

Stratosphere

Answers



Section One

Solving equations

Key skills

Bar model

Scale

Section Two

Estimate it

Problem solving

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Big questions

Solving equations

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Work out the value of the letter.

1

$$13 + x = 16$$
$$x = 3$$

2

$$15 - y = 5$$
$$y = 10$$

3

$$m + 7 = 102$$
$$m = 95$$

4

$$n - 2 = 3$$
$$n = 5$$

5

$$s \times 4 = 24$$
$$s = 6$$

6

$$t \div 3 = 6$$
$$t = 18$$

A

$$7 + x = 1$$
$$x = -6$$

B

$$4 - y = 17$$
$$y = -13$$

C

$$m + 8 = 3.5$$
$$m = -4.5$$

D

$$n - 5 = -103$$
$$n = -108$$

E

$$8s = 48$$
$$s = 6$$

F

$$\frac{t}{3} = 15$$
$$t = 45$$

$$0.35 + x = -0.15$$
$$x = -0.5$$

$$\frac{2}{3} - y = \frac{1}{2}$$
$$y = \frac{1}{6}$$

$$m + 6.2 = -3.5$$
$$m = -9.7$$

$$n - 0.12 = -0.006$$
$$n = -0.114$$

$$\frac{3}{4}s = 12$$
$$s = 16$$

$$\frac{140}{5t} = 10$$
$$t = 2.8$$

1 $6\,581 + 3\,810 = 10\,391$

2 $63\,441 - 5\,093 = 58\,348$

3 Write 0.08 as a fraction. $\frac{2}{25}$

Bar model

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1 25% of a number is 8. What is the number?

32

2 A third of a number is 13. What is the number?

39

3 Three fifths of a number is 15. What is the number?

25

4 35% of a number is 7. What is the number?

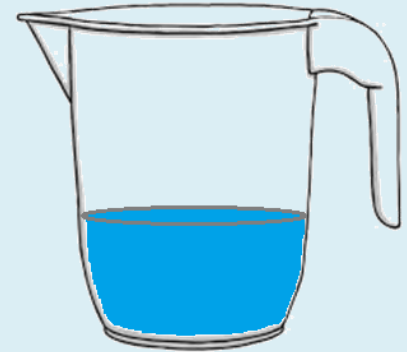
20

5 $\frac{7}{5}$ of a number is 105. What is the number?

75

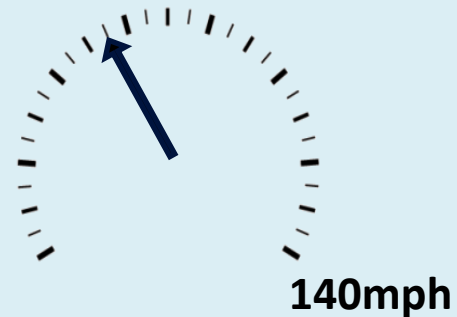
- 1 The jug holds 1 litre of water.
Estimate the volume of water in the jug.

≈ 300ml to 400ml



- 2 The top speed on the speedometer is 140mph.
What speed is the speedometer showing?

55mph



- 3 Circle the category below that describes the credit score of 650.

Very poor Poor Fair **Good** Excellent



Reflect on the first section.

WWW:

EBI:

Estimate it

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A Estimate the weight of the car.

$\approx 1\text{tn to } 2\text{tn}$

B Estimate the height of the statue.

$\approx 100\text{m to } 200\text{m}$

C Estimate the volume of the box.

$\approx 10\text{ litres}$



1

What is the value of $\frac{12345}{1+2+3+4+5}$?

A

1

B

8

C

678

D

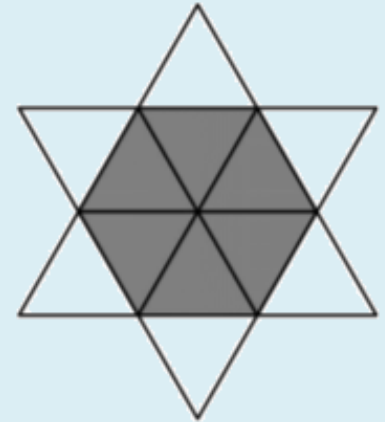
823

E

12 359

2

The star shown in the picture is made by fitting together 12 congruent equilateral triangles. The perimeter of the star is 36cm. What is the perimeter of the grey hexagon?



A

6cm

B

12cm

C

18cm

D

24cm

E

30cm

3

There are 81 players taking part in a knock-out quiz tournament. Each match in the tournament involves 3 players and only the winner of the match remains in the tournament – the other two players are knocked out. How many matches are required until there is an overall winner?

40 matches

1

Fahima buys

2 packets of bread rolls costing £1.50 for each packet

1 bottle of ketchup costing £1.60

3 packets of sausages

Fahima pays with a £10 note.

She gets 30p change.

Fahima works out that one packet of sausages costs £2.30

Is Fahima right?

You must show how you get your answer.

$$£10 - 30p = £9.70$$

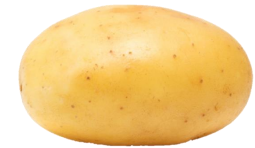
$$£9.70 - £3 - £1.60 = £5.10$$

$$£5.10 \div 3 = £1.70$$

Each packet costs £1.70

(3 marks)

How many medium sized potatoes could you eat in a lifetime?
How much will it cost you?
How much will they weigh?



The information will help you but you will need to make some assumptions and approximations. Make sure your workings are clear.

Note!

There is no known food that supplies all the needs of human adults on a long-term basis. But, for the sake of this big mathematical question, let's say you could live a full life by your calorie intake being 100% from potatoes. The life expectancy in the UK is currently 81 years.

[Data Commons](#)



Generally, the recommended daily calorie intake is 2,000 calories a day for women and 2,500 for men.

Big questions

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Potato / Energy Amount

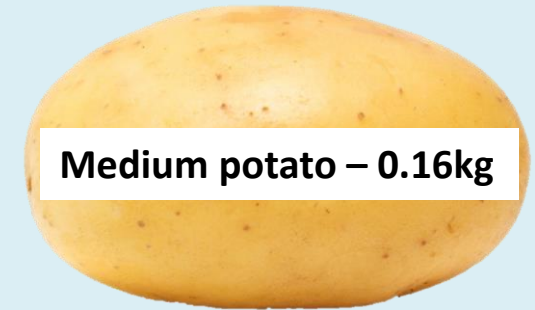
77 calories

Type

Potato

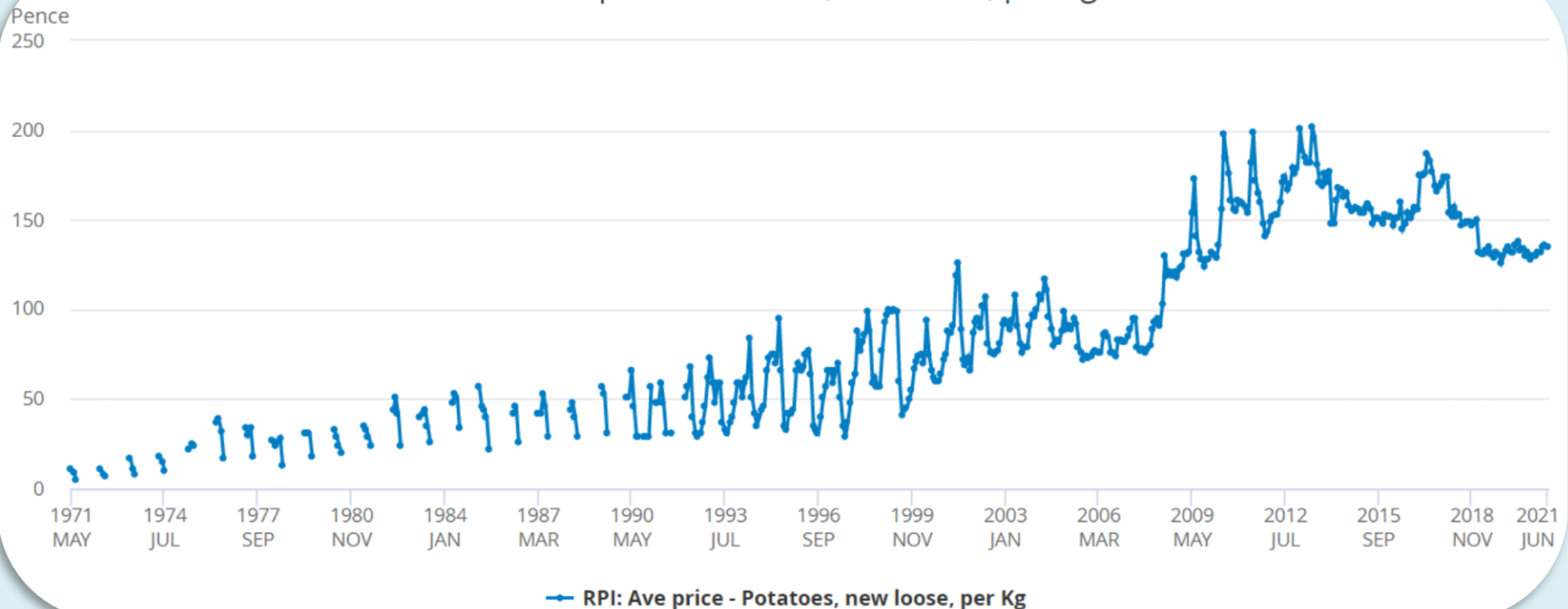
Quantity

100 grams



Medium potato – 0.16kg

RPI: Ave price - Potatoes, new loose, per Kg



Well done for completing the lesson.



Reflection

A large, empty white rectangular area with rounded corners and a black border, intended for student reflection.