Edexcel B (R)

Number

2022 International GCSE Advance Information

Sparx Topics & Key Questions

We are always looking for ways to support maths teachers and students. In order to help you and your year 11s this year we've pulled together a list of key questions which may be useful to practise with your students based on the exam board topic lists.

These 42 key questions are all taken from our library of over 45,000 high-quality questions in Sparx Maths. If you are a Sparx Maths School then your students can use the Topic Codes provided to search the full content library directly within the independent learning section of Sparx Maths to help target their revision.

Please note this is not an exhaustive topic guide it is simply designed to help you pull together some key questions to use to check for understanding in lessons, starters, or as worksheets with your learners.

Number	Topics	Sparx Topic Codes
Powers and roots	Surds	B816, B225, B100, B664, B402
Percentages	Reverse percentage	B309
	Percentage profit	B575, B342
Ratio	Share in a ratio	B882, B743
Standard form	Calculation	B341, B447
Other	The four operations	B585, B797, B134, B480
	Natural numbers, integers, rational and irrational numbers	B301, B144
	Bounds	B224, B515

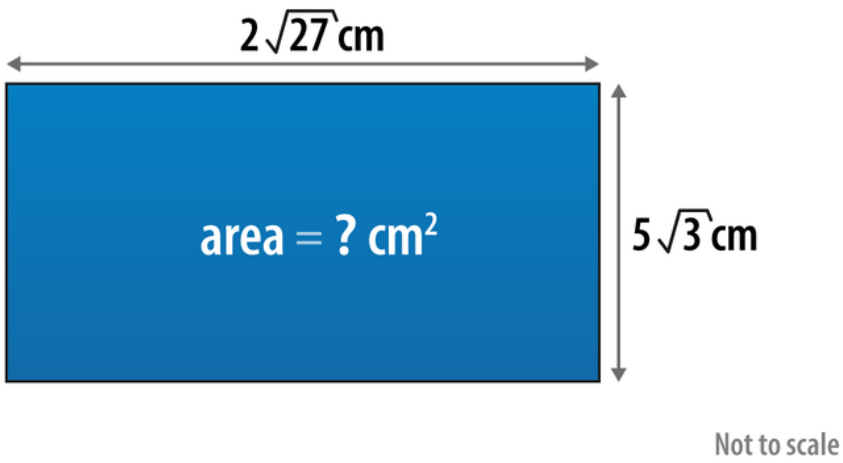
Copyright Sparx 2022

Powers and roots - Surds

Simplifying surds B816

Calculate the area, in cm^2, of the rectangle below.

Give your answer as an integer or as a surd in its simplest form.



Fully simplify $\frac{12\sqrt{84}}{3\sqrt{7}}$

Adding and subtracting surds B225

Fully simplify

$$5\sqrt{27} + 2\sqrt{45} - \sqrt{75} - \sqrt{20}$$

Copyright Sparx 2022

Expanding brackets with surds B100

$(7+\sqrt{12})(11+\sqrt{3})$ can be written in the form $a+b\sqrt{3}$, where a and b are integers.

What are the values of a and b?

Calculate $(\sqrt{7}+\sqrt{2})(\sqrt{7}-\sqrt{2})$

Give any surds in your answer in their simplest forms.

Rationalising denominators containing a single term B664

Rationalise the denominator of $\frac{15+\sqrt{3}}{10\sqrt{3}}$

Give your answer in its simplest form.

Rationalising denominators containing two terms B402

Rationalise the denominator of $\frac{21}{3+\sqrt{2}}$

Give your answer in its simplest form, with any brackets expanded.

Copyright Sparx 2022

Percentages - Reverse percentage

Finding original values in percentage calculations B309

A computer costs $£968$. A tax of 16.5% is then added to the cost of the computer.

Work out the amount of **tax** that is added to the cost of the computer.
Give your answer in pounds $(£)$.

135% of a value is $5265\ \text{kg}$.

What is the original value?
Give your answer in kilograms (kg).

Increase 280 by 132%

Copyright Sparx 2022

The price of a netball dress is **reduced** by 17% in a sale. The sale price is $£53.95$.

What was the original price of the netball dress?
Give your answer in pounds $(£)$.

Copyright Sparx 2022

Percentages - Percentage profit

Writing numbers as percentages of other numbers B575

Romeo wants to buy 50 diving lessons that cost $£35$ each, but he only has $£1200$.
What **percentage** $(\%)$ of the total cost of the lessons does Romeo have?
Round your answer to 1 decimal place.

Finding the percentage an amount has been changed by B342

The price of a netball dress is **reduced** by 17% in a sale. The sale price is $£53.95$.

What was the original price of the netball dress?
Give your answer in pounds $(£)$.

A hippopotamus had a mass of $32.7\,\text{kg}$ at birth.
At two months old, it had a mass of $87.4\,\text{kg}$.

By what percentage did its mass increase over these two months?
Give your answer to the nearest 1%.

Ratio - Share in a ratio

Sharing amounts in a given ratio B882

A shade of paint, Purple Berry, can be made by mixing red paint and blue paint in the ratio $5 : 2$. Emma has 30 litres of red paint and 10 litres of blue paint.

Work out the **maximum** volume of Purple Berry paint that Emma can make.
Give your answer in litres.

Orla and Rachel split a sum of money between them in the ratio $5 : 9$.

If Rachel has £40 more than Orla, what was the total amount that they split?
Give your answer in pounds (£).

Solving problems involving sharing amounts in a given ratio B743

A fruit bowl contains a mixture of oranges, kiwis and limes. The ratio of oranges to kiwis is $3 : 5$.

Steve picks a piece of fruit at random from the fruit bowl. The probability that it is an **orange** is $\frac{1}{4}$.

What is the probability that it is a **lime**?
Give your answer as a fraction in its simplest form.

Copyright Sparx 2022

Standard form - Calculation

Multiplying and dividing numbers in standard form B341

Calculate $(4 \times 10^5) \times (9 \times 10^2)$

Give your answer in standard index form.

Calculate $(6 \times 10^{20}) \div (3 \times 10^4)$

Give your answer in standard form.

Adding and subtracting numbers in standard form B447

Work out $(7.8 \times 10^7) - (3.1 \times 10^6)$

Give your answer in standard form.

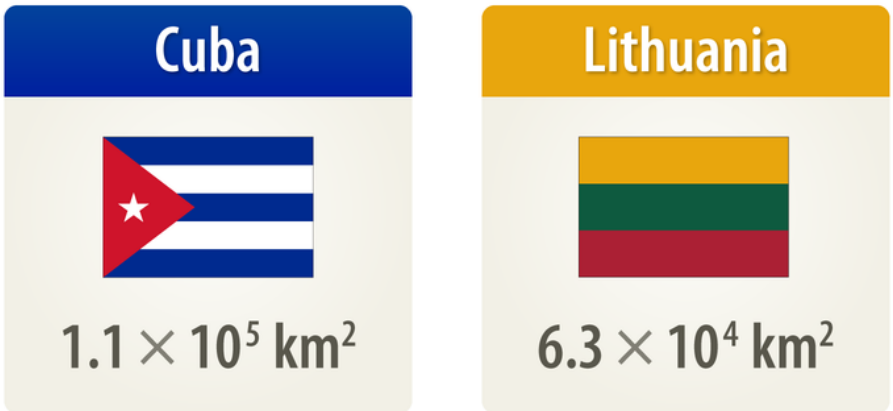
A company sold 2.7×10^7 pots of yoghurt in 9 days.

On average, how many pots of yoghurt were sold each day?
Give your answer in standard index form.

Copyright Sparx 2022

The approximate areas of two countries in 2017 are given below.

Use this information to work out the **difference** between the area of Cuba and the area of Lithuania.
Give your answer in km^2 in standard form.



Calculate $(7 \times 10^4)^2 - (4 \times 10^8)$

Give your answer in standard index form.

Copyright Sparx 2022

Other - The four operations

Adding and subtracting B585

Sienna is planning a three-day trip. The map below shows the distance she plans to travel on each day.

a) Approximate the total length of the trip by first rounding each distance to the nearest kilometre.

b) Calculate the exact length of the trip.

Give your answers in kilometres (km).

Not drawn accurately

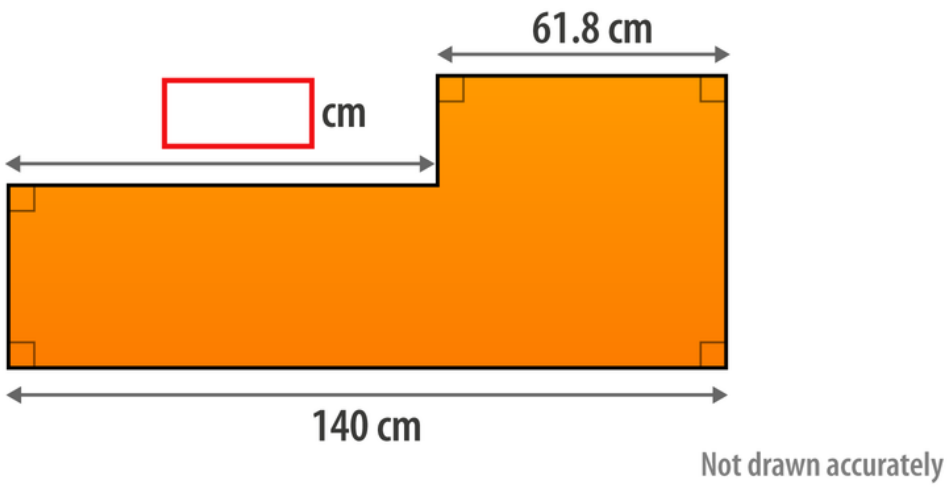
Copyright Sparx 2022

Oscar thinks of a number.

When he adds 67.2 to his number, he gets 345.

What was his original number?

Find the value that should go in the box.



Using a written method to multiply integers **B797**

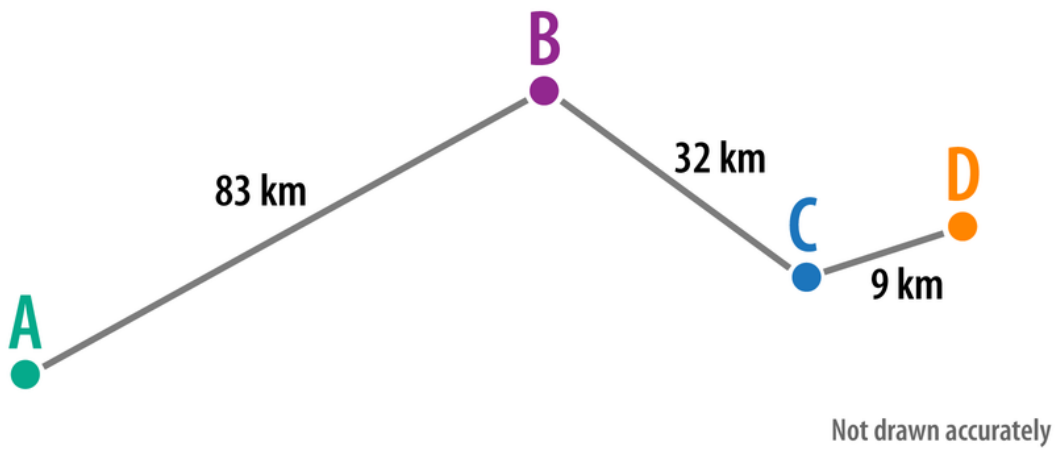
A rugby team hires 65 buses to take fans to a match. Each bus can transport 52 passengers.

3601 fans want to go to the match. How many of them will **not** be able to travel on the buses?

Copyright Sparx 2022

A train travelled from town A to town B.
It then travelled the $32\ \mathrm{km}$ between town B and town C 17 times.
The train then travelled from town C to town D.

Work out the **total** distance, in kilometres (km), that the train travelled.



Copyright Sparx 2022

Using a written method to multiply decimals B134

At a diving competition there are five judges and each of them gives each dive a score out of 10. The five scores are then added together and multiplied by the difficulty rating to give the final score.

Leo performed a dive with a difficulty rating of 3.2 and the judges` scores are shown in the table below. What was the final score for his dive?

Judge	1	2	3	4	5
Score	4	6	5	5	7

Tanya is paying for swimming lessons. Each lesson costs $£1.75$. She pays for 15 lessons.

How much change will she get from $£40$?

Give your answer in pounds $(£)$.

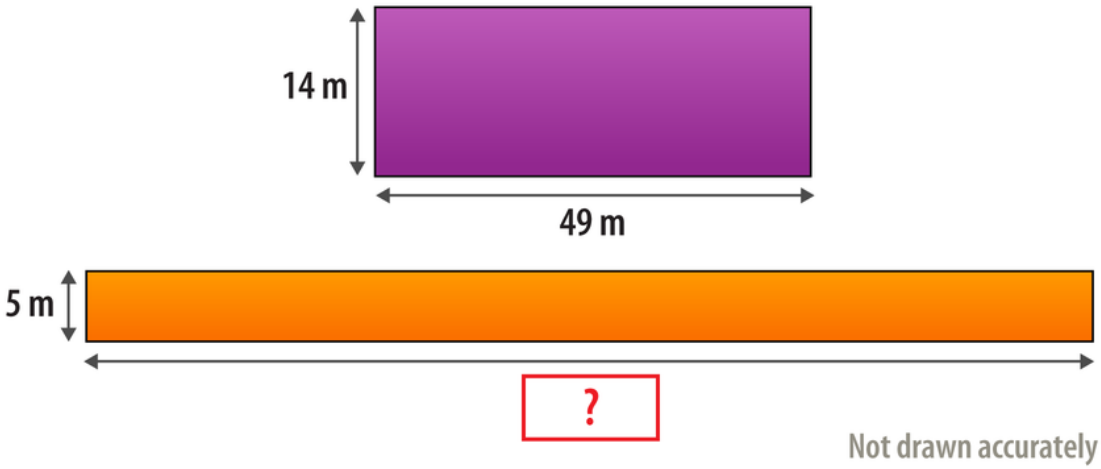
Using a written method for division B480

A school is organising a football tournament. 357 players want to play and each team needs exactly 11 players. How many players will be left without a team?

Copyright Sparx 2022

The two rectangles below have the **same area**.

Work out the unknown side length.
Give your answer in metres (m).



Divide 3.66 by 1.5

Give your answer as a decimal.

Copyright Sparx 2022

Other - Natural numbers, integers, rational and irrational numbers

Converting fractions to recurring decimals B301

Write $\frac{2}{11}$ as a recurring decimal using dot notation.

Select **all** of the fractions below that are equivalent to terminating decimals.

$\frac{9}{20}$ $\frac{1}{35}$ $\frac{14}{35}$ $\frac{1}{16}$

Converting recurring decimals to fractions B144

Calculate $0.\dot{2}\dot{3} + 0.\dot{2}$

Give your answer as a fraction in its lowest terms.

Put the values below into ascending order.

$\frac{1}{3}$ $\frac{5}{33}$ $0.\dot{1}\dot{2}$

Copyright Sparx 2022

Other - Bounds

Finding error intervals B224

A number, h, rounded to 2 significant figures is 0.072

Write down the error interval for h.

Finding error intervals for calculations B515

Jill buys a mobile phone that weighs 210 g to 2 significant figures.
She puts the phone inside a protective case that weighs 15.4 g to 1 decimal place.

Work out the smallest possible total weight, in grams (g), of the phone and case combined.

At the start of an experiment, some chemicals had a mass of 73 g, rounded to 2 significant figures.

During the experiment, the mass of the chemicals **decreased** by 8.2 g, rounded to 2 significant figures.

Calculate the lower and upper bounds of the mass of the chemicals at the end of the experiment.

Copyright Sparx 2022

Colin has 10 metal rods. Each rod is $90\ \mathrm{cm}$ long when rounded to the nearest centimetre (cm). He lays out the rods in a straight line, end to end.

What is the **smallest** possible **total** length, in cm, of the line of rods?

A formula connecting speed (s), distance (d) and time (t) is

$$s = \frac{d}{t}$$

$d = 190\ \mathrm{metres}$ to 2 significant figures
$t = 8.1\ \mathrm{seconds}$ to 2 significant figures

Calculate the lower and upper bounds of s.
Give your answers to 3 significant figures.

Copyright Sparx 2022