IGCSE · Cambridge (CIE) · Maths

1 hour 22 questions

Non-Calculator Questions

Prime Factors, HCF & LCM

Prime Factor Decomposition / Uses of Prime Factor Decomposition / HCF & LCM

Easy (7 questions)	/18
Medium (6 questions)	/20
Hard (9 questions)	/23
Total Marks	**/61**

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Easy Questions

1 Express 56 as the product of its prime factors.

(2 marks)

2 Write 36 as a product of its prime factors.

(2 marks)

3 Write 600 as a product of powers of its prime factors. Show your working clearly.

(3 marks)

4 Write 800 as a product of its prime factors.

Show your working clearly.

(2 marks)

5 Write 880 as a product of powers of its prime factors.

Show your working clearly.

(3 marks)

6 Write 200 as a product of prime factors.
Give your answer in index form.

(3 marks)

7 Write 36 as a product of prime factors.
Give your answer in index form.

(3 marks)

Medium Questions

1 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?

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?

(4 marks)

2 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.

(3 marks)

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

(2 marks)

4 Write 3.6×10^3 as a product of powers of its prime factors.

Show your working clearly.

(3 marks)

5 Work out the highest common factor (HCF) of 75 and 105.

(2 marks)

6 (a) Write down the highest common factor of 48 and 80.

(3 marks)

(b) Find the lowest common multiple of 24 and 18.

(3 marks)

Hard Questions

1 $N = 2^4 \times 3 \times 7^5$

$PN = K$, where P is an integer and K is a square number. Find the smallest value of P.

$P =$ .....

(2 marks)

2 $234 = 2 \times 3^2 \times 13$ $1872 = 2^4 \times 3^2 \times 13$ $234 \times 1872 = 438\,048$

Use this information to write 438 048 as a product of its prime factors.

(1 mark)

3 Find the highest common factor (HCF) of 84 and 105.

(2 marks)

4 Liz buys packets of coloured buttons.

There are 8 red buttons in each packet of red buttons.
There are 6 silver buttons in each packet of silver buttons.
There are 5 gold buttons in each packet of gold buttons.

Liz buys equal numbers of red buttons, silver buttons and gold buttons.

How many packets of each colour of buttons did Liz buy?

..... packets of red buttons

..... packets of silver buttons

..... packets of gold buttons

(3 marks)

5 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?

(5 marks)

6 John buys some boxes of pencils and some packets of pens for people to use at a conference.

There are 40 pencils in a box.
There are 15 pens in a packet.

John gives one pencil and one pen to each person at the conference.
He has no pencils left.
He has no pens left.

How many boxes of pencils and how many packets of pens did John buy?

(3 marks)

7 $A = 2^n \times 3 \times 5^m$

Write $8A$ as a product of powers of its prime factors.

(2 marks)

8 $A = 5^2 \times 7^4 \times 11^p$

$B = 5^m \times 7^{n-5} \times 11$

m, n and p are integers such that

$m > 2$

$n > 10$

$p > 1$

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

Give your answer as a product of powers of its prime factors.

(2 marks)

9 N is a number.

As a product of prime factors in index form $N = 2 \times 3^4 \times y^3$

Work out $3N^2$ as a product of prime factors in index form.

Give your answer in terms of y.

(3 marks)