percent correct has been alternately rounded up or down (so that, for example, 72.5% becomes 73% in one instance and 72% in the next), because more detailed information was not available at the time of writing.

20

A predator is an animal that feeds on other animals.  
Which of these is a predator?

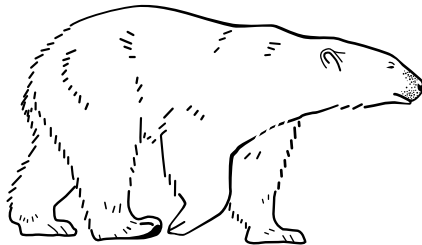
- (A) deer
- (B) wolf
- (C) cow
- (D) goat

**Correct:** Ireland: 86% International: 87%

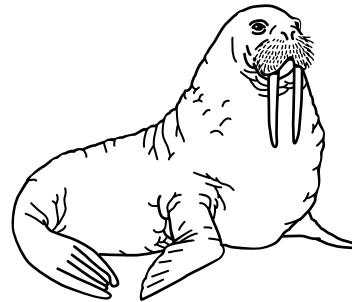
S031356

21

polar bear



walrus



Polar bears and walrus look very different, but both can survive in the extreme cold. A polar bear has a thick coat of fur that helps keep it warm. The walrus has no fur.

What does the walrus have that helps it keep warm?

- (A) fat layers
- (B) tusks
- (C) whiskers
- (D) flippers

**Correct:** Ireland: 88% International: 80%

S031291

22

What do birds, bats and butterflies have in common?

- (A) feathers
- (B) hair
- (C) internal skeleton
- (D) wings

**Correct:**      **Ireland:** 95%      **International:** 82%

S031230

23

The normal temperature of the human body is about 37 degrees Celsius. Manuel takes his temperature one morning after waking up. His body temperature is 40 degrees Celsius.

Write down one thing that could have caused his temperature to be higher than normal.

Refers to Manuel being sick, having a temperature, or similar.

- He was ill.

- He was running a fever.

- He may have had an infection.

**Correct:**      **Ireland:** 38%      **International:** 38%

S031325

(10)  
(70) (71) (79)  
(99)

24

Maria designed an experiment using salt and water. The results of her experiment are shown in the table.

Amount of Salt Dissolved	Water Volume	Water Temperature	Was Mixture Stirred?
15 grams	50 ml	25° C	Yes
30 grams	100 ml	25° C	Yes
45 grams	150 ml	25° C	Yes
60 grams	200 ml	25° C	Yes

What was Maria studying in her experiment?

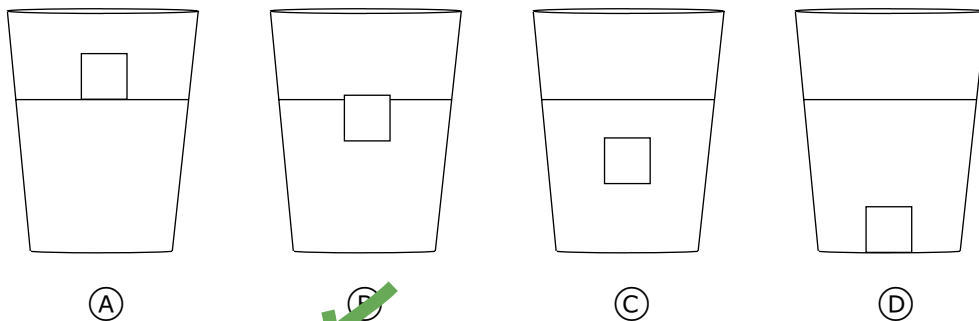
- (A) How much salt will dissolve in different volumes of water.
- (B) How much salt will dissolve at different temperatures.
- (C) If stirring increases how fast salt will dissolve.
- (D) If stirring decreases how fast will salt dissolve.

**Correct:** Ireland: 52% International: 49%

S031068

25

A piece of ice is placed in a glass of water. Which picture best shows the position of the ice in the water?



**Correct:** Ireland: 50% International: 43%

S031418

26

Name two things electricity can be used for in daily life.

Use 1:

10 11 12 13 19  
70 79  
99

Use 2:

10 11 12 13 19  
70 79  
99

**2 points:** Two specific, valid examples; e.g.:

- providing light/powering lamps/lightbulbs, providing heat, television, radio, cooker, electric car, telephone, toaster, washing machine, etc.

**1 point:** One specific, valid example.

**2 points**

**Ireland:** 76%    International: 57%

**1 point**

**Ireland:** 13%    International: 18%

S031197

27

During freezing, melting, and boiling, water changes from one state to another state.

Heat needs to be supplied for which of these to take place?

- (A) boiling only
- (B) melting only
- (C) melting and freezing but not boiling
- (D) melting and boiling but not freezing

**Correct:**    **Ireland:** 50%    International: 47%

S031371

28

Plants grow best in soils that are rich in which of the following?

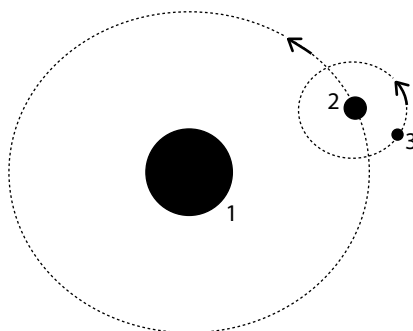
- (A) grains of sand
- (B) lumps of clay
- (C) layers of gravel
- (D) decaying plants and animals

**Correct:**    **Ireland:** 34%    International: 40%

S031376

29

The figure below shows the Earth, the moon, and the sun. Each body is labelled by a number. The arrows show the direction each body is moving.



Fill in the correct number next to each body (1, 2 or 3).

The Earth is body number: \_\_\_\_\_

The moon is body number: \_\_\_\_\_

The sun is body number: \_\_\_\_\_

All three bodies numbered correctly.

- Earth = 2
- Moon = 3
- Sun = 1.

**Correct:** Ireland: 50% International: 48%

10  
70 79  
99

S031044

30

Describe two human activities that can lead to the extinction of animals.

Activity 1:

Activity 2:

**2 points:** Two specific, valid examples; e.g.:

- cutting down trees.
- shooting animals and eating them.
- causing air pollution.
- took away their home.
- poaching.
- dumping waste into rivers.

**1 point:** One specific, valid example.

**2 points** Ireland: 31% International: 27% **1 point** Ireland: 32% International: 33%

10 11 12 19  
70 79  
99

10 11 12 19  
70 79  
99

S031390

31

The table shows three functions carried out by parts of the human body.

Write the name of the body part beside its function. The first one has been done for you.

Function	Body Part
Supports the body	Skeleton
Pumps blood through the body	Heart
Used for thinking	Brain

Both answers filled in correctly.

**Correct:** Ireland: 70% International: 49%

S051057

32

A hedgehog is a small spiny animal. When it is frightened it rolls into a ball.



How does this behaviour help the hedgehog?

- (A) The hedgehog can roll away quickly.
- (B) The hedgehog looks larger rolled up.
- (C) The hedgehog is harder to see in a ball.
- (D) The hedgehog's soft body parts are covered.


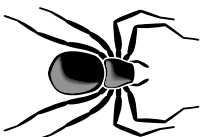
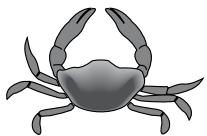
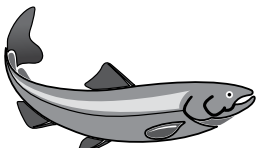

**Correct:** Ireland: 51% International: 49%

S051032

33

Which animals shown below have a backbone?

Fill in one circle for **each** animal. One has been done for you.

Animal	Has a Backbone	
	Yes	No
 heron	<input checked="" type="radio"/>	<input type="radio"/> (B)
 spider	<input type="radio"/> (A)	<input checked="" type="radio"/> (B)
 crab	<input type="radio"/> (A)	<input checked="" type="radio"/> (B)
 fish	<input checked="" type="radio"/> (A)	<input type="radio"/> (B)
 lion	<input checked="" type="radio"/> (A)	<input type="radio"/> (B)

**Correct:**

Ireland: 79%

International: 78%

**Correct:**

Ireland: 58%

International: 62%

**Correct:**

Ireland: 54%

International: 63%

**Correct:**

Ireland: 94%

International: 91%



34

Why are many desert animals more active at night?

- (A) It is drier at night.  
 (B) It is cooler at night.  
 (C) There is less danger at night.  
 (D) There is less wind at night.

**Correct:**            **Ireland:** 59%            **International:** 49%

S051033

35

Harry grows two centimetres in one month.

Why is eating food that contains calcium important for Harry's growth?

Refers to calcium being needed to make (strong) bones.

- *Bones.*

- *He needs the calcium for his bones.*

- *His bones are growing and he needs calcium to make them.*

**Correct:**            **Ireland:** 27%            **International:** 20%

S051173

(10)  
(79)  
(99)

36

Water, ice, and steam all have different temperatures.

What is the order from coldest to hottest?

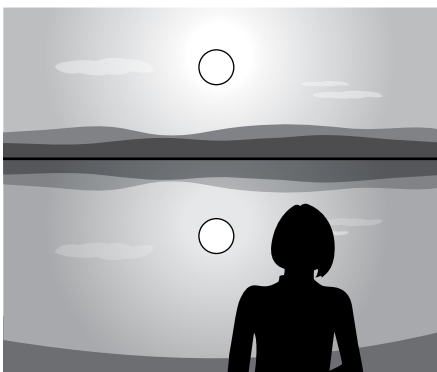
- (A) ice, water, steam  
 (B) ice, steam, water  
 (C) steam, ice, water  
 (D) steam, water, ice

**Correct:**            **Ireland:** 76%            **International:** 72%

S051086

37

Alice watches a sunrise from across a calm lake. She sees a sun in the sky and a sun in the lake as shown below.



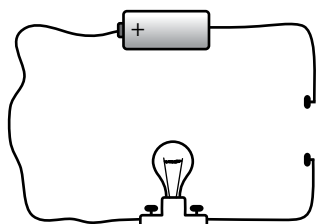
Why does Alice see a sun in the lake?

- (A) The sunlight warms that part of the lake.
- (B) The sky spreads sunlight over the lake.
- (C) The sunlight reflects off the lake water.
- (D) Clouds reflect sunlight into the lake.

**Correct:****Ireland:** 91%**International:** 75%

38

Gerry connects a battery, a light bulb, and some wire as shown below.



Will the bulb light?

(Tick one box.)

Yes

No

Explain your answer.

10 11  
79  
99

"No", with an explanation that the bulb will not light because the circuit is incomplete,  
OR

"Yes", with an explanation that the bulb would light if the wires were joined together.

- *No, there is a gap in the wires.*

- *The switch is not closed.*

- *The two wires on the right have to be connected.*

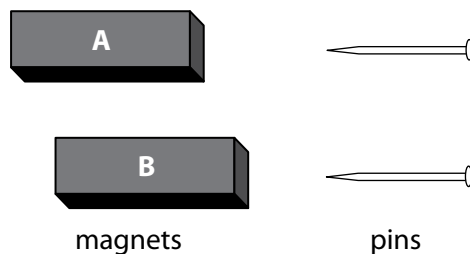
- *It is not a full circuit.*

**Correct:**      **Ireland:** 22%      **International:** 27%

39

Betty has two magnets (A and B) and two metal pins that are the same.

She slides Magnet A along a table until a pin is attracted to the magnet. She slides Magnet B along a table until a pin is attracted to the magnet.



She finds that Magnet A attracts the pin from 15cm and Magnet B attracts the pin from 10cm.

Steven says that both magnets are equally strong.

Do you agree?

(Tick one box.)

Yes

No

Explain your answer.

"No", with an explanation that a stronger magnet (Magnet A) can attract from further away, or a reference to different distances only.

Responses that refer to the strength of the magnet only were not credited.

- Magnet B had to be closer to the pin, so it is weaker.

- Magnet A is stronger than B because it attracted the pin from 15cm while B can attract the pin from 10cm.

- The magnets attract from different lengths.

**Correct:**

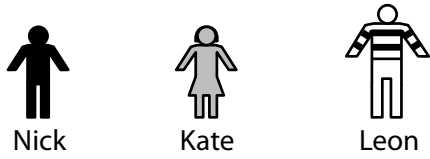
**Ireland:** 28%

**International:** 26%

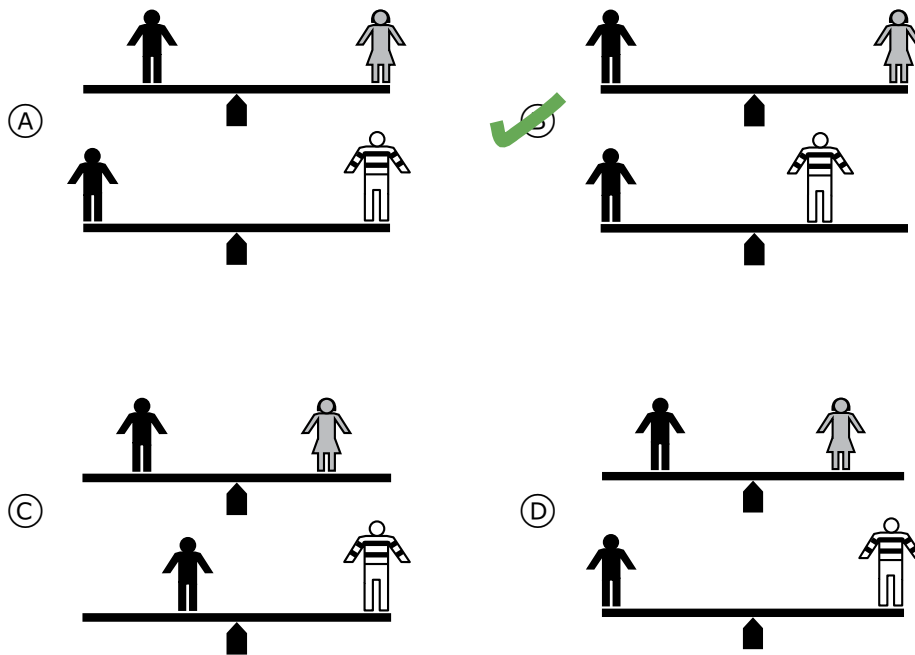
10 11  
79  
99

40

Nick plays on a seesaw with his sister Kate and then with his brother Leon. Nick is the same weight as Kate, but Leon is twice the weight of Nick.



Which figure shows where the children should sit so that Nick can balance first with Kate and then with Leon?

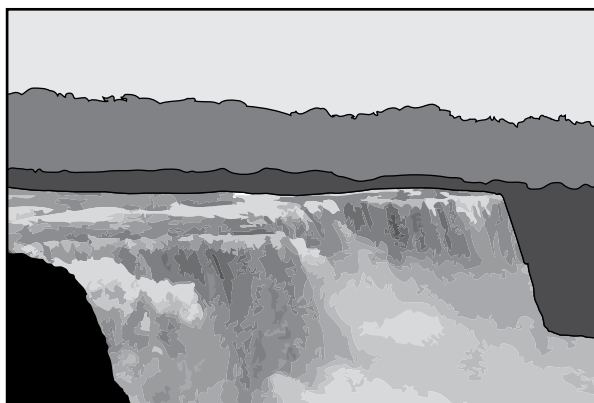


**Correct:**      **Ireland:** 40%      **International:** 43%

S051071

41

A river flowing over a waterfall has a lot of energy.



Which of the following is made from waterfall energy?

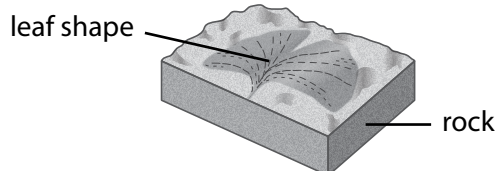
- (A) hot water
- (B) solar power
- (C) electricity
- (D) drinking water

**Correct:**      **Ireland:** 24%      **International:** 31%

S051100

42

The leaf shape in the rock comes from a plant that lived long ago.



About how long ago was the plant alive?

- (A) one year
- (B) one hundred years
- (C) one thousand years
- (D) one million years

**Correct:**      **Ireland:** 25%      **International:** 28%

S051156

13

The picture shows a boat sailing.



Which force causes the boat to move?

- (A) gravity
- (B) wind
- (C) friction
- (D) magnetism

**Correct:**      **Ireland:** 93%      **International:** 89%

S041117

14

Which two objects produce their own light?

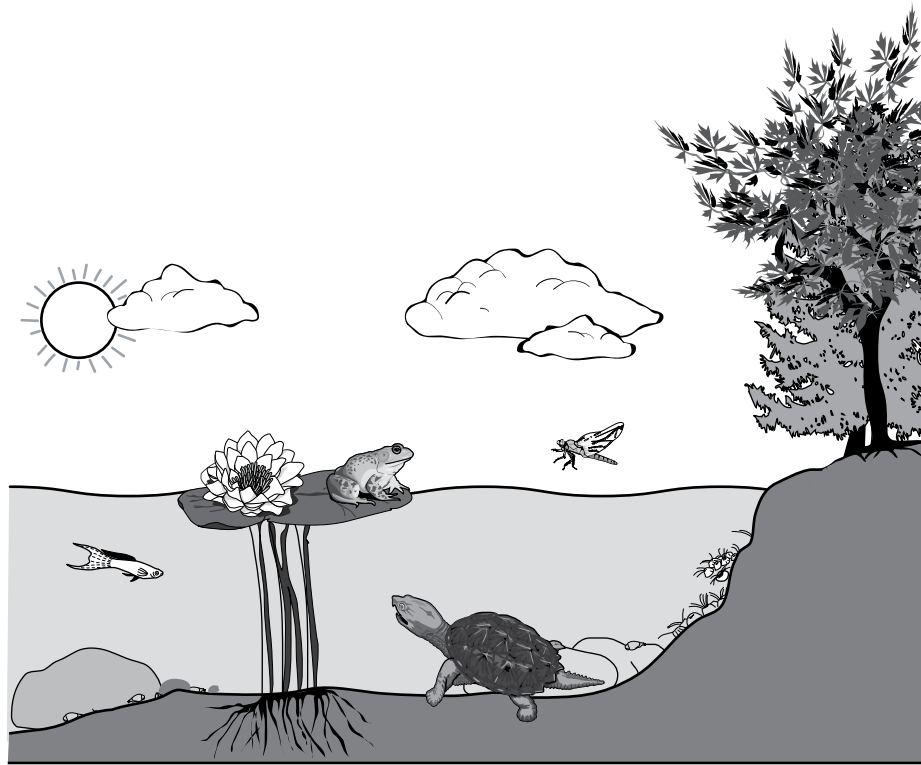
- (A) candle and moon
- (B) moon and mirror
- (C) sun and candle
- (D) mirror and sun

**Correct:**      **Ireland:** 45%      **International:** 50%

S041120

15

The picture below shows a pond.



In the spaces provided below, list three living things and three non-living things shown in this picture.

(10)  
(79)  
(99)

### Living things

1. *Fish*  
*Frog*  
*Turtle*  
*Dragonfly (insect, butterfly, fly)*
2. *Water lily (plants)*  
*Trees*  
*Grass*
3. *Molluscs (snails)*

### Non-living things

1. *Sun*  
*Clouds*  
*Water*  
*Rocks*
2. *Pebbles (stones)*  
*Sand*  
*Soil (dirt, earth)*
3. *Air*  
*Mud*

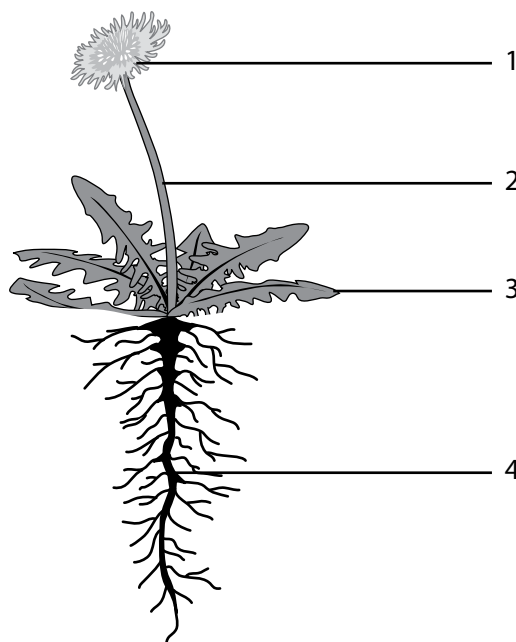
Names three living things and three non-living things from the lists above.

**Correct:**      **Ireland:** 41%      **International:** 46%



16

The diagram shows a flowering plant. Four of its parts are numbered.



In the table below, write the name of each part, and state its function.

Part Number	Name of Part	Function of Part
1	<b>2 points:</b> Identifies 4 parts of the plant in the correct position (as per numbered labels) and states a correct function for at least 3 of them. - Petals - attract pollinators - Seeds - reproduction	
2	- Flowers - makes pollen, attracts insects - Stem (stalk) - holds up the plant, transports water and food - Leaf - makes food for the plant, photosynthesis, absorbs sunlight, takes in air	
3	- Root - anchors the plant, absorbs water, takes in minerals and nutrients  <b>1 point:</b> Identifies 4 parts with 1 or 2 correct functions, OR 3 parts with 1 or 2 or 3 correct functions, OR 2 parts with 1 or 2 functions.	
4	<b>2 points</b> Ireland: 10% International: 20%	<b>1 point</b> Ireland: 36% International: 32%

(20) (21)  
(10)  
(70) (79)  
(99)

17

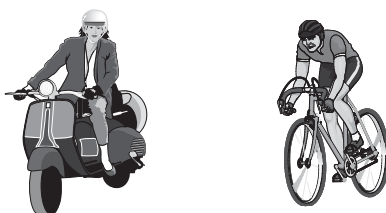
Which group of animals contains ONLY reptiles?

- (A) lizard, frog, snake  
 (B)  turtle, lizard, crocodile  
 (C) octopus, snail, turtle  
 (D) crab, earthworm, snake

**Correct:** Ireland: 51% International: 39%

S041163

18



The pictures above show two ways of travelling around town.

Which way of travelling is better for the environment?

(Tick one box.)

- Bicycle  
 Motorbike

Explain your answer.

"Bicycle", with an explanation that relates to air or noise pollution.

- It does not produce fumes like a motorbike does.
- No pollution is given off.
- It is very quiet.

**Correct:** Ireland: 41% International: 47%

S041039

(10)  
(70) (79)  
(99)

19

Some plants produce fruit such as apples.

What is one function of a fruit?

- A to protect seeds
- B to produce food for seeds
- C to stop seeds from dispersing
- D to store water for seed germination

**Correct:**      **Ireland:** 32%      **International:** 31%

S041014

20

How can influenza be passed from person to person?

Mentions coughing or sneezing, or touching the same object or having physical contact with a person who has influenza.

- *By standing near someone who is sneezing.*
- *It can be passed on by sharing food and drinks.*
- *By shaking hands.*
- *If you sneeze on your friend the germs can be passed on.*

**Correct:**      **Ireland:** 52%      **International:** 59%

S041181

(10) (11) (19)  
(70) (79)  
(99)

21

How does migration increase the survival of birds?

Refers to finding food, reproduction, or moving to a warmer place.

- *They migrate to warmer places.*
- *Food may become scarce so they move to a place where there is more food.*
- *They migrate so they are in an area that helps their young survive.*
- *They migrate to find a safe place to breed.*

**Correct:**      **Ireland:** 31%      **International:** 36%

S041174

(10) (11)  
(79)  
(99)

22

The table below shows the properties of two materials.

Properties of Material 1	Properties of Material 2
Conducts heat quickly	Conducts heat slowly
Solid	Solid
Does not dissolve in water	Dissolves in water
Attracted by magnets	Not attracted by magnets

Which statement about materials 1 and 2 is **most** likely to be correct?

- (A) Material 1 is glass, and material 2 is clay.
- (B) Material 1 is copper, and material 2 is wood.
- (C) Material 1 is iron, and material 2 is sugar.
- (D) Material 1 is cork, and material 2 is gold.

**Correct:**      **Ireland:** 40%      **International:** 47%

S041049

23

How often does the Earth rotate on its axis?

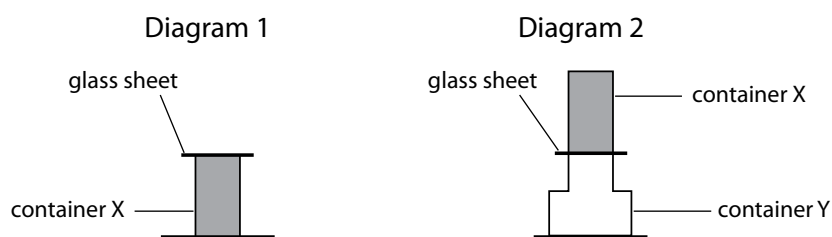
- (A) once every 12 hours
- (B) once every 24 hours
- (C) once every month
- (D) once every year

**Correct:**      **Ireland:** 42%      **International:** 53%

S041208

24

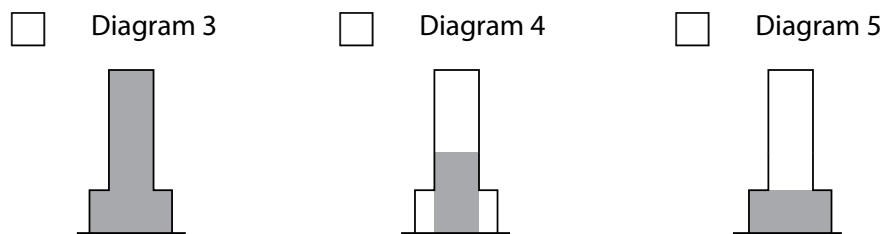
Diagram 1 shows a container X that is filled with a material that could be a solid, liquid, or gas. The container has been sealed with a glass sheet. Container X is placed upside down on an empty container Y, as shown in Diagram 2.



The glass sheet is removed.

Which of the diagrams below shows what you would see if the material in container X is a gas?

(Tick one box.)



Explain your answer.

Choose Diagram 3, with an explanation that gases expand (or increase in volume), OR that they fill (spread out to fill) a container, OR that they have no definite shape.

A choice of Diagram 3 with an incorrect or no explanation was not credited.

- Gas does not have a definite shape.
- Gas would fill the space.
- Particles move away from each other.

**Correct:**      **Ireland:** 19%      **International:** 17%

10  
70 71 72 79  
99

25

The picture below shows a river flowing across a plain.



Farming is carried out on the plain and near the river.

There are advantages and disadvantages to farming along a river.

A. Describe one **advantage**.

Refers to the availability of water (for crops/animals), OR fertile soil, OR the ability to grow better crops.

- Lots of water for irrigation.
- They can get water for their animals.
- Fertile soil is deposited every year.
- Good soil to grow vegetables.

**Correct:**            **Ireland:** 51%            **International:** 41%

10  
79  
99

B. Describe one **disadvantage**.

Refers to the river flooding/overflowing, OR the river being polluted/carrying pollutants, OR animals falling into the river.

- The river could flood.
- Animals might fall in and get hurt.
- Water in the rivers may be dirty or polluted.
- Pollutions can flow from the fields down into the river.

**Correct:**            **Ireland:** 46%            **International:** 34%

10  
79  
99

25

Calcium is a mineral that helps make your bones and teeth strong. Which of these foods is the best source of calcium?

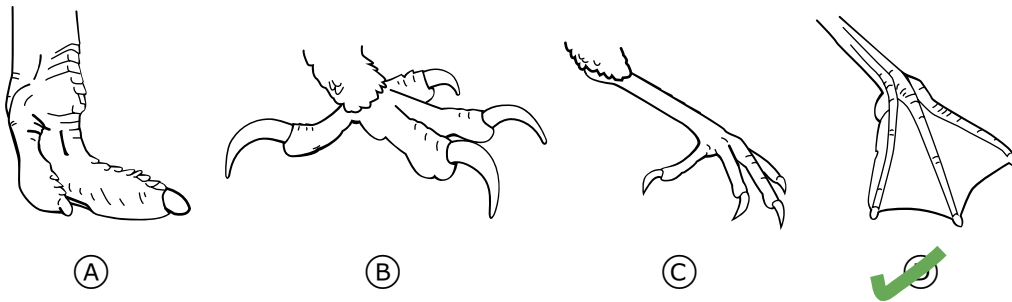
- (A) sweets
- (B) rice
- (C) cheese
- (D) meat

**Correct:** Ireland: 70% International: 46%

S031340

26

A bird that lives on a pond is most likely to have which of these foot structures?



**Correct:** Ireland: 81% International: 71%

S031236

27

There is a shortage of fresh water in many parts of the world. Describe two things people can do to avoid wasting water.

1. **2 points:** Two specific, valid suggestions; e.g.:
  - Turn off the water when you are not using it.
  - Fix leaky taps.
  - Don't dump bath water. Use it to water your plants.
  - Don't pollute rivers, so you can drink the water.
2.
  - Have short showers.
  - Use less water to brush your teeth.

**1 point:** One specific, valid example.

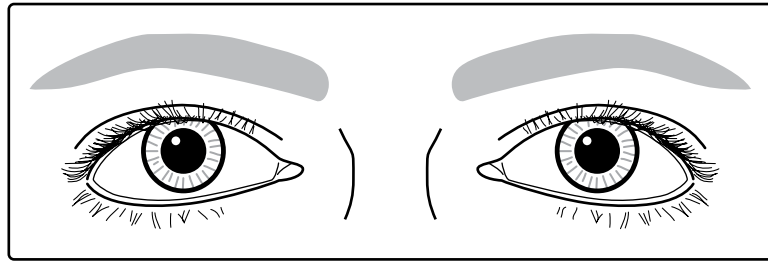
**2 points** Ireland: 41% International: 27% **1 point** Ireland: 35% International: 29%

S031391

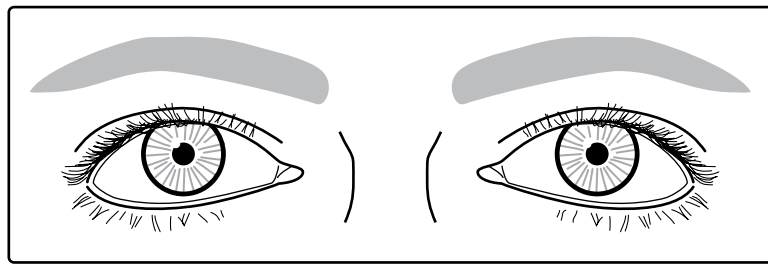
(10) (11) (12) (19)  
(70) (79)  
(99)  
(10) (11) (12) (19)  
(70) (79)  
(99)

28

Picture 1



Picture 2



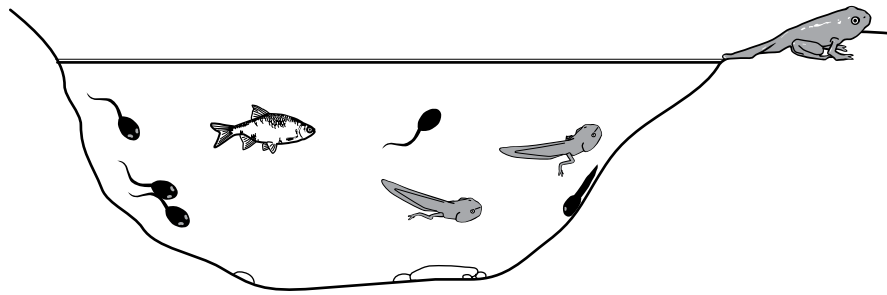
Picture 1 and Picture 2 show the same eyes in different outside conditions. What outside condition is different between Picture 1 and Picture 2?

- (A) Light is brighter in Picture 1.
- (B) Light is brighter in Picture 2.
- (C) Temperature is higher in Picture 1.
- (D) Temperature is higher in Picture 2.

**Correct:** Ireland: 60% International: 55%



29



Melissa found some tadpoles and fish in a pond as shown above. How did the tadpoles get there?

- (A) They hatched from eggs laid by fish in the pond.
- (B) They formed from mud at the bottom of the pond.
- (C) They were made from materials dissolved in pond water.
- (D) They developed from eggs laid by frogs in the pond.

**Correct:**

**Ireland:** 88%

**International:** 76%

31

Which of these is a mixture?

- (A) salt water  
 (B) sugar  
 (C) water vapour  
 (D) salt

**Correct:**      **Ireland:** 67%      **International:** 64%

S031410

32

Some of the materials below will burn and some will not.  
 Put an X in the box next to the materials that will burn.

(You may put an X in more than one box.)

- water  
 wood  
 sand  
 petrol  
 air

"Wood" and "petrol" marked, and no other answers.

**Correct:**      **Ireland:** 62%      **International:** 60%

S031421

(10)  
 (70) (71) (72) (79)  
 (99)

33

A hot, boiled egg is put into a cup of cold water. What happens to the temperature of the water and the egg?

- (A) The water gets colder and the egg gets warmer.  
 (B) The water gets warmer and the egg gets colder.  
 (C) The water temperature stays the same and the egg gets colder.  
 (D) Both the water and the egg get warmer.

**Correct:**      **Ireland:** 29%      **International:** 34%

S031298

34



The figure shows two carts, each holding a magnet. The carts are moved close together and then let go.

Describe what will happen to the carts.

(You may draw a picture to help explain your answer.)

(10)  
(70) (79)  
(99)

Refers to the carts being repelled, moving away from each other, not being attracted to each other, one cart turning around so that North and South face each other, or similar. Diagrams were accepted.

- The magnets repel because the two north poles push apart.
- The carts will not stick together.
- They will spread apart.
- If one cart turns around then the carts will stick together.

**Correct:**            **Ireland:** 42%            **International:** 35%

S031076

35

What is the correct explanation for why we have day and night on Earth?

- (A) The sun orbits around the Earth.
- (B) The Earth orbits around the sun.
- (C) The Earth turns on its axis.
- (D) The sun turns on its axis.

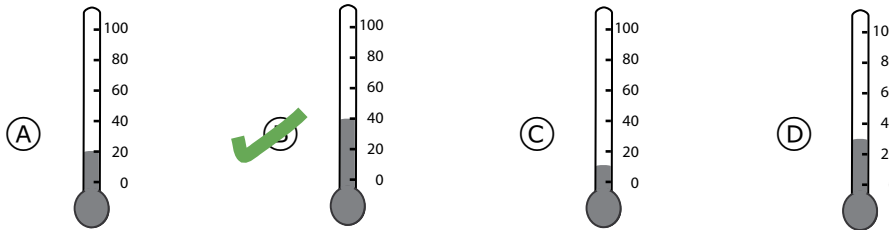
**Correct:**            **Ireland:** 20%            **International:** 34%

S031275

36

Four different thermometers were used to measure the temperature of water in four different beakers.

Which thermometer reading belongs to the hottest water?



**Correct:**      **Ireland:** 97%      **International:** 91%

S041311

37

Plants use energy directly from the sun.

What do they use the energy from the sun for?

- (A) to make food
- (B) to disperse seeds
- (C) to fertilise the soil
- (D) to prevent insect damage

**Correct:**      **Ireland:** 30%      **International:** 51%

S041178

38

Michelle is playing a board game with a friend who has the flu.

Write down one thing Michelle can do to avoid catching the flu from her friend.

States one acceptable reason.

- Michelle can wash her hands.
- She can tell her friend to cover her mouth when she sneezes.
- She should not touch her face.
- She can wear gloves.
- She should not touch the same things as her friend.
- She can avoid being coughed on.

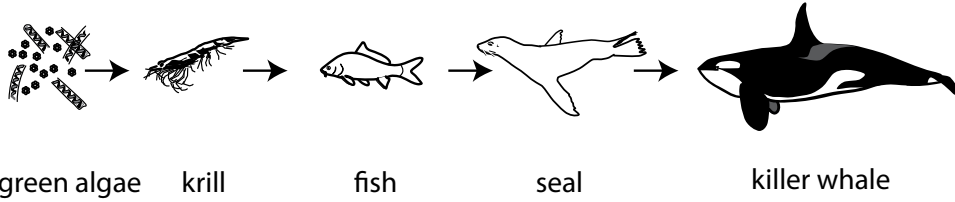
**Correct:**      **Ireland:** 54%      **International:** 41%

S041182

(10)  
(79)  
(99)

39

The diagram below shows a food chain.



Which predator–prey relationship is correct?

- (A) fish (predator)–seal (prey)
- (B) green algae (predator)–krill (prey)
- (C) fish (predator)–krill (prey)
- (D) seal (predator)–killer whale (prey)

<b>Correct:</b>	<b>Ireland:</b> 53%	<b>International:</b> 56%
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S041180

40

Which of the following describes condensation?

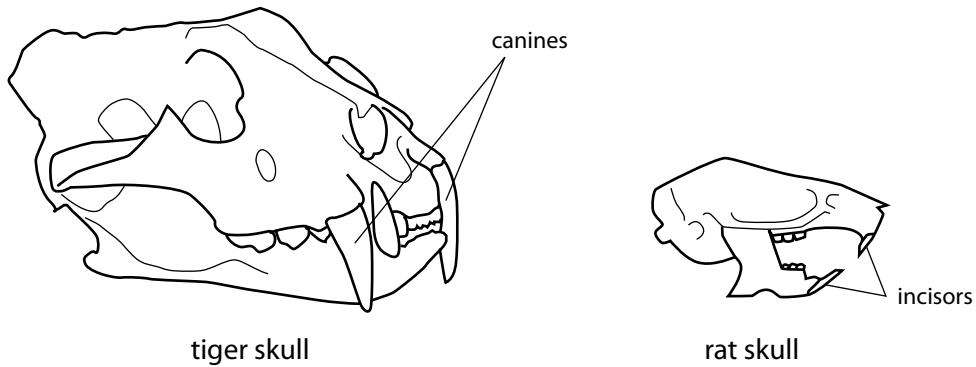
- (A) a liquid changing to a solid
- (B) a solid changing to a liquid
- (C) a solid changing to a gas
- (D) a gas changing to a liquid

<b>Correct:</b>	<b>Ireland:</b> 31%	<b>International:</b> 28%
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S041187

41

The diagrams show a tiger skull and a rat skull.



A tiger has very large teeth called canines. A rat has very large teeth called incisors. A tiger and a rat eat different types of food.

A. What does a tiger use its canines for?

States that the tiger uses its canines for piercing (stabbing, killing, ripping, hearing, holding) prey. References to chewing (crushing, grinding) were considered to refer to molars, and were not credited.

- It uses its canines to kill prey.
- Biting into animals and killing them.
- It stabs its prey and rips the meat.
- It uses its canines to grip the prey.

**Correct:**                      **Ireland:** 50%                      **International:** 31%

10  
70 79  
99

B. What does a rat use its incisors for?

States that the rat uses its incisors for gnawing (nibbling) food or killing prey. References to chewing (crushing, grinding) were considered to refer to molars, and were not credited.

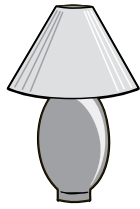
- They use them to nibble food.
- For killing young birds.
- To gnaw nuts and grains.
- To bite the heads off prey.

**Correct:**                      **Ireland:** 21%                      **International:** 22%

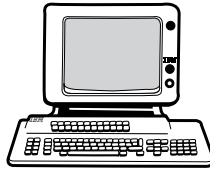
10  
70 79  
99

S041013

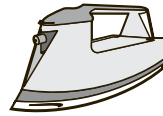
42



lamp



computer



iron

What type of energy runs the objects shown above?

States that electrical energy runs the objects shown.

- They all plug into electricity.
- Electricity.

**Correct:**

**Ireland:** 62%

**International:** 59%

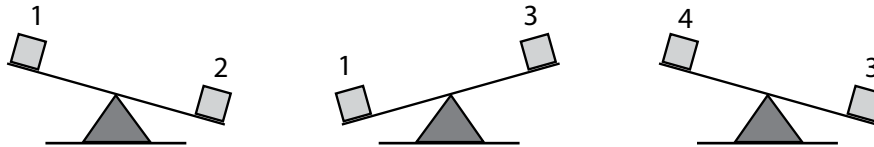
S041067

(10)  
(79)  
(99)

43

Stephanie has a scales and four cubes (1, 2, 3, 4). The cubes are made of different materials.

She puts two cubes at a time on the scales and observes the following results.



What can she conclude about the weight of cube 2?

- (A) It is heavier than cubes 1, 3, and 4.
- (B) It is heavier than cube 1 but lighter than cubes 3 and 4.
- (C) It is heavier than cube 3 but lighter than cubes 1 and 4.
- (D) It is heavier than cube 4 but lighter than cubes 1 and 3.

**Correct:**

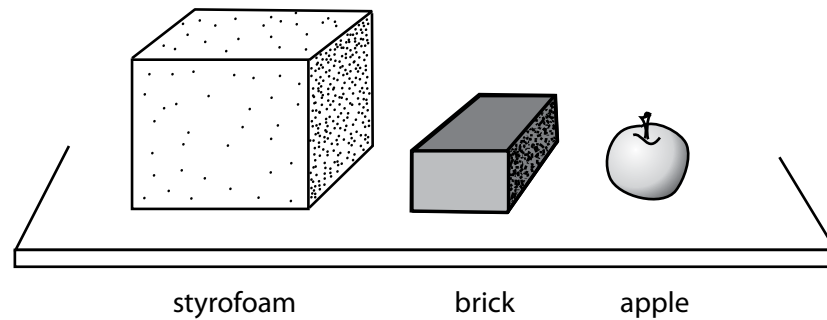
**Ireland:** 54%

**International:** 44%

S041305

44

Jack's teacher places three objects on a table, as shown below. She puts them in order according to their volume.



Jack thinks that objects with more volume weigh more.

Do you agree with him?

(Tick one box.)

Yes

No

Explain your answer.

"No", with an explanation based on weight and/or density of material.

- The brick has a smaller volume but probably weighs more than the styrofoam.
- The styrofoam is the least dense but it has more volume than the other two..
- An object like a brick is smaller and heavier because the styrofoam has air in it and the brick doesn't.
- It depends on what it is made of.

**Correct:**                      **Ireland:** 39%                      **International:** 41%

10  
70 71 79  
99



45

S041110

Write down one form of energy Earth receives from the sun.

Refers to light, heat, or solar energy.

- Light.
- Sunlight.
- Heat.
- Solar energy.

**Correct:** Ireland: 68% International: 54%

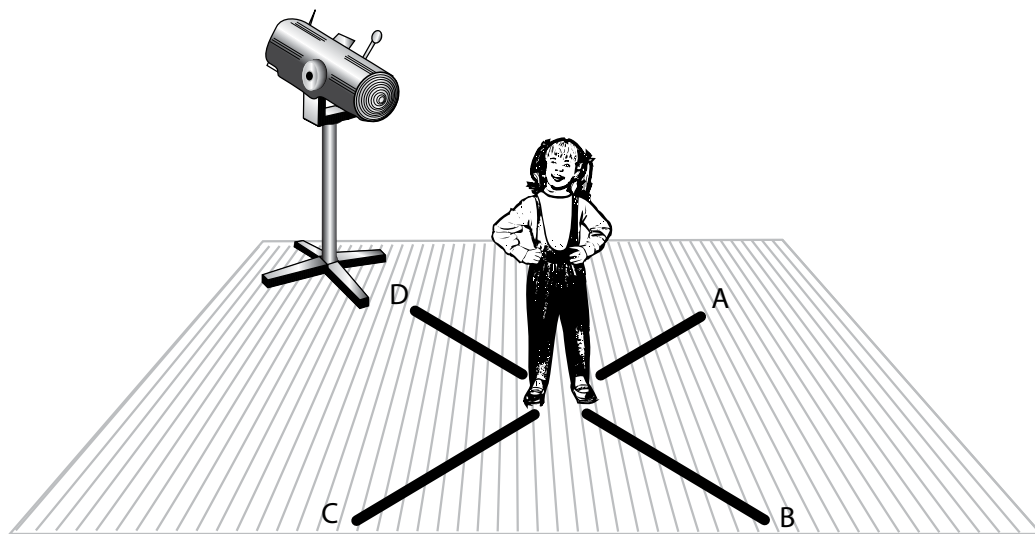
S06\_10

10 11 12  
79  
99

46

S041069

A spotlight shines on a girl on a stage.



The shadow would be seen along which line?

- (A) A
- (B) B
- (C) C
- (D) D

**Correct:** Ireland: 56% International: 57%

S06\_11

47

The direction water flows in a river depends on

- (A) the length of the river
- (B) the slope of the land
- (C) the type of rock over which the water flows
- (D) the location of the North Pole

**Correct:**      **Ireland:** 54%      **International:** 45%

S041100

48

Water that has its salt removed before it can be used as drinking water is most likely to have come from

- (A) underground
- (B) a river
- (C) a lake
- (D) a sea

**Correct:**      **Ireland:** 61%      **International:** 56%

S041092



**There are no more questions on this test.**

If you have finished Part 2 of the test before the time is over, you may go back and check your answers in Part 2. Thank you for taking the time to answer these questions carefully.

14

Which of these animals has a young form that looks the most like the adult form?

- (A) moth
- (B) human
- (C) frog
- (D) butterfly

**Correct:**      **Ireland:** 54%      **International:** 54%

S031254

15

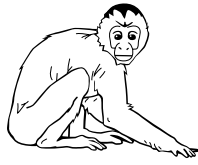
Some animals are very rare. For example, there are very few Siberian tigers. If the only Siberian tigers left are female, what will most likely happen?

- (A) The females will find another type of male animal to mate with and produce more Siberian tigers.
- (B) The females will mate with each other and produce more Siberian tigers.
- (C) The females will only be able to produce female Siberian tigers.
- (D) The females will not be able to produce more Siberian tigers, and they will die out.

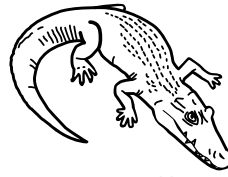
**Correct:**      **Ireland:** 55%      **International:** 53%

S031266

16



Monkey



Crocodile



Grasshopper



Octopus

Answer the following questions using the animals shown above. Write the name for the correct animal in the spaces below.

10  
70 71 79  
99

Which animal has an internal skeleton and produces milk for its young?

Monkey

\_\_\_\_\_

Which animal has an external skeleton and three pairs of legs?

Grasshopper

\_\_\_\_\_

Which animal has a soft body and no skeleton?

Octopus

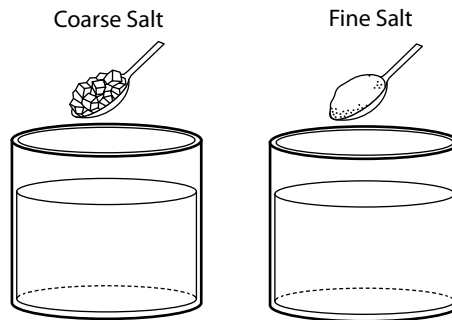
\_\_\_\_\_

Identifies all 3 animals in the correct order.

**Correct:**      **Ireland:** 58%      **International:** 57%

17

Coarse salt and fine salt are added to water and then stirred as shown in the picture.



Which statement is true?

(Tick one box.)

- Coarse salt will dissolve faster.
- Fine salt will dissolve faster.
- They both will dissolve in the same amount of time.

Explain your answer.

"Fine", with an explanation based on smaller particles dissolving faster (or similar).

"Fine" with an incorrect or no explanation was not credited.

- The fine salt is already partly broken down.
- The coarse salt is in big blocks that do not dissolve very well.
- Fine salt is powdered and thinner.
- It has the smallest size of crystals, so it will dissolve faster.

**Correct:**                      **Ireland:** 38%                      **International:** 37%

10  
70 71 72 79  
99

18

A metal spoon and a wooden spoon are used to stir a pot of hot soup. After a few minutes, the metal spoon feels hotter than the wooden spoon. What explains this?

- (A) Metal is always hotter than wood.
- (B) Metal conducts heat better than wood.
- (C) Metal conducts electricity better than wood.
- (D) Metal heats up the water better than the wood.

**Correct:**      **Ireland:** 65%      **International:** 55%

S031273

19

Name one thing you have seen that shows that sunlight is made up of different colours.

Refers to a prism (or equivalent), rainbows, sunset/sunrise, or another correct answer.

- *Light shining on broken glass.*
- *The sun hit my glasses and looked different colours in the glare.*
- *Rainbow.*
- *When the sun goes down.*
- *Soap bubbles.*
- *Oil slicks.*

**Correct:**      **Ireland:** 52%      **International:** 37%

S031299

(10) (11) (12) (19)  
(79)  
(99)

20

Most birds sit on their eggs until they hatch. Which of these is the most important reason why birds sit on their eggs?

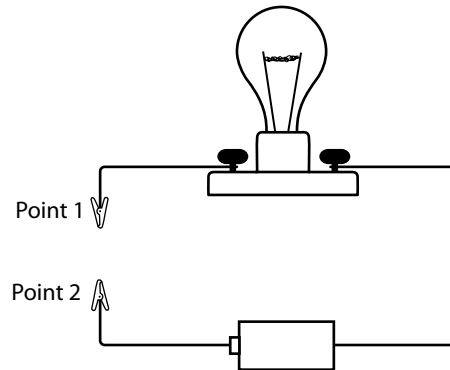
- (A) to keep the eggs inside the nest
- (B) to keep the eggs warm
- (C) to protect the eggs from the wind
- (D) to protect the eggs from the rain

**Correct:**      **Ireland:** 92%      **International:** 79%

S031281

21

The following picture shows a lightbulb connected to a battery in an electrical circuit. Which of the following objects connected to Points 1 and 2 will allow the bulb to glow?



- (A) iron nail
- (B) plastic spoon
- (C) rubber band
- (D) wooden stick

<b>Correct:</b>	<b>Ireland:</b> 76%	<b>International:</b> 71%
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S031077

22

What causes an object to fall to the ground when you let it drop from your hand?

- (A) magnetism
- (B) gravity
- (C) air resistance
- (D) the push from your hand

<b>Correct:</b>	<b>Ireland:</b> 71%	<b>International:</b> 60%
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S031311

23

Air is important for many things. What are two ways we use air?

1. **2 points:** Two specific, valid examples, including that air (oxygen) is needed for breathing, for fires, or for inflating objects, or stating an effect that is due to air movement/pressure; e.g.:
- *It has our oxygen in it.*
  - *To burn wood.*
  - *To blow up balloons.*
2. **1 point:** One specific, valid example.
- *To inflate tires.*
  - *For windmills.*
  - *For fans to work they blow cool air.*
  - *If there was no air pressure our bodies would explode.*

⑩ ⑪ ⑫ ⑬ ⑰  
⑦⑩ ⑦① ⑦⑨  
⑨⑨

⑩ ⑪ ⑫ ⑬ ⑰  
⑦⑩ ⑦① ⑦⑨  
⑨⑨

**2 points****1 point**

Ireland: 20% International: 16%

Ireland: 71% International: 57%

S031088

24

Which of these soil changes is due only to natural causes?

- Ⓐ Loss of minerals due to farming.
- Ⓑ Deserts forming due to tree cutting.
- Ⓒ Flooding due to dam construction.
- ✓ Ⓓ Minerals washing out due to heavy rain.

**Correct:** Ireland: 37% International: 38%

S031389



**Do not start working on Part 2 until you are told to do so.**

If you have finished Part 1 of the test before the time is over, you may go back and check your answers.