Edexcel - Foundation

Number

2022 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 83 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
Arithmetic	Four operations	U417, U478, U735, U127, U293, U453, U868, U976
	Negative number	U947, U742, U548
Fractions	Order fractions, decimals, percentages	U746, U594
	Fraction of an amount	U881, U916
	One amount as a fraction of another	U916
	Fraction arithmetic	U736, U793, U475, U544
	Equivalent fractions	U704
Properties	Place value	U435
	Multiples	U751
	Factors	U211, U529
	Lowest Common Multiple	U751, U250
	Product of prime factors	U739, U250
Powers and roots	Square root	U851
Standard form	Conversion	U330, U534
	Calculation	U264, U290
Approximation and Estimation	Rounding	U480, U298, U731, U965

Number	Topics	Sparx Topic Codes
Approximation and Estimation	Estimation	U225
	Error interval	U657
Other	Calculator use	U926

Arithmetic - Four operations

Adding and subtracting integers U417

a) **Estimate** the answer to $378 + 836$ by rounding each number to the nearest hundred.

b) Using the column method, calculate the **actual** answer.

c) Does your answer look sensible compared to your estimate?

Abigail thinks of a number.

When she adds 3625 to her number, she gets 9442.

What was her original number?

Adding and subtracting decimals U478

Estelle has a bunch of grapes that weighs $29.72\,\text{g}$ and a bag of oranges that weighs $734.2\,\text{g}$.

How much does the fruit weigh **in total**?

Hannah has $15.3\,\text{m}$ of rope. Mike cuts off $2.87\,\text{m}$.

How much rope is Hannah left with?

Multiplying and dividing with place value U735

Work out the number that should replace the question mark in the calculation below.

$$0.62 \times ? = 620$$

An IT company has $8.02\ \text{TB}$ of data, which is split equally between 100 computers.

How many terabytes (TB) of data are there on each computer?

What is 0.4×0.02?

Work out 8000×0.03

Using a written method to multiply integers U127

Multiply 264 by 36

Using a written method to multiply decimals U293

Calculate 33×2.4

Using a written method to divide integers U453

Calculate $345 \div 15$

$$15\overline{)345}$$

1	×	15	=	15
2	×	15	=	30
3	×	15	=	45
4	×	15	=	60
5	×	15	=	75
6	×	15	=	90
7	×	15	=	105
8	×	15	=	120
9	×	15	=	135
10	×	15	=	150

Callum sorts 46 T-shirts into groups of 4, but has some T-shirts left over.

How many T-shirts are left over?

Using a written method to divide with decimals U868

Dominic has $5.5\,\text{kg}$ of sugar. He divides the sugar equally into 4 piles.

Work out the mass, in kilograms (kg), of each pile.

Using the correct order of operations U976

Work out $3 \times (5 + 4 \times 2)$

Work out $50 \div 5 \times 2$

Work out $\frac{3 \times 5}{6 - 4 + 3}$

Arithmetic - Negative number

Ordering negative numbers U947

The table below shows the melting points of four different elements.

Write the elements in order according to their melting points, starting with the lowest.

Element	Melting point (°C)
Lithium	180
Neon	-249
Gallium	30
Krypton	-157

Adding and subtracting with negative numbers U742

Calculate $4 - (-3)$

The table below shows the temperatures in four cities on a day in February.
The temperature in Edinburgh on that day was $13\,^{\circ}\mathrm{C}$ higher than the temperature in Chicago.

Work out what the temperature was in Edinburgh.
Give your answer in degrees Celsius $(^{\circ}\mathrm{C})$.

City	Temperature (°C)
Miami	19
Dallas	8
Chicago	-6
Warsaw	-2

Multiplying and dividing with negative numbers **U548**

Work out -9×-2

Esther thinks of a number. She multiplies her number by 8 and gets an answer of -56.

What was Esther`s original number?

Fractions - Order fractions, decimals, percentages

Ordering fractions U746

Put these fractions into ascending order:

$\frac{2}{5}$, $\frac{6}{10}$, $\frac{7}{15}$

Ordering fractions, decimals and percentages U594

Kieran enters four events in an athletics competition. The probability of him winning each of the events is shown below.

Order the probabilities from least likely to most likely.

100 m	Long jump	Discus	Hurdles
			
0.46	$\frac{2}{5}$	23%	$\frac{3}{10}$

Fractions - Fraction of an amount

Finding fractions of amounts without a calculator U881

Lilly receives $£45$ on her birthday. She gives $\frac{4}{5}$ of this to charity.

How much does Lilly give to charity?
Give your answer in pounds $(£)$.

What is $\frac{4}{15} \times 2$?

Give your answer as a fraction in its simplest form.

Finding fractions of amounts with a calculator U916

Work out $\frac{4}{5}$ of 682

Give your answer as a decimal.

638 people were asked which season they prefer.

$\frac{6}{11}$ of those people said they prefer summer.

How many of the people who were asked said they prefer summer?

Fractions - One amount as a fraction of another

Finding fractions of amounts with a calculator U916

Work out $\frac{4}{5}$ of 682

Give your answer as a decimal.

638 people were asked which season they prefer.

$\frac{6}{11}$ of those people said they prefer summer.

How many of the people who were asked said they prefer summer?

Fractions - Fraction arithmetic

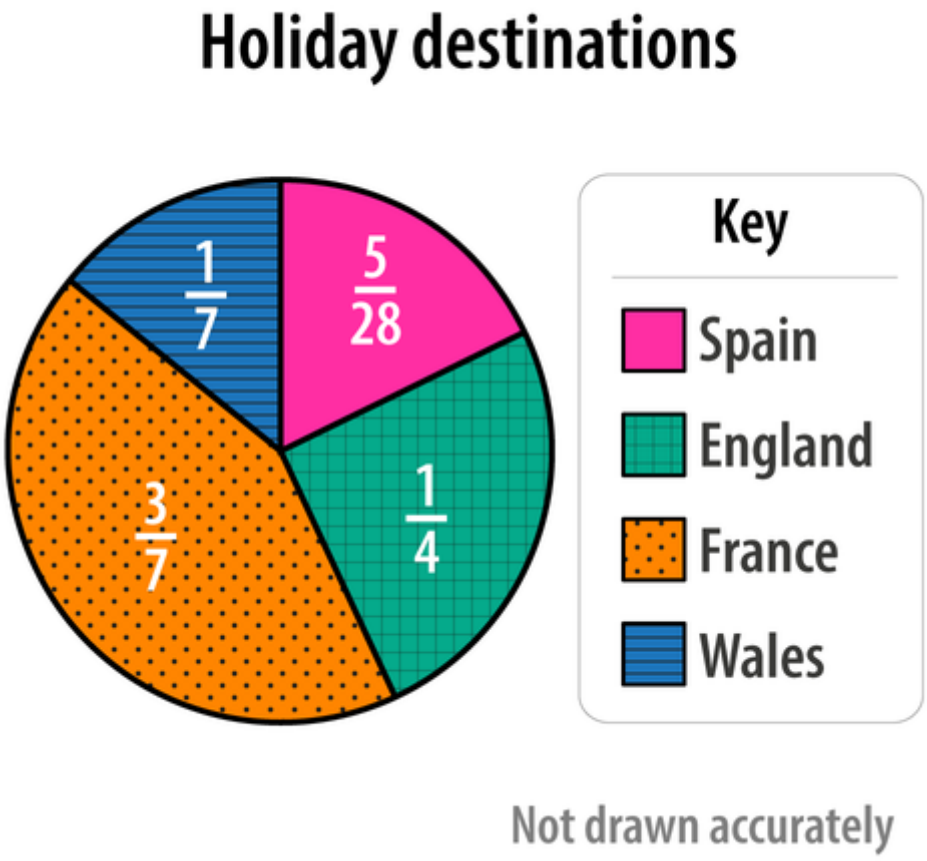
Adding and subtracting fractions U736

Work out $\frac{3}{25} + \frac{3}{50} + \frac{5}{100}$

Give your answer as a fraction in its simplest form.

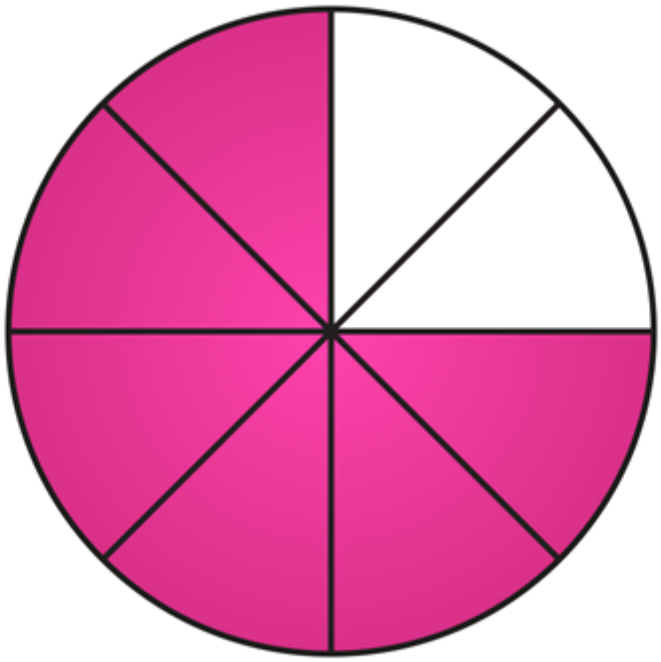
This pie chart shows the results of a survey about where people went on their most recent holiday.

What fraction of people went to either **England** or **France**?
Give your answer in its simplest form.



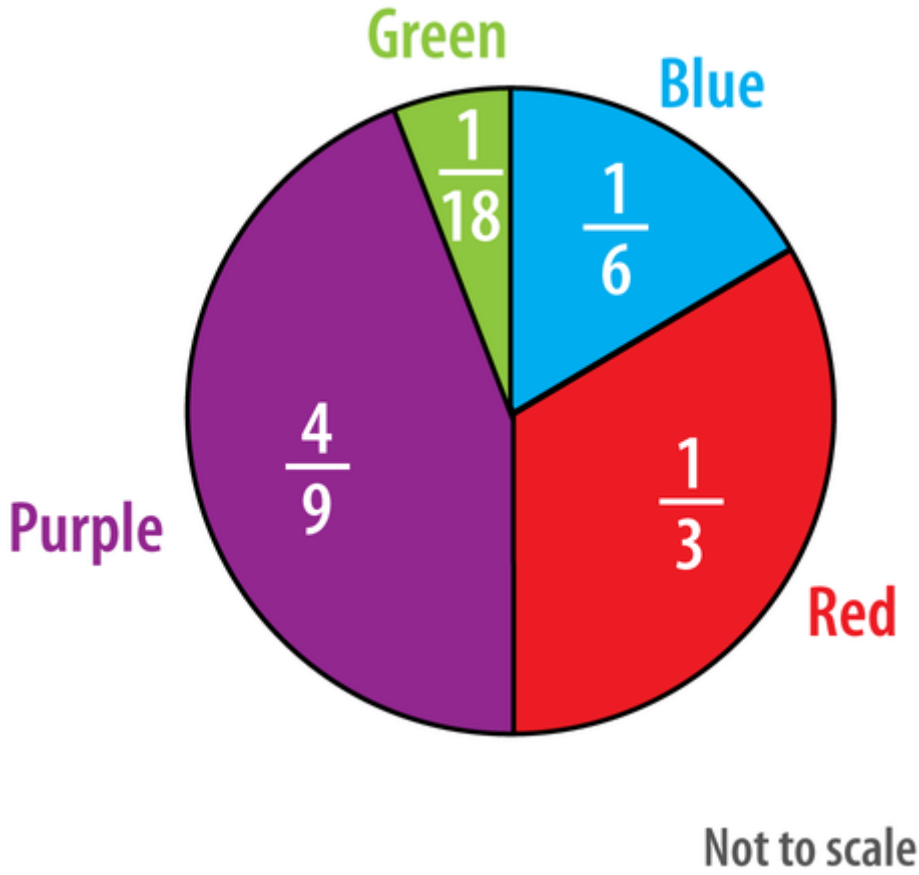
What fraction of this shape is shaded?

Give your answer in its lowest terms.



What fraction of this circle is shaded **red** or **purple**?

Give your answer in its simplest form.



Adding and subtracting mixed numbers **U793**

Work out $1\frac{3}{10} + 2\frac{2}{5}$.
Give your answer as a mixed number.

Multiplying fractions U475

Work out $3 \times \frac{4}{21}$

Give your answer as a whole number or as a fraction in its lowest terms.

Work out $\frac{5}{8} \times \frac{7}{15}$

Give your answer as a fraction in its lowest terms.

Dividing fractions U544

What is the **reciprocal** of $\frac{5}{6}$?

Give your answer in its simplest form.

What is $18 \div \frac{4}{5}$?

Give your answer as a fraction in its lowest terms.

Work out $\frac{4}{7} \div \frac{6}{11}$

Give your answer as a whole number or as a fraction in its simplest form.

Work out $\frac{8}{7} \div \frac{2}{21}$

Give your answer as a whole number or as a fraction in its lowest terms.

Fractions - Equivalent fractions

Finding equivalent fractions U704

What is the missing number in these equivalent fractions?

$$\frac{1}{4} = \frac{5}{?}$$

Work out the missing number in these equivalent fractions:

$$\frac{?}{5} = \frac{6}{10}$$

Properties - Place value

Understanding and ordering decimals U435

$$56.481 = 50 + 6 + 0.4 + 0.08 + 0.001$$

Use this example to work out the missing number in this sum:

$$35.149 = 30 + 5 + 0.1 + \_\_\_\_ + 0.009$$

What is the value of the digit 8 in the decimal number 6.08?

(Hint: in the decimal 4.7, the digit 7 has a value of 0.7)

Arrange these numbers in order of size from smallest to largest.

$13.07 \qquad 3.76 \qquad 3.8 \qquad 13.45$

Properties - Multiples

Finding the lowest common multiple (LCM) U751

What is the lowest common multiple (LCM) of 7 and 5?

Zara and Chester are building fences.

Zara uses fence panels that are each 6 feet long and Chester uses fence panels that are each 4 feet long.

If both of their fences are the same length, what is the **shortest** possible length that Zara`s fence could be?
Give your answer in feet.

Properties - Factors

Finding factors and using divisibility tests U211

Find **all** the factors of 20.

Work out all the factors of 16.

Finding the highest common factor (HCF) U529

Work out all the factors of 16.

Work out the highest common factor (HCF) of 8 and 20.

Marnie wants to split 12 pencils and 15 highlighters into boxes so that each box contains the same number of pencils and each box contains the same number of highlighters.

What is the **largest** number of boxes that Marnie could split the pencils and highlighters into?

Trains on two different routes stop at the same train station.

Trains on one route stop there every 9 minutes and trains on the other route stop there every 6 minutes.

Trains on both routes stop at the train station at midday. How many minutes later will it be when trains on both routes next stop there at the same time?

Properties - Lowest Common Multiple

Finding the lowest common multiple (LCM) U751

What is the lowest common multiple (LCM) of 7 and 5?

Zara and Chester are building fences.

Zara uses fence panels that are each 6 feet long and Chester uses fence panels that are each 4 feet long.

If both of their fences are the same length, what is the **shortest** possible length that Zara`s fence could be?
Give your answer in feet.

Finding the HCF and LCM using prime factor decomposition U250

Draw the prime factor trees for 30 and 130.

Use the prime factor trees to find the **highest common factor (HCF)** of 30 and 130.

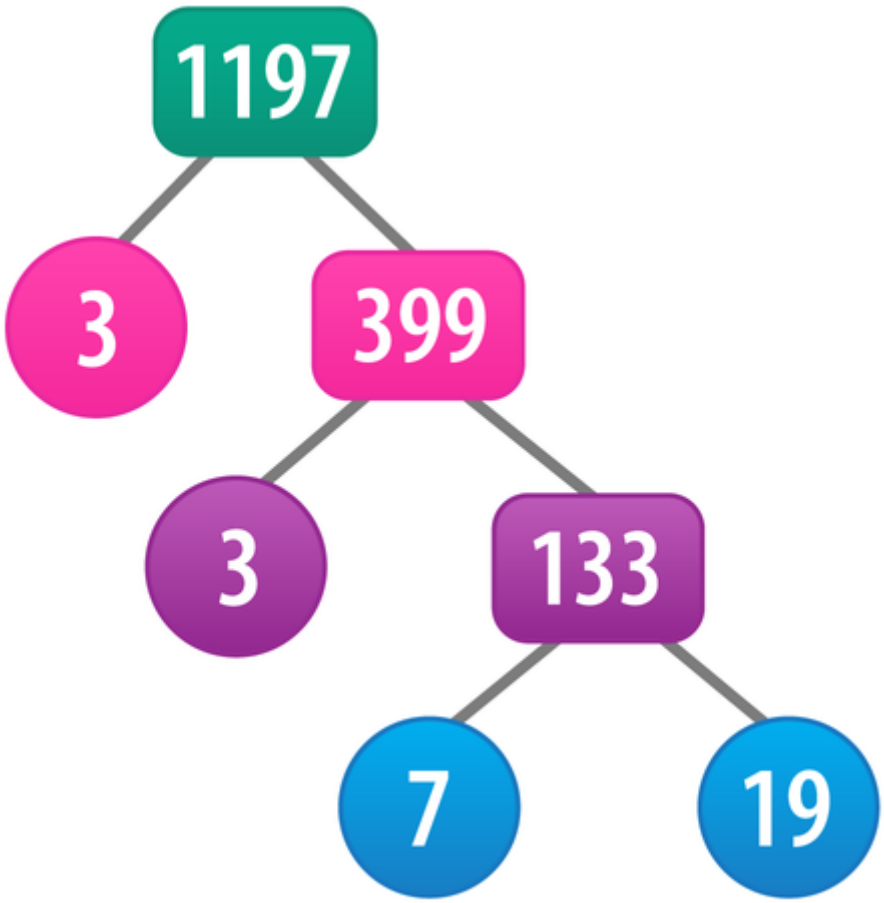
Draw the prime factor trees for 30 and 42.

Use the prime factor trees to find the **lowest common multiple (LCM)** of 30 and 42.

Properties - Product of prime factors

Prime factor decomposition U739

Use the prime factor tree below to write the prime decomposition of 1197 in index form.



Write the prime decomposition of 90 in index form.

Finding the HCF and LCM using prime factor decomposition U250

Draw the prime factor trees for 30 and 130.

Use the prime factor trees to find the **highest common factor (HCF)** of 30 and 130.

Draw the prime factor trees for 30 and 42.

Use the prime factor trees to find the **lowest common multiple (LCM)** of 30 and 42.

Powers and roots - Square root

Calculating with roots and powers U851

Find the value of $4 + 5^3$

Work out $\sqrt{36} + 2$

Standard form - Conversion

Using standard form with positive indices U330

Summer estimates that she takes 6.29×10^6 steps in a year.

What is this value written as an ordinary number?

Write $68{,}000$ in standard form.

Using standard form with negative indices **U534**

The fair spinner below is spun six times.
The probability that it lands on a multiple of three every time is approximately
1.37×10^{-3}

Convert this probability to an ordinary number.

Write $0.003\,47$ in standard form.

Standard form - Calculation

Multiplying and dividing numbers in standard form U264

Work out $(3 \times 10^4) \times (2 \times 10^9)$

Give your answer in standard index form.

Adding and subtracting numbers in standard form U290

Work out $(4 \times 10^6) + (2 \times 10^7)$

Give your answer in standard index form.

Approximation and Estimation - Rounding

Rounding integers U480

Round 5465 to the nearest 10.

Round 9976 to the nearest 100.

Two of these canals have the **same length** when rounded to the nearest 100 km.

What is their length when rounded?

Lengths of canals

Canal	Length (km)
Grand Union	208
Nara	364
Oxford	126
Marne-Rhine	313
Suez	193

Rounding decimals U298

What is 1.97 rounded to 1 decimal place?

Rounding integers using significant figures U731

Round the number shown on the calculator to 2 significant figures.

Rounding decimals using significant figures U965

Round 0.026 to 1 significant figure.

Approximation and Estimation - Estimation

Estimating calculations U225

Estimate $0.473 + 0.84$

Estimate the value of

$$6.94 \times 4.31$$

Approximation and Estimation - Error interval

Finding error intervals U657

My number has one decimal place.

It rounds to 3 when rounded to the nearest whole number.

What could my number be?

Sienna thinks of a number that has 2 decimal places.

Her number is 4.8 when rounded to 1 decimal place.

What is the **smallest** number that Sienna could be thinking of?

A number, x, rounded to the nearest integer is 29.

Write down the **error interval** for x.

A number, n, rounded to **one decimal place** is 4.7.

Complete the inequality to show the lower and upper bounds of n.

Other - Calculator use

Using a calculator U926

Use a calculator to find the sum of these amounts of money.
Give your answer in pounds $(£)$.

$£54.70 \qquad 67\text{p} \qquad £183$

Calculate

a) $-10{,}844 + 9751$

b) $771 - -4182$