



Trends in International Mathematics and Science Study

# TIMSS 2006/07

## Year 5 - BOOKLET

# 2



**TIMSS National Research Centre**

Research Division  
Ministry of Education  
PO Box 1666  
Wellington  
New Zealand



International Association for the Evaluation  
of Educational Achievement  
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# General Directions

In this test, you will answer mathematics and science questions. You may find some questions easy, and you may find some questions difficult. Try to answer all questions, the difficult ones as well as the easy ones.

For some questions, you choose the answer you think is correct, and tick the circle next to it. Example 1 shows this kind of question with the circle next to the correct answer ticked.

Example 1

How many minutes are there in 1 hour?

- (A) 12
- (B) 24
- (C) 60
- (D) 120

The circle with the letter “C” has been ticked because there are 60 minutes in one hour. If you are not sure about the answer to a question, tick the circle next to the answer you think is best, and move on to the next question.

If you decide to change an answer to a question, put an “X” over your first choice, and then tick the circle next to your new choice. Example 2 shows how to do this.

Example 2

How many minutes are there in 1 hour?

- (A) 12
- (B) 24
- (C) 60
- (D) 120

## General Directions (continued)

For some questions, you must write your answer in the space below the question. Words, drawings, or numbers are used in answers to these questions. Example 3 shows a question like this.

Write down one thing your heart does to help other parts of the body.

It pumps blood to all parts of the body.

Example 3

Sometimes, to get full points, you will need to explain your answers for science questions, or show your working for mathematics questions. Keep your writing and calculations as neat as possible, and give mathematics answers in their simplest form. For questions in the test that use money, pretend that you are in a country where the “Zed” is used as the unit of money, like the dollar (\$) is used in New Zealand.

When you are asked to write an answer, be sure that your handwriting is clear. Think carefully about each question, and answer as completely as possible. If you are not sure about the answer, give the answer you think is best, and move on to the next question.

You will have 36 minutes to work in the first part of your test booklet. You will then have a short break. After the break, you will work for another 36 minutes in the second part.

You may not use a calculator during the test.

## **Instructions for Part 1**

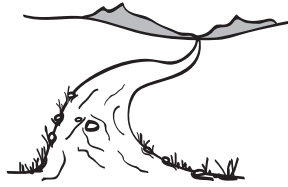
Read each question carefully, and answer it as well as you can. If you are not sure about the answer to a question, choose or write the answer you think is best, and continue with the next question on the test.

You will have 36 minutes to complete this part of the test.

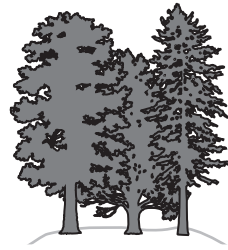
Do not start working until you are told to do so.

1

Look at the four pictures.



river



trees



seeds



fire

Which pictures show **non-living** things?

- (A) trees and fire
- (B) fire and river
- (C) river and seeds
- (D) seeds and trees

S041007

2

An animal has six legs.

What is it most likely to be?

- (A) a spider
- (B) a fly
- (C) a lizard
- (D) a centipede

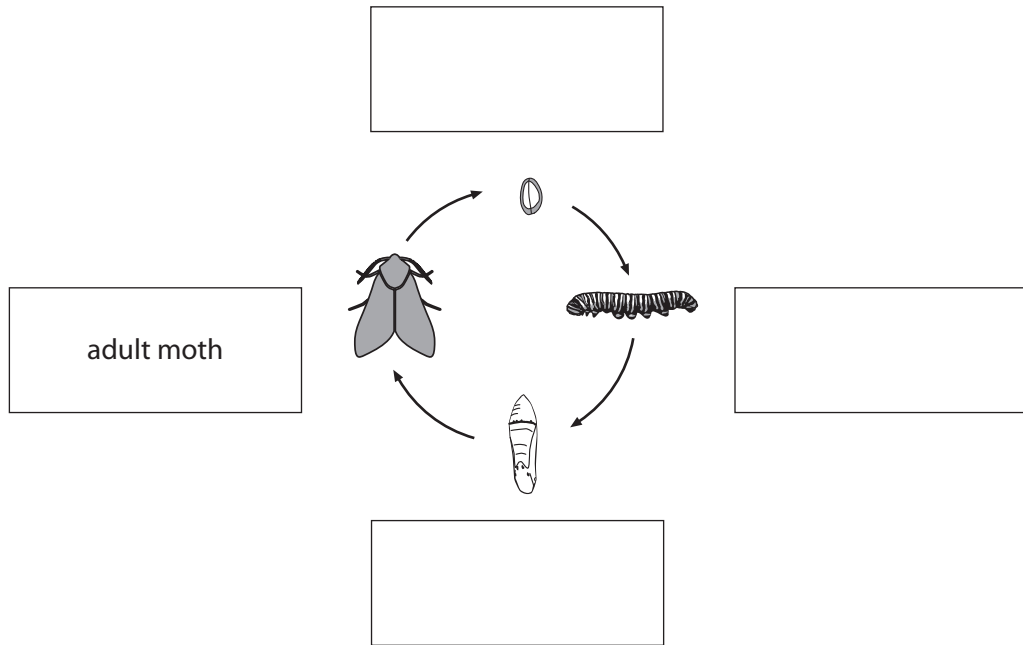
S041164

3

The diagram below shows the life cycle of a moth.

Write the name of each stage in the boxes provided.  
One stage has been completed for you.

S02\_03



S041018

4

Where do plants get energy from to make food?

- (A) air
- (B) soil
- (C) water
- (D) sunlight

S02\_04

S041160

5

Smoking harms the body in many ways.

It is most harmful to which organ?

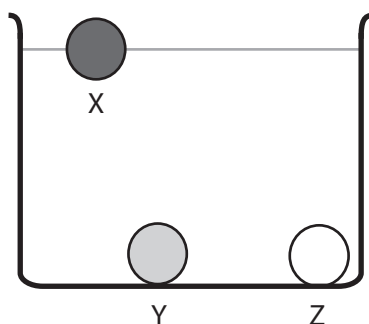
- (A) lung
- (B) kidney
- (C) liver
- (D) stomach

S041042

6

Tom has three objects that are the same shape and size.

Tom puts the three objects in a container of water. He observes that X floats, but Y and Z both sink.



What can he tell about the weight of object X compared to Y and Z?

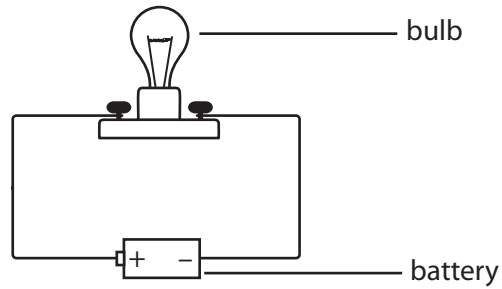
- (A) X is lighter than Y or Z.
- (B) X is heavier than Y or Z.
- (C) X is lighter than Y and heavier than Z.
- (D) X is heavier than Y and lighter than Z.

S041079

**7**

The bulb in the circuit shown below does NOT light up.

S02\_07



One possible reason is that the bulb is blown or broken.

Give another possible reason for the bulb not lighting.

S041073

**8**

Katie has a mixture of iron filings and sand. She wants to separate them.

S02\_08

How can she do this?

- (A) Shake the mixture, and the iron filings will rise to the surface.
- (B) Add water to the mixture, and the sand will dissolve in the water.
- (C) Put the mixture through a sieve, and the sand will remain in the sieve.
- (D) Pass a magnet over the mixture, and the magnet will attract the iron filings.

S041217

**9**

Which of the following runs ONLY on electricity?

- Ⓐ a sailboat
- Ⓑ a motorcycle
- Ⓒ a ceiling fan
- Ⓓ a steam engine

S041196

**10**

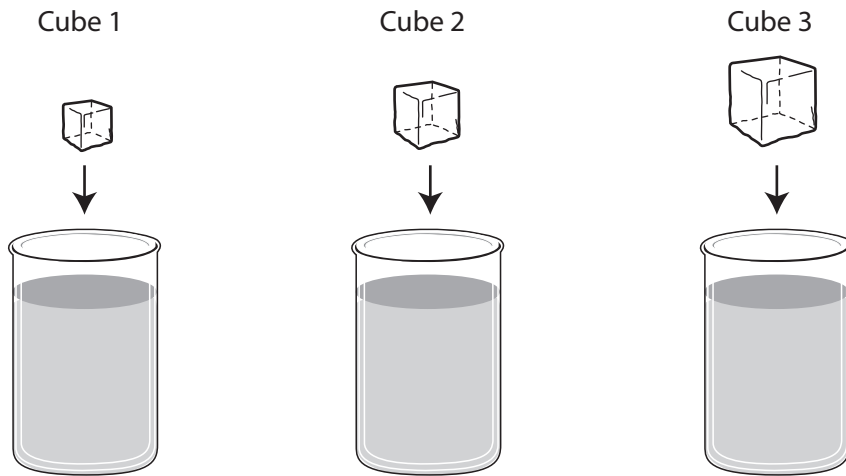
Grace's teacher places a dish of water on a sunny windowsill. When Grace looks into the dish at the end of the day, the water has disappeared.

Explain why the water has disappeared.

S041211

11

Susie has three ice cubes of different sizes. She places each ice cube into an identical glass containing the same volume of water, as shown in the diagram.



What happens to the ice cubes when they are placed in the water?

- (A) Cubes 1, 2, and 3 will sink.
- (B) Cubes 1, 2, and 3 will float.
- (C) Cube 1 will float, and cubes 2 and 3 will sink.
- (D) Cubes 1 and 2 will float, and cube 3 will sink.

S041051

12

Most of Earth's surface is covered by

- (A) sand
- (B) trees
- (C) water
- (D) mountains

S041089

The table below shows the distance from the sun of four planets of the solar system.



	Earth	Mars	Mercury	Saturn
Approximate distance from the sun (millions km)	150	230	58	1,400

A. Which of these planets is closest to the sun?

- (A) Earth
- (B) Mars
- (C) Mercury
- (D) Saturn

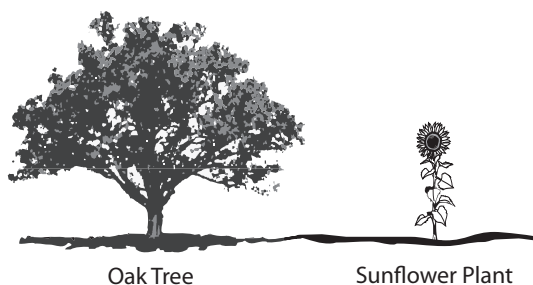
B. Which of these four planets is most likely to have the **lowest** average surface temperature?

**14**

Which of these groups of animals are ALL mammals?

- (A) duck, eagle, parrot
- (B) mouse, monkey, bat
- (C) butterfly, ant, mosquito
- (D) crocodile, snake, turtle

S031229

**15**

Can an oak tree and a sunflower plant together produce an oak tree that has sunflowers?

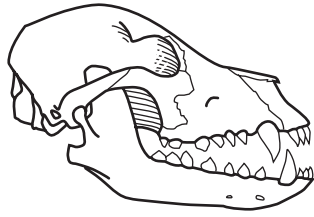
(Tick one box.)

- Yes
- No

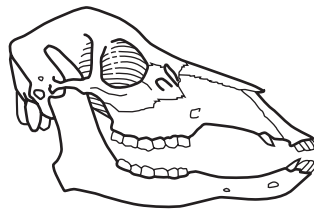
Explain your answer.

S031270

Skull 1



Skull 2



The figures above show two animal skulls – Skull 1 and Skull 2.  
One of the animals ate only plants, and one of them ate only other animals.

Write down which skull belongs to which type of animal.

The animal that ate plants had Skull \_\_\_\_\_.

The animal that ate other animals had Skull \_\_\_\_\_.

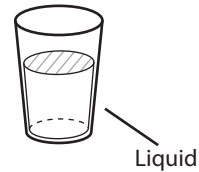
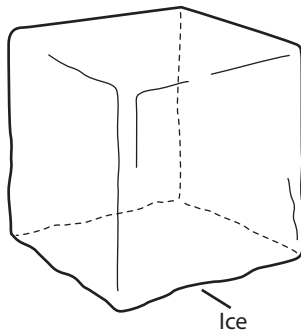
Explain your answers based on your knowledge of teeth.

**17**

Tommy cut his finger. His body needed energy to help heal the cut.  
Where did the energy come from to heal the cut?

- (A) from the bandage he put on the cut
- (B) from the antiseptic cream he put on the cut
- (C) from the food he ate
- (D) from the water he drank

S031319

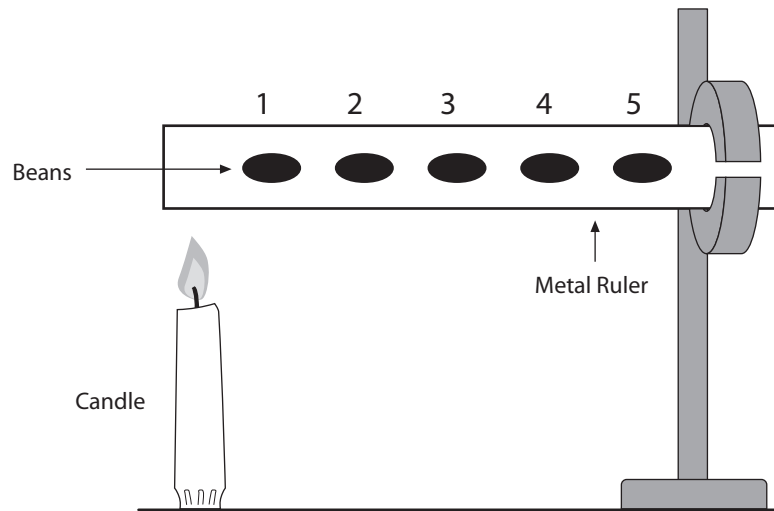
**18**
  


Ice and liquid are different forms of water. Each form is used in different ways.  
Write down one way that water is used by humans in each of these forms.

Ice:

Liquid:

S031414

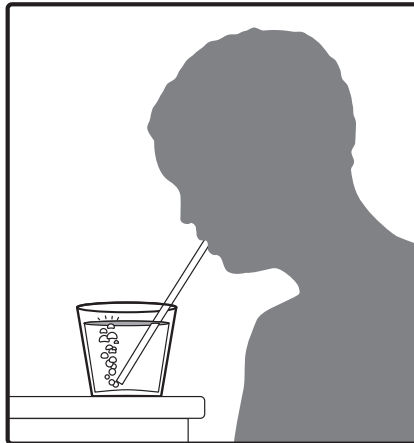
**19**

Beans are fixed on a metal ruler with butter as shown in the figure above. The ruler is heated at one end. In which order will the beans fall off?

- (A) 1, 2, 3, 4, 5
- (B) 5, 4, 3, 2, 1
- (C) 1, 3, 5, 4, 2
- (D) All at the same time

20

S03\_07



When you blow into water using a straw, bubbles are formed and rise to the top. Why do the bubbles rise in water?

S031009

21

S03\_08

What is the main reason we can see the Moon?

- (A) The Moon reflects light from the Earth.
- (B) The Moon reflects light from the Sun.
- (C) The Moon produces its own light.
- (D) The Moon is larger than stars.

S031401

A. What are the names of two different seasons of the year?

Season 1: \_\_\_\_\_

Season 2: \_\_\_\_\_

B. Write down one difference in weather between the seasons you named.



**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.

## **Instructions for Part 2**

In Part 2, you will answer more questions in mathematics or science. You will have 36 minutes to work on this part of the test.

Read each question carefully, and answer it as well as you can. If you are not sure about the answer to a question, choose or write the answer you think is best, and move on to the next question.

Do not start working until you are told to do so.

*Please go to the next page*

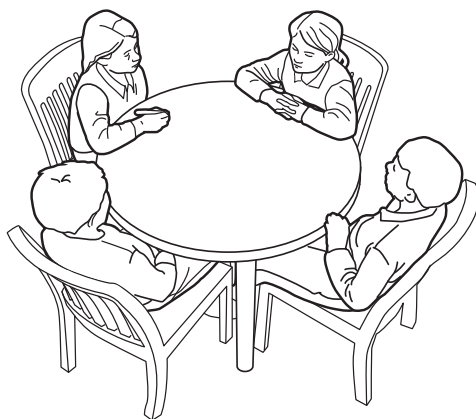


**23**

In which of the following are the numbers ordered from LARGEST to SMALLEST?

- (A) 36, 43, 66, 87
- (B) 66, 43, 36, 87
- (C) 87, 66, 36, 43
- (D) 87, 66, 43, 36

M041014

**24**

One table can seat 4 people.

How would you find out how many tables are needed to seat 28 people?

- (A) Multiply 28 by 4.
- (B) Divide 28 by 4.
- (C) Subtract 4 from 28.
- (D) Add 4 to 28.

M041039

**25**

Multiply:  
 $53 \times 26$

M02\_03

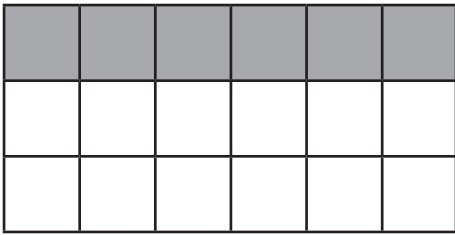
Answer: \_\_\_\_\_

M041278

**26**

What fraction of this rectangle is shaded?

M02\_04



(A)  $\frac{1}{4}$

(B)  $\frac{1}{3}$

(C)  $\frac{6}{12}$

(D)  $\frac{2}{3}$

M041006

**27**

Subtract:  
 $5.3 - 3.8$

M02\_05

Answer: \_\_\_\_\_

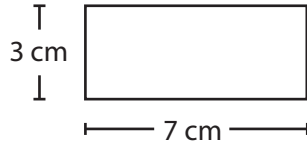
M041250

**28**

Rob has 10 zeds. For lunch, he buys a bottle of fruit juice for 2.50 zeds and a sandwich for 3.85 zeds. How much money does Rob have left after he has paid for his lunch?

- (A) 3.65 zeds
- (B) 4.75 zeds
- (C) 6.35 zeds
- (D) 16.35 zeds

M041094

**29**

What is the perimeter of this rectangle?

- (A) 7 cm
- (B) 10 cm
- (C) 20 cm
- (D) 21 cm

M041330

## 30

**Geometry Tiles**

Instruction:

For these tasks, you have been given a piece of cardboard with 6 tiles like the ones shown below. Take the piece of cardboard, and punch out the 6 tiles.

If you do not have the piece of cardboard, raise your hand.

4 Triangle Tiles

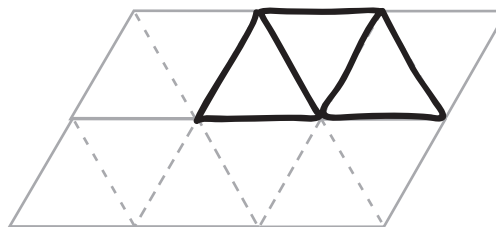


2 Trapezium Tiles



These tiles can be used to make new figures. One task has been done for you

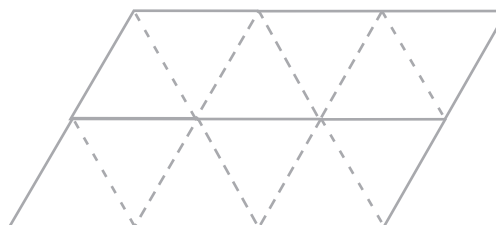
USE: 3 Triangle Tiles  
 MAKE: A trapezium  
 SHOW: Draw it on the grid.



Now try these tasks.

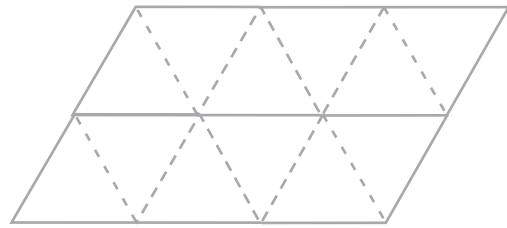
A.

USE: 1 Triangle Tile and  
 1 Trapezium Tile  
 MAKE: A 4-sided figure  
 SHOW: Draw it on the grid.



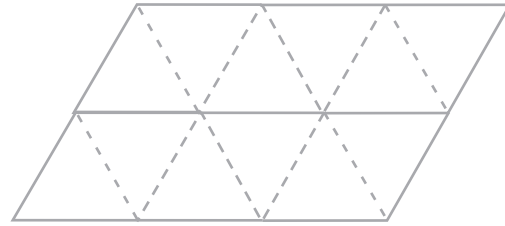

B.

USE: 2 Trapezium Tiles  
 MAKE: A 6-sided figure  
 SHOW: Draw it on the grid.



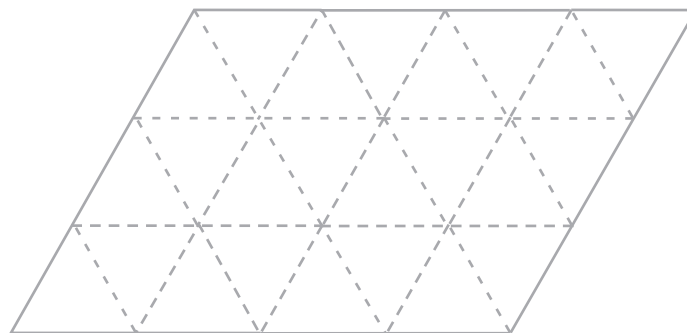
C.

USE: 2 Trapezium Tiles  
 MAKE: A 6-sided figure that is not the same shape as the one you made in Part B  
 SHOW: Draw it on the grid.

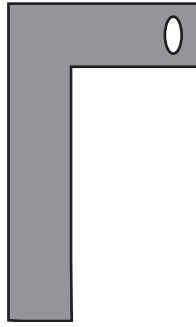


D.

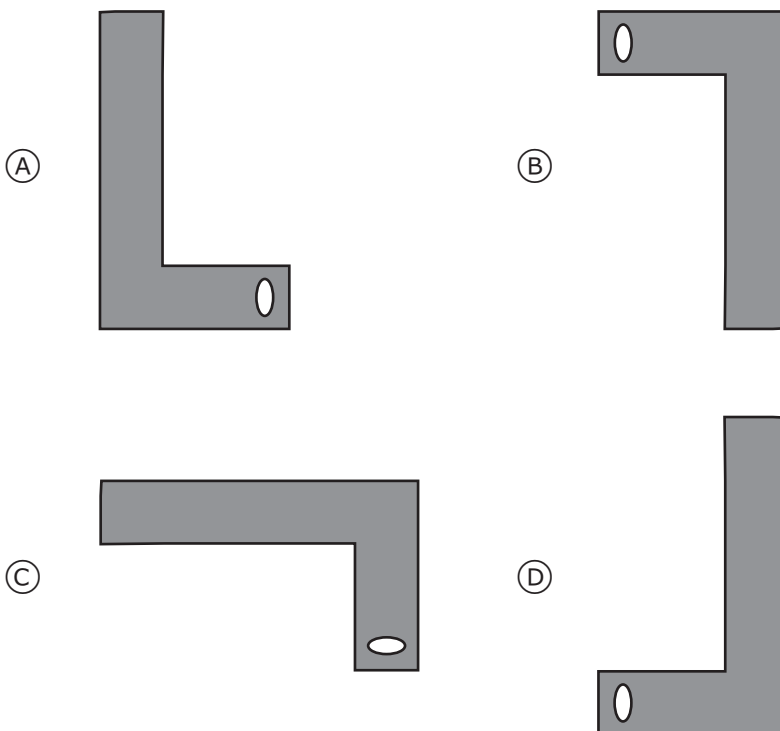
USE: 2 Triangle Tiles and 1 Trapezium Tile  
 MAKE: A 7-sided figure  
 SHOW: Draw it on the grid.



31

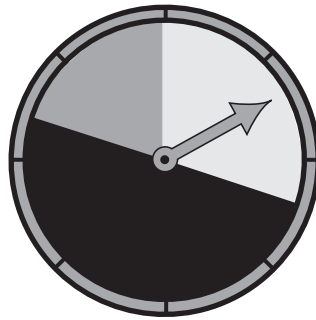


The shape above is rotated by  $90^\circ$  clockwise. Which shape is the result?



M041173

A spinner can land on 3 different colours. Here are the results after 100 spins.

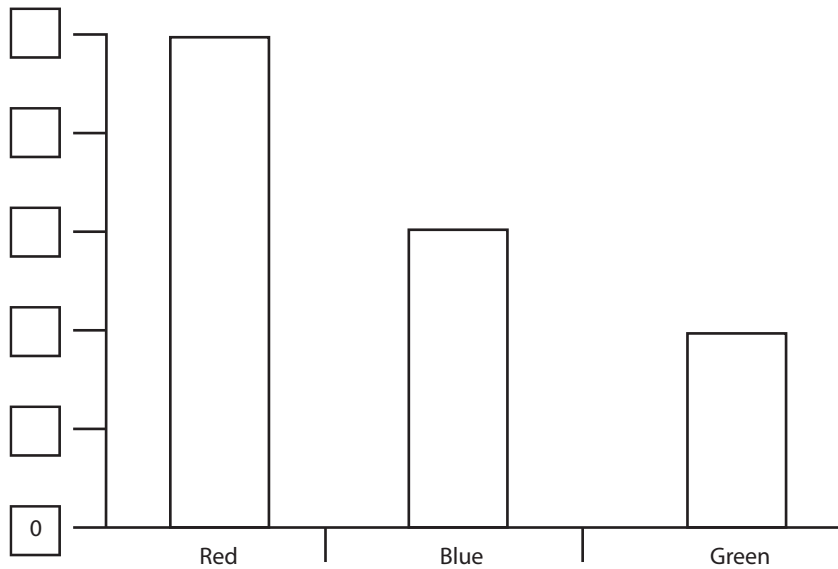


Spinner Results

Red	50
Blue	30
Green	20

Jenny starts to draw this graph to show the result. Help Jenny by writing the correct numbers in the boxes to complete the scale.

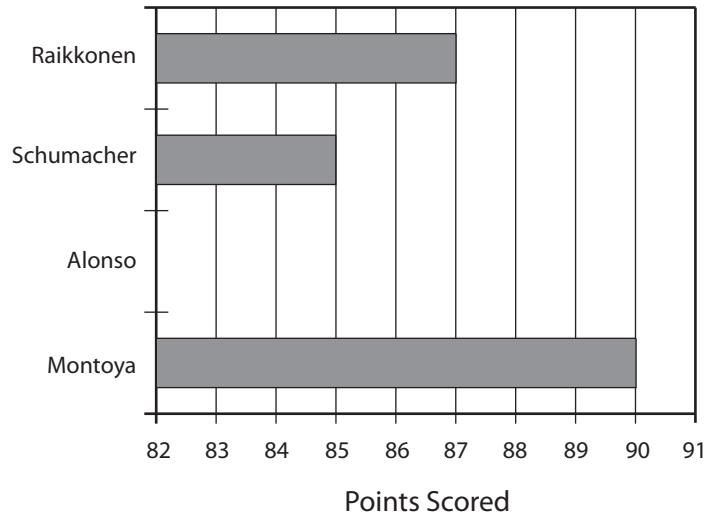
Bar graph



33

This graph shows the points scored by 4 drivers in the car racing championship. Montoya is in first place. Alonso is in third place. Draw a bar which shows how many points Alonso has scored.

M02\_11



M041203

**34**

A group of 8 children have 74 sweets altogether. How many more sweets are needed for the children to be able to share them equally?

M03\_01

Answer: \_\_\_\_\_

M031235

**35**

Two boys went running. For every 2 km that Zak ran, Alan ran 3 km. Zak ran 6 km. How far did Alan run?

M03\_02

Answer: \_\_\_\_\_ km

M031285

**36**

Ken measured the length of a blackboard using a 30 cm ruler. The blackboard was 6 cm less than 9 times the length of the ruler. What is the length of the blackboard?

M03\_03

- (A) 264 cm
- (B) 270 cm
- (C) 276 cm
- (D) 279 cm

M031050

**37**

Ann uses a rule to get her number from Mary's number, as shown in the table.

M03\_04

Mary's Number	Ann's Number
1	3
2	6
4	12
6	18

What is the rule Ann uses to get her number?

M031258

**38**

2, 5, 11, 23, ...

Starting the pattern at 2, which of these rules would give each of the terms in the number pattern above?

M03\_05

- (A) Add 1 to the previous term and then multiply by 2.
- (B) Multiply the previous term by 3 and then subtract 1.
- (C) Multiply the previous term by 2 and then add 1.
- (D) Subtract 1 from the previous term and then multiply by 3.

M031334

**39**

$$64 \div \blacksquare = \blacksquare$$

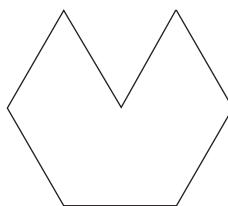
In this number sentence,  $\blacksquare$  stands for the same number. What number does  $\blacksquare$  stand for?

- (A) 4
- (B) 8
- (C) 16
- (D) 32

M031255

**40**

How many triangular tiles like this are needed to cover the figure below?



Answer: \_\_\_\_\_

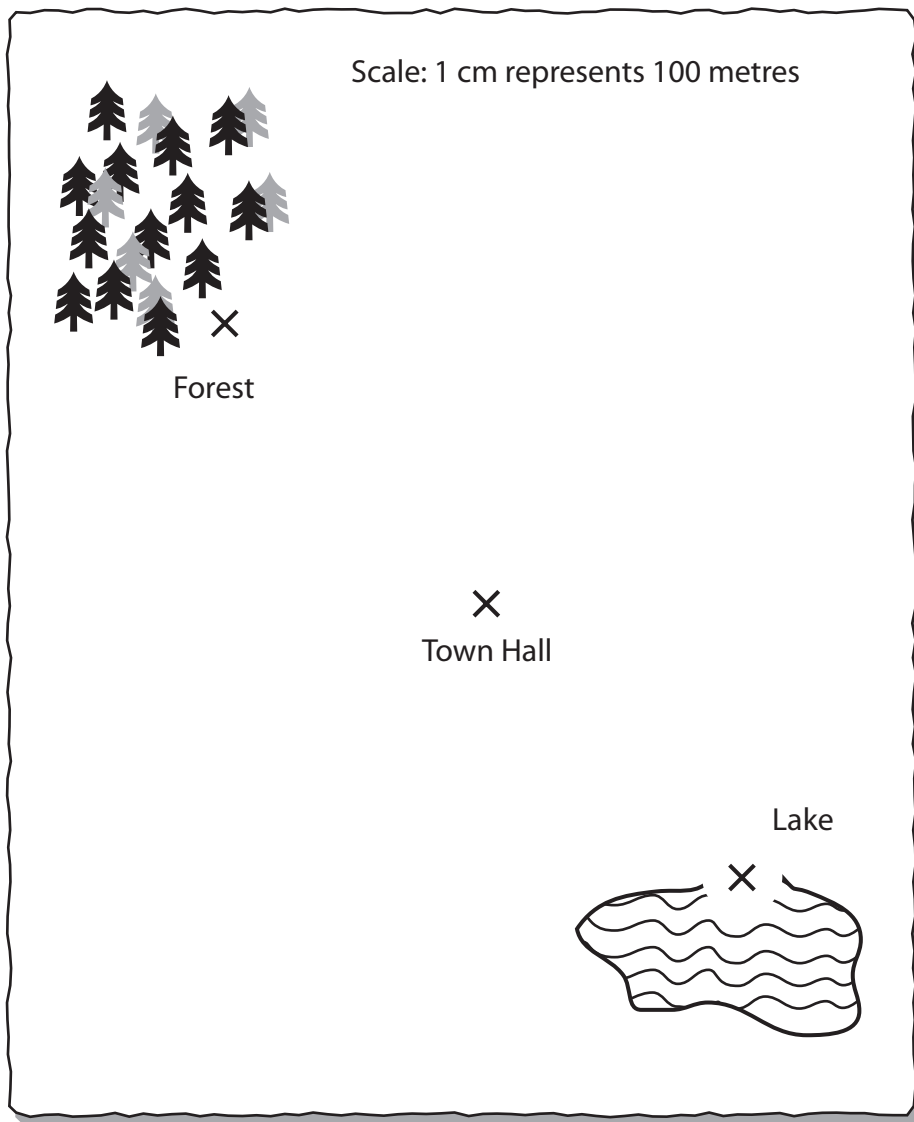
M031041

41

For this item, you have been given a cardboard ruler. If you do not have the cardboard ruler raise your hand. Use the map below and your ruler to answer this set of questions.

Marytown is a new town. The people of Marytown are planning their new town. They decided to put the town hall halfway between the lake and the forest, as shown on the map below. They made their measurements from the X's.

### Marytown



MP31350

This Marytown question continues on the next page. ➔

Add a park, a library, and a school to the map of Marytown using the following information.

- A. The **park** should be 200 metres from the lake so people can go fishing and swimming. On the map, mark with an X where you would put the **park** and write **park** below the X.
- B. The **library** should be at least 300 metres but no more than 400 metres from the town hall. On the map, mark with an X where you would put the **library** and write **library** below the X.
- C. The **school** should be halfway between the park and the library. On the map, mark with an X where you would put the **school** and write **school** below the X.

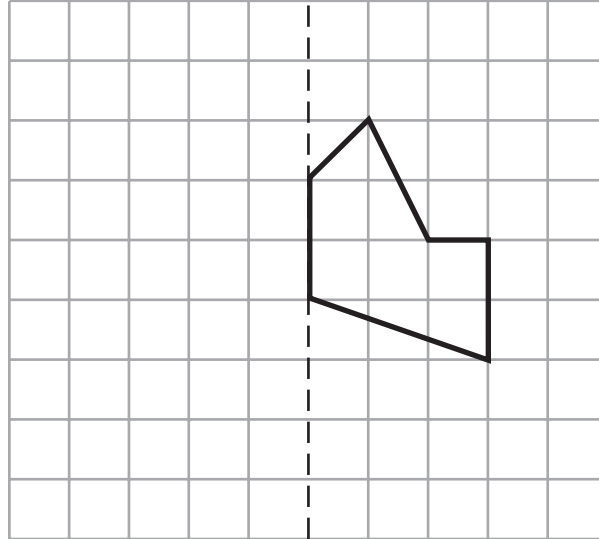
End of Marytown section.



42

On the grid below, draw the reflection of the shape in the dotted line of symmetry.

M03\_09



M031274

**43**

There were 5 children at the park. Some were wearing hats and some were not.

M03\_10



<b>Girls</b>	<b>Boys</b>
Maria was wearing a hat	Peter was wearing a hat
Megan was not wearing a hat	Chan was not wearing a hat
Mandy was not wearing a hat	

Complete the table to show the number of boys and girls who were wearing hats and who were not wearing hats.

	<b>Hat</b>	<b>No hat</b>
<b>Boys</b>		
<b>Girls</b>		



**There are no more questions in 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.









**TIMSS & PIRLS**  
International Study Center  
Lynch School of Education, Boston College

**Year 5**  
**BOOKLET** **2**