

Edexcel

GCSE Maths (1 – 9)

Revision Pack

Non-calculator Questions Numbers

- Indices
- Surds
- Standard form
- Fractions
- HCF, LCM
- Sequences

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Q1.

(a) Work out $1\frac{3}{4} + 3\frac{1}{2}$

.....

(1)

(b) Work out $\frac{3}{7} \times \text{£}28$

£.....

(2)

(c) Estimate the value of 19.89×201.71

.....

(2)

Q2.

(a) Find the value of $\sqrt[3]{8 \times 10^6}$

.....
(1)

(b) Find the value of $144^{\frac{1}{2}} \times 64^{\frac{1}{3}}$

.....
(2)

(c) Solve $3^{2x} = \frac{1}{81}$

$x =$
(2)

Q3.

(a) Write down the value of $64^{\frac{1}{2}}$

.....
(1)

(b) Find the value of $\left(\frac{8}{125}\right)^{-\frac{2}{3}}$

.....
(2)

Q4.

ABD is a right angled triangle.

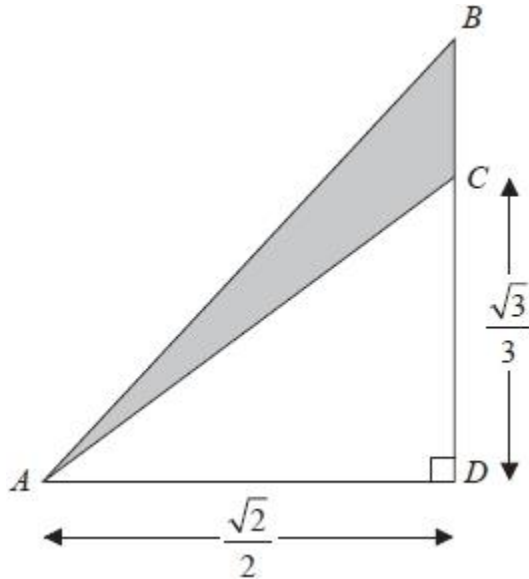


Diagram NOT
accurately drawn

All measurements are given in centimetres.

C is the point on BD such that $CD = \frac{\sqrt{3}}{3}$

$AD = BD = \frac{\sqrt{2}}{2}$

Work out the exact area, in cm^2 , of the shaded region.

..... cm^2

Q5.

Here is a trapezium.

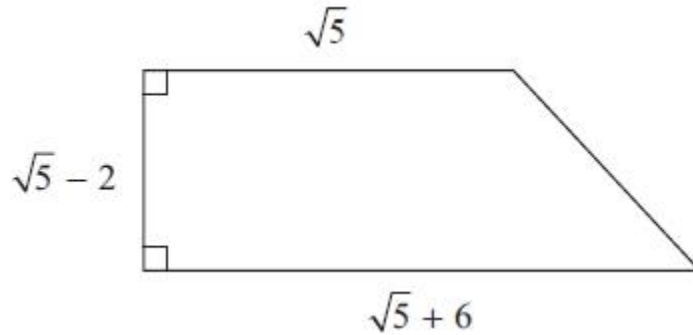


Diagram **NOT**
accurately drawn

All measurements shown are in centimetres.

Work out the area of the trapezium.

Give your answer in cm^2 in the form $a\sqrt{5} + b$ where a and b are integers.

..... cm^2

Q6.

(a) Write 8.2×10^5 as an ordinary number.

..... (1)

(b) Write 0.000 376 in standard form.

..... (1)

(c) Work out the value of $(2.3 \times 10^{12}) \div (4.6 \times 10^3)$
Give your answer in standard form.

..... (2)

Q7.

Express the recurring decimal $0.2\bar{8}1$ as a fraction in its simplest form.

.....

Q8.

There are 892 litres of oil in Mr Aston's oil tank.
He uses 18.7 litres of oil each day.

Estimate the number of days it will take him to use all the oil in the tank.

.....

Q9.

Work out an estimate for the value of $\frac{89.3 \times 0.51}{4.8}$

.....

Q10.

Expand $(1 + \sqrt{2})(3 - \sqrt{2})$

Give your answer in the form $a + b\sqrt{2}$ where a and b are integers.

.....

Q11.

Express the recurring decimal $0.7\dot{5}\dot{0}$ as a fraction.

.....

Q12.

(a) Express $5\sqrt{27}$ in the form $n\sqrt{3}$, where n is a positive integer.

..... (2)

(b) Rationalise the denominator of $\frac{21}{\sqrt{3}}$

..... (2)

Q13.

* The diagram shows a triangle DEF inside a rectangle $ABCD$.

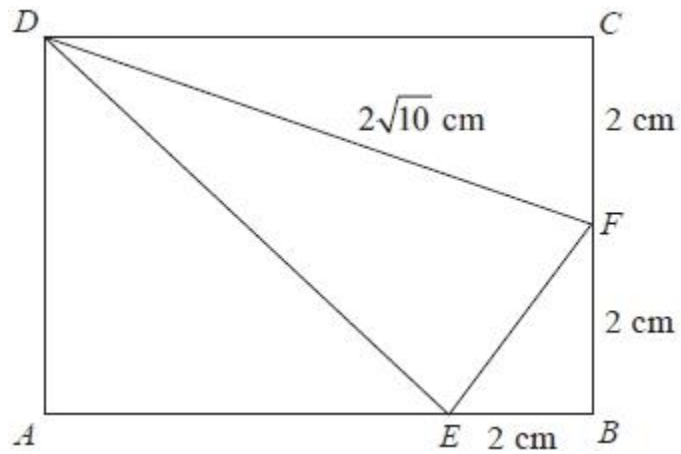


Diagram **NOT**
accurately drawn

Show that the area of triangle DEF is 8 cm^2 .
You must show all your working.

Q14.

Here are the first four terms of an arithmetic sequence.

11 17 23 29

(a) Find, in terms of n , an expression for the n th term of this arithmetic sequence.

.....
(2)

(b) Is 121 a term of this arithmetic sequence?
You must explain your answer.

.....
.....
.....

(2)

Q15.

(a) Express 180 as a product of its prime factors.

.....
(3)

Martin thinks of two numbers.

He says,

"The Highest Common Factor (HCF) of my two numbers is 6
The Lowest Common Multiple (LCM) of my two numbers is a multiple of 15"

(b) Write down **two** possible numbers that Martin is thinking of.

..... ,
(2)

Q16.

(a) Write down the reciprocal of 5

.....
(1)

(b) Evaluate 3^{-2}

.....
(1)

(c) Calculate $9 \times 10^4 \times 3 \times 10^3$

Give your answer in standard form.

.....
(2)

Q17.

Here are the first 5 terms of an arithmetic sequence.

6 10 14 18 22

(a) Write down an expression, in terms of n , for the n th term of this sequence.

.....
(2)

The n th term of a different sequence is $2n^2 - 4$

(b) Find the 3rd term of this sequence.

.....
(2)

Q18.

(a) Work out $1\frac{1}{5} \times 2\frac{1}{3}$

Give your answer as a mixed number in its simplest form.

.....
(3)

(b) Work out $2\frac{7}{15} - 1\frac{2}{3}$

.....
(3)

Q19.

Rationalise the denominator of $\frac{10}{\sqrt{5}}$
Give your answer in its simplest form.

.....

Q20.

(a) Rationalise the denominator of $\frac{15}{\sqrt{5}}$

..... (2)

$(1 + \sqrt{3})^2$ can be written in the form $a + b\sqrt{3}$, where a and b are integers.

(b) Work out the value of a and the value of b .

$a = \dots\dots\dots$

$b = \dots\dots\dots$

(2)

Q21.

Rationalise the denominator of $\frac{(6 - \sqrt{5})(6 + \sqrt{5})}{\sqrt{31}}$

Give your answer in its simplest form.

.....

Q22.

Rationalise the denominator $\frac{3}{\sqrt{7}}$

.....

Q23.

Show that $\frac{1}{1 + \frac{1}{\sqrt{2}}}$ can be written as $2 - \sqrt{2}$

Q24.

Show that $\frac{(4 - \sqrt{3})(4 + \sqrt{3})}{\sqrt{13}}$ simplifies to $\sqrt{13}$

Q25.

(a) Rationalise the denominator of $\frac{12}{\sqrt{3}}$

.....
(2)

(b) Work out the value of $(\sqrt{2} + \sqrt{8})^2$

.....
(2)

Q26.

(a) Rationalise the denominator of $\frac{5}{\sqrt{2}}$

.....
(2)

(b) Expand and simplify $(2 + \sqrt{3})^2 - (2 - \sqrt{3})^2$

.....
(2)

Q27.

Rationalise the denominator of $\frac{(4 + \sqrt{2})(4 - \sqrt{2})}{\sqrt{7}}$

Give your answer in its simplest form.

.....

Q28.

$\frac{\sqrt{3}}{5} + \frac{2}{\sqrt{3}} = a\sqrt{3}$, where a is a fraction

Find the value of a .

.....

Q29.

$x = 0.0\dot{4}\dot{5}$

Prove algebraically that x can be written as $\frac{1}{22}$

Q30.

(a) Write down the value of $27^{1/3}$

..... (1)

(b) Find the value of $25^{-1/2}$

..... (2)

Q31.

(a) Find the value of 2^{-3}

..... (1)

$5\sqrt{5}$ can be written in the form 5^k

(b) Find the value of k .

..... (1)

(c) Work out the value of $(\sqrt{12} - \sqrt{3})^2$

..... (2)

Q32.

(a) Express 48 as a product of its prime factors.

..... (2)

Buses to Exeter leave a bus station every 20 minutes.
Buses to Plymouth leave the bus station every 16 minutes.
A bus to Exeter and a bus to Plymouth both leave the bus station at 8am.

(b) When will buses to Exeter and to Plymouth next leave the bus station at the same time?

..... (3)

Q33.

Express the recurring decimal $0.1\dot{5}$ as a fraction.
Give your answer in its simplest form.

.....

Q34.

Express $0.2\dot{5}$ as a fraction in its simplest form.

.....

Q35.

Write these numbers in order of size.
Start with the smallest number.

$$4.2 \times 10^5 \quad 13 \times 10^4 \quad 30 \times 10^{-6} \quad -2.5 \times 10^{-4} \quad 0.0052 \times 10^6$$

.....