Questions

Q1.

Write down an example to show that each of the following two statements is **not** correct.

(a) The factors of an even number are always even.

.....

(1)

(b) All the digits in odd numbers are odd.

.....

(1)

(Total for question = 2 marks)

(**Q11 1MA1/1F, June 2018**)

Q2.

Express 56 as the product of its prime factors.

.....

(Total for question = 2 marks)

(**Q02 1MA1/1H, June 2017**)

Q3.

Write down two factors of 12

..... , ...

(Total for question = 1 mark)

(**Q01 1MA1/3F, Nov 2019**)

Q4.

Write down a factor of 60 that is between 8 and 14

.....

(Total for question = 1 mark)

(**Q04 1MA1/1F, Nov 2022**)

Q5.

Write down **three** different factors of 20

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

(Total for question = 2 marks)

(**Q07 1MA1/1F, June 2023**)

Q6.

Find the highest common factor (HCF) of 63 and 105

.....

(Total for question = 2 marks)

(**Q22 1MA1/3F, June 2024**)

Q7.

Write down **two** factors of 16

.....

(Total for question = 1 mark)

(**Q03 1MA1/3F, Nov 2024**)

Q8.

Here is a list of numbers.

1 2 5 6 12

From the list, write down

(i) a multiple of 4

.....

(ii) a prime number

.....

(Total for question is 2 marks)

(**Q04 1MA1/3F/S1, Specimen papers**)

Q9.

Here is a list of eight numbers

4 5 4 25 29 30 33 39 40

From the list, write down

(i) a factor of 20

. . . . . .

(ii) a multiple of 10

. . . . . .

(iii) the prime number that is greater than 15

. . . . . .

(Total for Question is 3 marks)

(**Q04 5MB2F/01, Nov 2010**)

Q10.

Prove that

$(2n + 3)^2 - (2n - 3)^2$ is a multiple of 8

for all positive integer values of n.

(Total for Question is 3 marks)

(**Q19 1MA0/2H, June 2012**)

Q11.

Write down the first even multiple of 7

.....

(Total for question = 1 mark)

(**Q05 1MA1/1F, June 2018**)

Q12.

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 is 4 marks)

(**Q07 1MA0/2F, Mar 2013**)

Q13.

Write down an example to show that each of the following statements is **not** correct.

(a) The sum of an odd number and an even number is even.

.....

.....

(1)

(b) The product of two prime numbers is never even.

.....

.....

(1)

(c) When you square an integer the result is always an even integer.

.....

.....

(1)

(Total for question = 3 marks)

(**Q08 1MA1/1F/M2, Specimen papers**)

Q14.

Find the highest common factor (HCF) of 32, 48 and 72

.....

(Total for question = 2 marks)

(**Q21 1MA1/2F/S2, Specimen papers**)

Q15.

Find the Highest Common Factor (HCF) of 24 and 60

.....

(Total for question = 2 marks)

(**Q16 1MA1/2F/N, Specimen papers**)

Q16.

(a) Find the lowest common multiple (LCM) of 40 and 56

.....

(2)

$A = 2^3 \times 3 \times 5$ $B = 2^2 \times 3 \times 5^2$

(b) Write down the highest common factor (HCF) of A and B.

.....

(1)

(Total for question = 3 marks)

(**Q02 1MA1/2H, June 2018**)

Q17.

Tom and Amy set the alarms on their phones to sound at 6.45 am.

Both alarms sound together at 6.45 am.
Tom's alarm then sounds every 9 minutes.
Amy's alarm then sounds every 12 minutes.

At what time will both alarms next sound together?

.....

(Total for question = 3 marks)

(**Q07 5MB2H/01, Nov 2015**)

Q18.

Write down a multiple of 6 that is between 40 and 50

.....

(Total for question = 1 mark)

(**Q02 1MA1/2F, Nov 2017**)

Q19.

Here is a list of numbers.

4 5 30 31 39 49 72 100

From the list, write down

(i) a multiple of 8

.....

(ii) a factor of 50

.....

(iii) a prime number

.....

(Total for question = 3 marks)

(**Q13 1MA0/2F, Nov 2016**)

Q20.

Express 180 as a product of its prime factors.

.....

(Total for Question is 3 marks)

(**Q23 1MA0/1F, Nov 2014**)

Q21.

Write 525 as a product of its prime factors.

.....

(Total for Question is 3 marks)

(**Q04 1MA0/1H, June 2013**)

Q22.

Write 36 as a product of its prime factors.

.....

(Total for question = 2 marks)

(**Q01 1MA1/1H, Nov 2017**)

Q23.

(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)

(Total for Question is 5 marks)

(**Q12 1MA0/1H, Nov 2014**)

Q24.

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 = 3 marks)

(**Q08 1MA1/2F, June 2017**)

Q25.

A and *B* are numbers such that

$A = 2^2 \times 3^4 \times 7$
$B = 3^2 \times 7^2$

(a) Find the highest common factor (HCF) of *A* and *B*.

.....

(1)

(b) Find the lowest common multiple (LCM) of *A* and *B*.

.....

(2)

(Total for question = 3 marks)

(**Q24 1MA1/3F, June 2023**)

Q26.

Daisy thinks of a whole number.
She multiplies the number by 3
Daisy's answer is 34

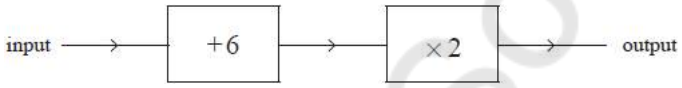
(a) Explain how you know Daisy's answer is wrong.

.....

.....

(1)

Here is a number machine.



Abbie says that when the output is 36 the input is 60

Here is her working.

$36 - 6 = 30$
$30 \times 2 = 60$

Abbie is wrong.

(b) Explain what she has done wrong.

.....

.....

(2)

(Total for question = 3 marks)

(**Q11 1MA1/2F/M1, Specimen papers**)

Q27.

Adam says,

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

(a) Write down an example to show Adam is wrong.

.....

(1)

Betty says,

"When you multiply two prime numbers together the answer is always an odd number."

(b) Betty is wrong.
Explain why.

.....

.....

(2)

(Total for question = 3 marks)

(**Q11 1MA1/2F/N, Specimen papers**)

Q28.

Steve says,

"There are more prime numbers between 20 and 30
than there are between 10 and 20"

Is Steve right?
You must show how you get your answer.

(Total for question = 2 marks)

(**Q07 1MA1/2F, Nov 2017**)

Q29.

Write down the multiple of 7 that is between 30 and 40

.....

(Total for question = 1 mark)

(**Q04 1MA1/2F, June 2024**)

Q30.

Ali is planning a party.

He wants to buy some cakes and some sausage rolls.

The cakes are sold in boxes.
There are 12 cakes in each box.
Each box of cakes costs £2.50

The sausage rolls are sold in packs.
There are 8 sausage rolls in each pack.
Each pack of sausage rolls costs £1.20

Ali wants to buy more than 60 cakes and more than 60 sausage rolls.
He wants to buy exactly the same number of cakes as sausage rolls.

What is the least amount of money Ali will have to pay?

£.....

(Total for Question is 5 marks)

(**Q14 1MA0/2H, June 2014**)

Q31.

(a) Write 156 as a product of its prime factors.

.....

(2)

(b) Find the highest common factor (HCF) of 156 and 130

.....

(2)

(Total for question = 4 marks)

(**Q03 1MA1/1H, Nov 2023**)

Q32.

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 = 3 marks)

(**Q18 1MA0/2F, June 2015**)

Q33.

There are some small cubes and some large cubes in a bag.
The cubes are red or the cubes are yellow.

The ratio of the number of small cubes to the number of large cubes is 4 : 7

The ratio of the number of red cubes to the number of yellow cubes is 3 : 5

(a) Explain why the least possible number of cubes in the bag is 88

.....

.....

.....

(1)

All the small cubes are yellow.

(b) Work out the least possible number of large yellow cubes in the bag.

.....

(3)

(Total for question = 4 marks)

(**Q17 1MA1/2H, June 2019**)

Q34.

Write down a 3 digit number that is a multiple of 5

.....

(Total for question = 1 mark)

(**Q04 1MA1/2F, June 2022**)

Q35.

Here is a list of numbers.

20 40 60 80 100

One of these numbers is a multiple of 25

Which number?

.....

(Total for question = 1 mark)

(**Q05 1MA1/2F, June 2023**)

Q36.

Write 60 as a product of its prime factors.

.....

(Total for question = 2 marks)

(**Q02 1MA1/2H, June 2023**)

Q37.

A and *B* are numbers such that

$$A = 2^2 \times 3^4 \times 7$$

$$B = 3^2 \times 7^2$$

(a) Find the highest common factor (HCF) of *A* and *B*.

.....

(1)

(b) Find the lowest common multiple (LCM) of *A* and *B*.

.....

(2)

(Total for question = 3 marks)

(**Q05 1MA1/3H, June 2023**)

Q38.

(a) Write 90 as a product of its prime factors.

.....

(2)

$A = 2^2 \times 3$

$B = 2 \times 3^2$

(b) Write down the lowest common multiple (LCM) of A and B.

.....

(1)

(Total for question = 3 marks)

(**Q21 1MA1/2F, June 2024**)

Q39.

Here is a list of numbers.

3 5 7 12 15 18 20

From the list, write down a factor of 10

.....

(Total for question = 1 mark)

(**Q03 1MA1/1F, Nov 2018**)

Q40.

Write down two prime numbers that have a sum of 32

..... , ...

(Total for question = 2 marks)

(**Q10 1MA1/1F, Nov 2018**)

Q41.

Bert has 100 cards.
There is a whole number from 1 to 100 on each card.
No cards have the same number.

Bert puts a star on every card that has a multiple of 3 on it.
He puts a circle on every card that has a multiple of 5 on it.

Work out how many cards have both a star and a circle on them.

.....

(Total for question = 3 marks)

(**Q15 1MA1/3F, Nov 2018**)

Q42.

Find the highest common factor (HCF) of 72 and 90

.....

(Total for question = 2 marks)

(**Q24 1MA1/1F, June 2019**)

Q43.

Here is a list of five numbers.

98^{53} 98^{64} 98^{73} 98^{88} 98^{91}

Find the lowest common multiple of these five numbers.

.....

(Total for question = 1 mark)

(**Q20 1MA1/3H, Nov 2020**)

Q44.

(a) Write 84 as a product of its prime factors.

.....

(2)

(b) Find the lowest common multiple (LCM) of 60 and 84

.....

(2)

(Total for question = 4 marks)

(**Q01 1MA1/2H, Nov 2020**)

Q45.

Lucy uses a code to open a lock.

The code is a letter followed by a 2-digit number.

The letter is L or U.
The number is a prime number between 20 and 30

Write down all the possibilities for Lucy's code.

.....

.....

.....

(Total for question = 2 marks)

(**Q12 1MA1/2F, Nov 2020**)

Q46.

(a) Find the Highest Common Factor (HCF) of 60 and 84

.....

(2)

(b) Find the Lowest Common Multiple (LCM) of 24 and 40

.....

(2)

(Total for question = 4 marks)

(**Q02 1MA1/2H, Nov 2021**)

Q47.

Jim says,

"If you add any two different prime numbers the answer will never be a square number."

Jim is wrong.
Explain why.

.....

.....

(Total for question = 2 marks)

(**Q06 1MA1/3F/M1, Specimen papers**)

Q48.

Shelley sells books.

On Saturday she is going to give a free book mark and a free dust cover with each book she sells.
All the books are the same size.

Shelley needs to buy the book marks and the dust covers.

Book marks come in boxes.
Each box contains 24 book marks.

Dust covers come in packs.
Each pack contains 36 dust covers.

Shelley wants to have enough book marks and dust covers for 250 books.

She buys exactly the same number of book marks and dust covers.

Work out the number of boxes of book marks and the number of packs of dust covers she buys.
You must show all your working.

..... boxes of book marks

..... packs of dust covers

(Total for question = 4 marks)

(**Q17 5MB2F/01, June 2016**)

Q49.

Margaret is thinking of a number.
She says,

"My number is odd. It is a factor of 36 and a multiple of 3"

There are two possible numbers Margaret can be thinking of.

Write down these two numbers.

....

(Total for question = 3 marks)

(**Q06 1MA1/2F, June 2018**)

Q50.

Jan writes down

one multiple of 9
and two different factors of 40

Jan adds together her three numbers.
Her answer is greater than 20 but less than 30

Find three numbers that Jan could have written down.

.....

(Total for question = 3 marks)

(**Q06 1MA1/2F/N, Specimen papers**)

Q51.

Michael writes down 4 different factors of 60
He adds the 4 factors together.
He gets a number greater than 20 but less than 35
What 4 factors could Michael have written down?

.....

(Total for Question is 3 marks)

(**Q13 1MA0_2F, June 2012**)

Q52.

Write down three different factors of 18 that add together to give a prime number.

....

(Total for question = 2 marks)

(**Q07 1MA1/3F/S2, Specimen papers**)

Q53.

Matt and Dan cycle around a cycle track.

Each lap Matt cycles takes him 50 seconds.
Each lap Dan cycles takes him 80 seconds.

Dan and Matt start cycling at the same time at the start line.

Work out how many laps they will each have cycled when they are next at the start line together.

.....
.....

(Total for Question is 3 marks)

(**Q08 1MA0/1H, June 2013**)

Q54.

Buses to Acton leave a bus station every 24 minutes.
Buses to Barton leave the same bus station every 20 minutes.

A bus to Acton and a bus to Barton both leave the bus station at 9 00 am.

When will a bus to Acton and a bus to Barton next leave the bus station at the same time?

. . . . . .

(Total for Question is 3 marks)

(**Q19 1MA0/1F, June 2012**)

Q55.

Rita is going to make some cheeseburgers for a party.

She buys some packets of cheese slices and some boxes of burgers.

There are 20 cheese slices in each packet.

There are 12 burgers in each box.

Rita buys exactly the same number of cheese slices and burgers.

(i) How many packets of cheese slices and how many boxes of burgers does she buy?

..... packets of cheese slices

..... boxes of burgers

Rita wants to put one cheese slice and one burger into each bread roll.

She wants to use all the cheese slices and all the burgers.

(ii) How many bread rolls does Rita need?

..... bread rolls

(Total for Question is 4 marks)

(**Q07 1MA0/1H, Nov 2013**)

Q56.

Miss Paisley is organising games for the children in her class.
She is going to put the children into teams.

If she puts the children into teams of 4, there will be 2 children left out.
If she puts the children into teams of 5, there will be 3 children left out.

Work out the smallest possible number of children in Miss Paisley's class.

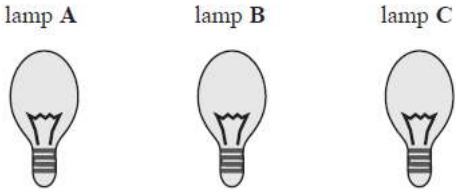
.....

(Total for question = 3 marks)

(**Q14 5MB2F/01, Nov 2016**)

Q57.

Here are three lamps.



Lamp **A** flashes every 20 seconds.
Lamp **B** flashes every 45 seconds.
Lamp **C** flashes every 120 seconds.

The three lamps start flashing at the same time.

How many times in one hour will the three lamps flash at the same time?

.....

(Total for question = 3 marks)

(**Q10 1MA1/3H, June 2018**)

Q58.

Here is a list of six numbers.

1 3 6 9 12 24

Which number in the list is **not** a factor of 24?

.....

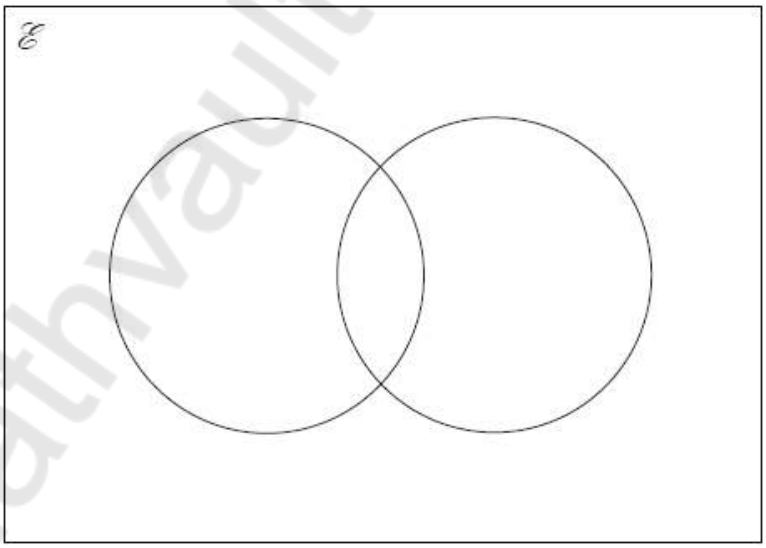
(Total for question is 1 mark)

(**Q02 1MA1/2F/S1, Specimen papers**)

Q59.

$\mathscr{E}$ = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13
A = multiples of 3
B = even numbers

Complete the Venn diagram for this information.



(Total for question = 4 marks)

(**Q20 1MA1/3F, Nov 2019**)

Q60.

Write down the 20th odd number.

.....

(Total for question = 1 mark)

(**Q03 1MA1/1F/N, Specimen papers**)

Q61.

Write down an even cube number.

.....

(Total for question = 1 mark)

(**Q02 1MA1/2F/M2, Specimen papers**)