

# TIMSS 2015

TRENDS IN INTERNATIONAL MATHEMATICS AND SCIENCE STUDY

## Released Items: Mathematics and Science

### **Fourth class**

**Educational Research Centre**

St Patrick's College, Dublin 9



# TIMSS 2015 released items:

## Mathematics, Fourth Class

The items shown in this section are real mathematics items that were administered to Fourth Class pupils who took part in TIMSS in 2015.

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.

*Material shown is property of the IEA and the ERC. Further usage and/or reproduction requires permission from both IEA and ERC.*

### **Note:**

If the responses to 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.



1

$43 \div 5 =$

Answer: 8 with a remainder of 3 or  $8\frac{3}{5}$  or equivalent (eg 8.6)

**Correct:** **Ireland:** 80% **TIMSS:** 47%

M061272

2

Josh is rounding numbers to the nearest 100.

A. Write a number for Josh that is less than 200 and rounds to 200.

Answer: Any number from 150 to 199 (including 150 and 199)

B. Write a number other than 500 that is more than 200 and rounds to 500.

Answer: Any number from 450 to 549 (including 450 and 549, except 500)

**2 points:** Completes both part A and B correctly.

**1 point:** Part A correctly only OR Part B correctly only.

2 Points  
**Ireland:** 63% **TIMSS:** 48%

1 Point  
**Ireland:** 18% **TIMSS:** 11%

M061243

3

Barry made this puzzle about a 4-digit number:

The hundreds digit is 7.

The thousands digit is greater than the hundreds digit.

The ones digit is less than the hundreds digit.

What is Barry's number?

- (A) 2708
- (B) 4733
- (C) 8726
- (D) 9718

**Correct:**

**Ireland:** 80%

**TIMSS:** 47%

M061029

**4**

Sally has 12 lengths of wire, 40 round beads, and 48 flat beads.

She uses 1 length of wire, 10 round beads, and 8 flat beads to make 1 bracelet.

If Sally makes all her bracelets the same, how many bracelets can she make?

- (A) 40
- (B) 12
- (C) 5
- (D) 4

**Correct:****Ireland:** 61%**TIMSS:** 65%

M061031

**5**

Which value for  $\triangle$  makes the number sentence true?

$$6 + 15 = \triangle + 10$$

- (A) 11
- (B) 21
- (C) 25
- (D) 31

**Correct:****Ireland:** 57%**TIMSS:** 46%

M061050

**6**

Harry starts to write a number pattern:

6, 13, 20, 27, ...

He adds the same number each time to get the next number.

What is the next number he should write in his pattern?

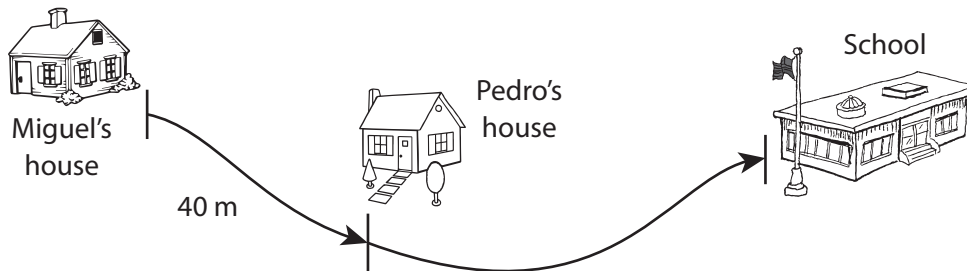
Answer:

**Correct:**

**Ireland:** 81%

**TIMSS:** 70%

M061167

**7**

Miguel walks 40 metres on the path from his house to Pedro's house. He then continues walking on the path to get to school.

How long is the path from Miguel's house to school?

- (A) 40 m
- (B) 80 m
- (C) 100 m
- (D) 130 m

**Correct:**

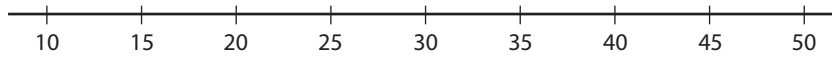
**Ireland:** 80%

**TIMSS:** 47%

M061206



Elisa and Ken are playing a game on a number line. Each move must be either to the right or to the left.



- A. Elisa begins at 27 and moves 10 units. She ends on 17. Which other point could she have ended on?

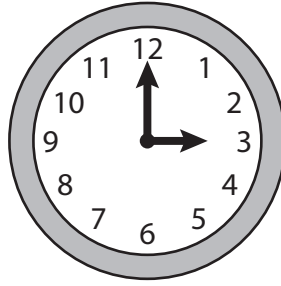
Answer:

**Correct:** **Ireland:** 58% **TIMSS:** 38%

- B. Ken begins at 35 and moves 13 units to the left. Then, his next move is 2 units. Which point could he have ended on?

- (A) 22  
(B) 24  
(C) 48  
(D) 50

**Correct:** **Ireland:** 36% **TIMSS:** 36%



The hands of a clock at 3:00 are at a right angle. Which is another time that the hands are at a right angle?

- (A) 3:15
- (B) 3:45
- (C) 9:00
- (D) 9:45

**Correct:** Ireland: 75% TIMSS: 69%

The table below shows the sizes of large snakes.

Type of snake	Weight (kilogrammes)	Length (metres)
Boa Constrictor	27	4
Burmese Python	90	5 to 7
Green Anaconda	227	6 to 9
King Cobra	9	4

A. James saw a snake that was 8 metres long. Which type of snake could it be?

Answer: *Green Anaconda*

B. Naomi saw a snake that was 6 metres long and weighed about 80 kilogrammes. Which type of snake could it be?

Answer: *Burmese Python*

Student is required to answer both parts correctly.

**Correct:** Ireland: 84% TIMSS: 70%





# TIMSS 2015 released items:

## Science, Fourth Class

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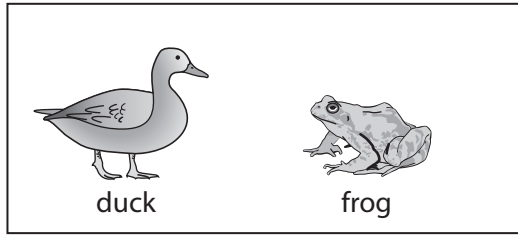
*Material shown is property of the IEA and the ERC. Further usage and/or reproduction requires permission from both IEA and ERC.*

### **Note:**

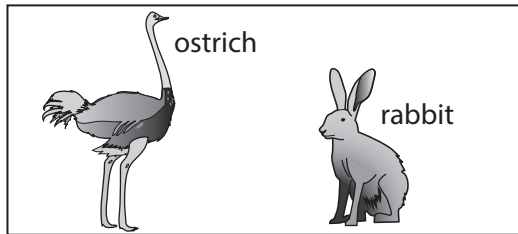
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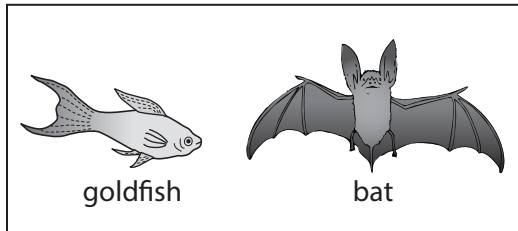
Which box contains two animals that lay eggs?



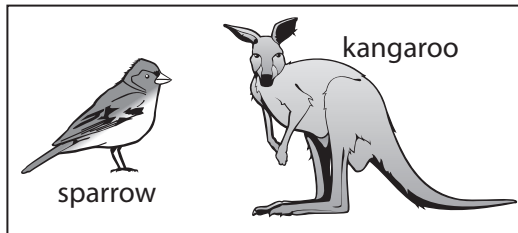
(B)



(C)



(D)



Correct:

Ireland: 77%

TIMSS: 69%

12

Plants and animals are living things.

Think about what **both** plants and animals need to live. Write two of them in the spaces below.

Writes two different things that both plants and animals need to live  
e.g.: Air, food, energy, water, a place to live.

**Correct:** **Ireland:** 37% **TIMSS:** 50%

S061010

13

Which of the following foods has a lot of protein?

- (A) fish
- (B) bread
- (C) fresh fruit
- (D) green vegetables

**Correct:** **Ireland:** 42% **TIMSS:** 47%

S061028



14

S061065

Which of the following ways of getting to school produces the **least** air pollution?

- Ⓐ a bus that runs on petrol
- Ⓑ a car that runs on petrol
- ✓ Ⓒ a car that runs on electricity
- Ⓓ a train that runs on oil

**Correct:**                      **Ireland:** 70%                      **TIMSS:** 68%

15

S061130

How can you catch a disease (like the flu) from someone when they cough near you, even if you have not touched the person?

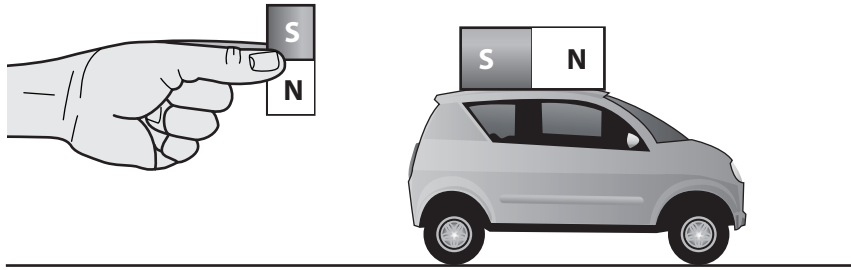
Refers to the spread of germs through the air OR by touching something the person has coughed on; e.g.:

- *Diseases can be spread through the air.*
- *The germs attach to you.*
- *When someone with the flu coughs on something and then you touch it, you can get sick*

**Correct:**                      **Ireland:** 49%                      **TIMSS:** 41%

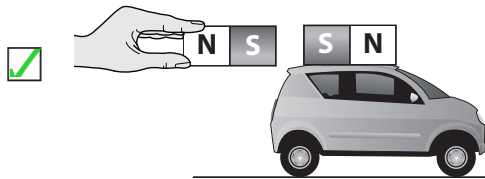
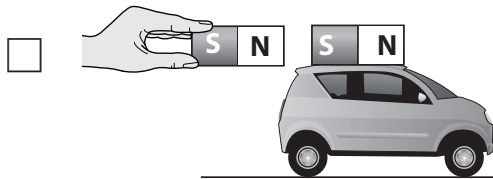
16

A magnet is glued to the top of a plastic toy car. Sarah wants to push the car away using another magnet.



Which way should she hold her magnet to push the car away?

(Tick one box.)



Explain your answer.

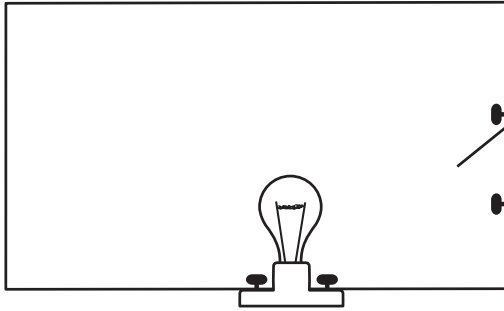
Student ticks the second box and explains that the same magnet poles repel.

**Correct:**                      **Ireland:** 37%                      **TIMSS:** 30%

S061081

17

Bethan makes a circuit with a light bulb and a switch as shown below.



When Bethan closes the switch, the bulb doesn't light. Then Bethan adds a battery to the circuit and the bulb lights.

Explain why putting a battery in the circuit will allow the bulb to light.

Indicates the battery provides a source of energy (or current or voltage or electricity or power) for lighting the bulb; e.g.:

- *The light needs energy to light up.*
- *The battery puts current in the circuit.*
- *The battery has voltage that makes a current.*

**Correct:**

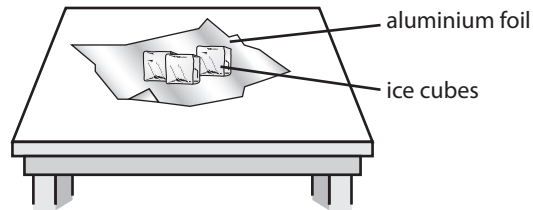
**Ireland:** 69%

**TIMSS:** 52%

S061060

18

Salem puts ice cubes on some aluminium foil on top of a table. After some time, the ice cubes melt.



What is a reason for this change?

- (A) The table takes heat from the ice cubes.
- (B) The air takes heat from the table.
- (C) The aluminium foil gets heat from the ice cubes.
- (D) The ice cubes get heat from the air.

**Correct:**                      **Ireland:** 66%                      **TIMSS:** 63%

S061075

19

Why are many electrical wires made of metals?

Indicates that metal is a good conductor of electricity; e.g.:

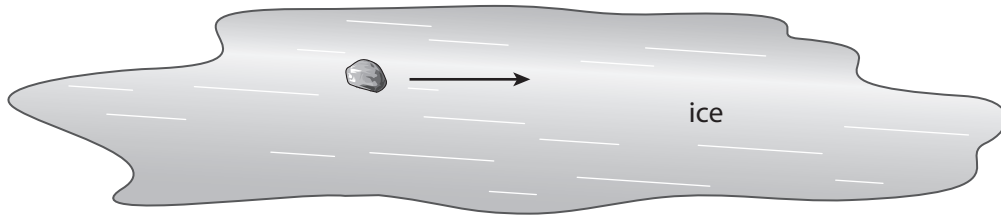
- *Electricity will go through it easily.*
- *Metal wires conduct electricity.*
- *So they can carry electricity.*

**Correct:**                      **Ireland:** 22%                      **TIMSS:** 28%

S061031

20

The diagram below shows a smooth rock sliding on ice in the direction of the arrow.



A. If Lee wants to make the rock go backwards along the same line, in which direction should he apply a force?

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

Correct:

Ireland: 77%

TIMSS: 63%

B. If the rock is sliding in the direction of the arrow and Lee wants to change its motion so it goes diagonally down and to the right, in which direction should he apply a force?

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

Correct:

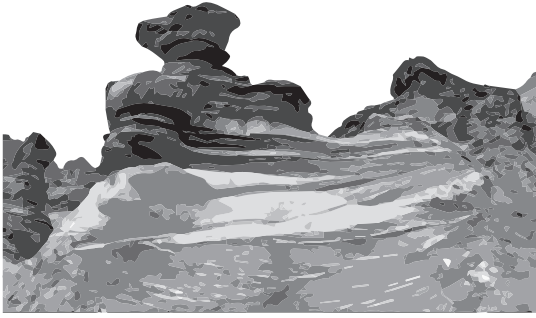
Ireland: 60%

TIMSS: 54%

S061049

21

This is a natural rock formation found in a desert.



How did the wind help shape these rocks?

- (A) Wind cools off the rocks and they break down.
- (B) Wind blows grains of sand, which rub the rocks.
- (C) Wind is hot in the desert, and it melts the rocks.
- (D) Wind carries moisture, which washes away the rocks.

Correct:

Ireland: 38%

TIMSS: 43%

S061098

22

Why are the stars not visible during the day?

Explains that stars are not visible during the day because the light we see from the Sun is too bright compared to light from stars; e.g.:

- *During the day, we face the Sun and the Sun's light is so bright we cannot see the stars.*
- *The Sun is too bright.*
- *It is not dark enough to see the stars.*

Correct:

Ireland: 43%

TIMSS: 30%

S061172



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**Fourth class**