

# REASONING

## 9ER14

First name \_\_\_\_\_

Last name \_\_\_\_\_

School \_\_\_\_\_

Class \_\_\_\_\_

Date of birth ○○ ○○ ○○○○

Date of test ○○ (05) (2014)

Total score  (maximum 20)



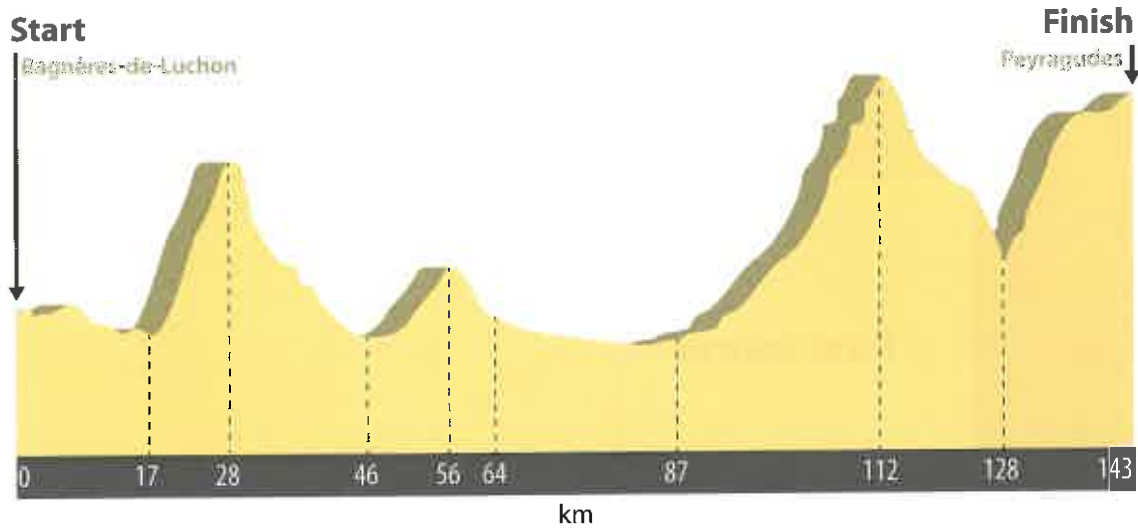
117612



Llywodraeth Cymru  
Welsh Government

1 Stage 17 of the 2012 Tour de France was in the mountains.

The diagram shows the approximate route.



It took Wiggins  $4\frac{1}{4}$  hours to cycle this route.  
How long would it take us?



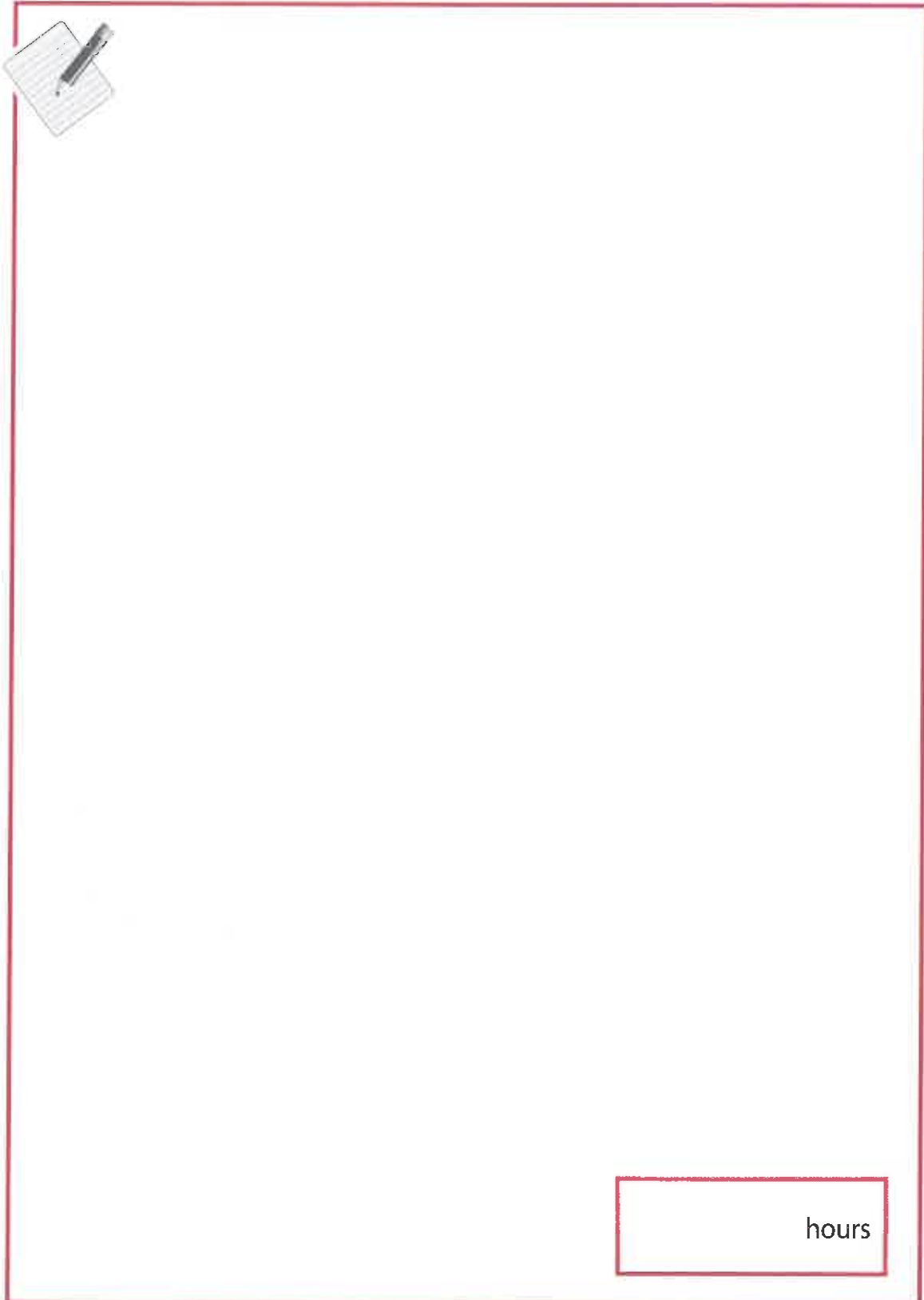
I think we could cycle:

- 8km per hour up steep mountains
- 16km per hour when it is fairly flat
- 32km per hour down steep mountains.

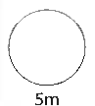
At those speeds, how many hours would it take these children to cycle all 143km?

Use the diagram to estimate the total time.

Show each step of your working clearly.



hours

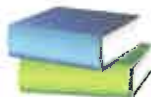


TOTAL



2

**Books £10 each**  
**Special offer:**  
**Buy one get one half price**



Use the special offer to work out the total cost of **12** books.

£

2m

3

The picture shows a lock on a safe.

The black dial turns.

**To open the lock, turn the dial:**  
**90° clockwise, then**  
**180° anticlockwise.**



To open the lock, what number should be at the **top** of the dial?

1m



Builders use blocks to build walls.



A computer works out the number of blocks for a wall that is 4 feet high.

Examples:

Length of wall (feet)

12

Height of wall (feet)

4

Number of blocks

54

Length of wall (feet)

7

Height of wall (feet)

4

Number of blocks

31.5

Length of wall (feet)

8

Height of wall (feet)

4

Number of blocks

36

The computer uses a rule to work out the number of blocks.

What is the rule?

5



In my story, the pavements of London are made of solid gold.



How many solid gold paving stones could you buy with **one hundred million pounds?**

Assume:

- a paving stone is 90cm long, 60cm wide and 5cm deep
- 1cm<sup>3</sup> of gold weighs 19.3 grams
- gold costs £33 per gram.

A large rectangular area outlined in red, intended for drawing. In the top-left corner, there is a small icon of a notepad and a pencil. In the bottom-right corner, there is a smaller red-bordered rectangle containing the text "paving stones".

5m

6 Megan's computer game shows:

Games played: 177  
Games won: 32  
Percentage won: 18%

Megan loses the next game.

Games played: 178  
Games won: 32  
Percentage won: 18%

Explain why the percentage won still shows **18%**.



A large rectangular box with a red border, intended for writing an explanation. It contains a small icon of a notepad and a pen in the top-left corner.

1m

If Megan continues to lose each game, when will the computer first show **17%**?

Games played: ?  
Games won: 32  
Percentage won: 17%

Show calculations to explain your answer.



A large rectangular box with a red border, intended for writing calculations. It contains a small icon of a notepad and a pen in the top-left corner.

3m

TOTAL

9m