Chhetri Academy

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GCSE MATHS

Number

Edexcel 1MA1 | Subtopic collection Topic 05

Indices and roots

Foundation tier

Past paper question booklet

34	2012-2025	Foundation
question groups	available papers	tier

Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

16 (a) Work out 3^4

.....

(1)

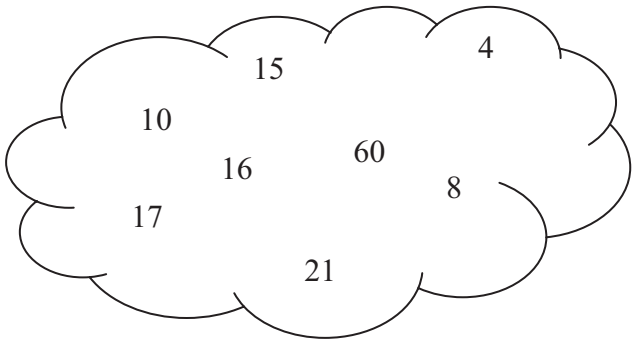
(b) Write down the cube root of 64

.....

(1)

(Total for Question 16 is 2 marks)

3



From the numbers in the cloud,

(a) write down a square number,

.....

(1)

(b) write down a multiple of 7,

.....

(1)

(c) write down a factor of 30

.....

(1)

(Total for Question 3 is 3 marks)

10 Here is a list of numbers.

5 15 30 50 60 90 100 125

From the numbers in the list, write down

(i) two different numbers that add up to an even number

..... , ...

(ii) a multiple of 20

.....

(iii) a factor of 45

.....

(iv) a cube number

.....

(Total for Question 10 is 4 marks)

17 (a) (i) Work out $3.2^2 + \sqrt{7.5}$

Write down all the figures from your calculator display.

.....

(ii) Write your answer to (a)(i) correct to 2 significant figures.

.....

(2)

(b) Work out the value of 10^5

.....

(1)

(Total for Question 17 is 3 marks)

16 (a) Work out $2 \times (8 - 3)$

.....

(1)

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

.....

(2)

(c) Find the value of 5^3

.....

(1)

(d) Find the square root of 16

.....

(1)

(Total for Question 16 is 5 marks)

11 Here is a list of numbers.

11 12 13 14 15 16 17 18 19 20

From the list, write down

(a) a factor of 24

.....

(1)

(b) a multiple of 7

.....

(1)

(c) a square number

.....

(1)

(Total for Question 11 is 3 marks)

3 Here is a list of numbers.

2	3	5	8	10	16	21	24

From the numbers in the list,

(a) write down an odd number

.....

(1)

(b) write down the square number

.....

(1)

(c) write down the number which is a multiple of 6

.....

(1)

(Total for Question 3 is 3 marks)

5 (a) Find the square root of 2.89

.....

(1)

(b) Work out 6.4×8.9

.....

(1)

(c) Find the value of 2.7^3

.....

(1)

(Total for Question 5 is 3 marks)

11 Stephanie thinks of a positive number.
She squares the number and adds 7
The result is 43

What number did Stephanie think of?

.....

(Total for Question 11 is 3 marks)

18 Here is a list of numbers.

1 2 4 5 8 9 12 15 16

(a) From the list, write down a prime number.

.....

(1)

(b) From the list, write down **three** square numbers that add to make 21

..... , ... , ...

(2)

(Total for Question 18 is 3 marks)

15 Liz's age is a square number.
Howard's age is a cube number.
Howard is 2 years older than Liz.

How old are Liz and Howard?

Liz .....

Howard .....

(Total for Question 15 is 2 marks)

9 (a) Find the value of $\sqrt{7.29}$

.....

(1)

(b) Find the value of 21^3

.....

(1)

(Total for Question 9 is 2 marks)

9 This table gives information about five sewing machines.

Type	Number of different stitches	Power of motor (watts)	Needle threader	Cost (£)
Fashion Wise	80	65	Yes	295
Sure Stitch	21	85	Yes	190
Compact	25	51	No	160
Classic	40	30	No	230
Home Style	23	105	Yes	250

(a) How many of these machines have a needle threader?

.....

(1)

(b) Which type of machine has the motor with the greatest power?

.....

(1)

Miss Searle wants to buy 16 sewing machines of the same type.
She must not spend more than £3700

(c) Which types of sewing machine could she choose to buy?
You must show your working.

.....

(2)

(Total for Question 9 is 4 marks)

2 The table shows information about seven microwaves.

Make	Power (watts)	Capacity (litres)	Cost (£)	Auto programmes
Ronald Higgs	800	20	74.99	8
Tornado	700	13	129.99	1
Shield	900	25	159.99	10
Style Master	900	28	199.99	4
Superstar	800	20	79.99	9
Kimble	900	30	109.99	10
Easy Cook	700	17	39.99	1

(a) Which microwave costs the most?

.....

(1)

(b) Write down the power of the microwave that has a capacity of 13 litres.

.....watts

(1)

(c) How many of these microwaves have more than 5 auto programmes and cost less than £120?

.....

(1)

(Total for Question 2 is 3 marks)

Question 15

June 2017 | 1MA1/2F | Original Q8

8 Here is a list of numbers.

21 22 23 24 25 26 27 28 29

(a) From the numbers in the list, write down a square number.

.....

(1)

(b) From the numbers in the list, write down a number that is a multiple of **both** 4 and 6

.....

(1)

(c) Write down all the prime numbers in the list.

.....

(1)

(Total for Question 8 is 3 marks)

Question 16

November 2017 | 1MA1/3F | Original Q9

9 Nidah writes down two different prime numbers.

She adds together her two numbers.
Her answer is a square number less than 30

Find two prime numbers that Nidah could have written down.

..... , ...

(Total for Question 9 is 2 marks)

8 (a) Find the value of $\sqrt{1.44 \times 3.61}$

.....

(1)

(b) Find the value of $(3.54 - 0.96)^2 - 4.096$

.....

(2)

(Total for Question 8 is 3 marks)

Question 18

November 2018 | 1MA1/2F | Original Q2

2 Write down a square number that is also an odd number.

.....

(Total for Question 2 is 1 mark)

Question 19

4 Work out the cube root of 64

.....

(Total for Question 4 is 1 mark)

Question 20

3 Find $\sqrt{1.44}$

.....

(Total for Question 3 is 1 mark)

7 There are four types of counter in a bag.

The table shows the number of each type of counter in the bag.

Type of counter	red circle	green circle	red square	green square
Number of counters	16	26	11	7

There are more green counters than red counters.
How many more?

.....

(Total for Question 7 is 2 marks)

Question 22

4 Find the value of $\sqrt{17.64}$

.....

(Total for Question 4 is 1 mark)

Question 23

5 Find the value of 6^5

.....

(Total for Question 5 is 1 mark)

5 Here is a list of numbers.

3 4 9 18 27 30 36

From the numbers in the list, write down a cube number.

.....

(Total for Question 5 is 1 mark)

6 Here is a list of whole numbers from 21 to 30

21 22 23 24 25 26 27 28 29 30

(a) From the list, write down a square number.

.....

(1)

(b) From the list, write down a multiple of 8

.....

(1)

(Total for Question 6 is 2 marks)

Question 26

5 Find $\sqrt{1.69}$

.....

(Total for Question 5 is 1 mark)

21 Simplify $(2^{-5} \times 2^{8})^{2}$

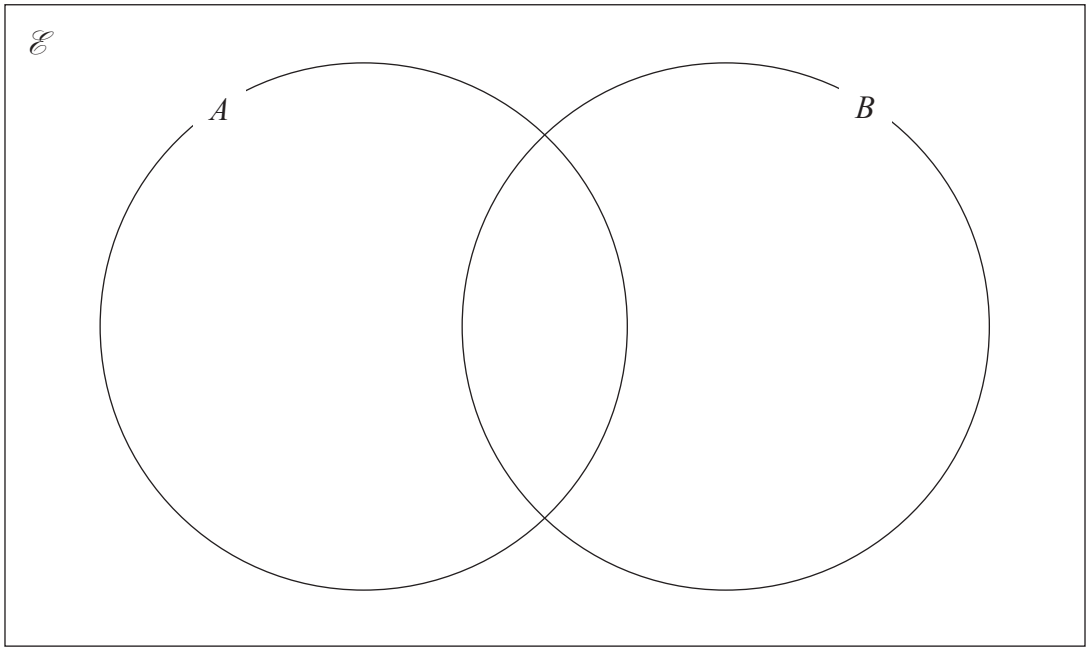
Give your answer as a power of 2

.....

(Total for Question 21 is 2 marks)

24 $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
$A = \{\text{odd numbers}\}$
$B = \{\text{square numbers}\}$

(a) Complete the Venn diagram for this information.



(3)

A number is chosen at random from the universal set $\mathscr{E}$

(b) Find the probability that this number is in the set B'

.....

(2)

(Total for Question 24 is 5 marks)

Question 29

November 2023 | 1MA1/2F | Original Q4

4 Write down a square number that is between 10 and 50

.....

(Total for Question 4 is 1 mark)

Question 30

5 Find the square root of 64

.....

(Total for Question 5 is 1 mark)

8 Junaid says that 20 is a square number because $10^2 = 20$

(a) Is Junaid correct?
Give a reason for your answer.

.....

.....

.....

(1)

Chloe says,

"When you divide an even number by an even number the answer is always an even number."

(b) Write down an example to show that Chloe is wrong.

.....

.....

.....

(1)

(Total for Question 8 is 2 marks)

5 Find the value of $\sqrt{2.25}$

.....

(Total for Question 5 is 1 mark)

2 Find $\sqrt{5.76}$

.....

(Total for Question 2 is 1 mark)

10 Jason says,

"The cube root of 27 is 9 because 27 divided by 3 is 9"

Is Jason correct?
You must give a reason for your answer.

.....

.....

.....

(Total for Question 10 is 1 mark)