1.2 Prime Factors,HCF and LCM

Mr Faruk
Teacher of Mathematics
BSc/MSc/PGCE Mathematics
cieigcsesolutions@gmail.com

January 2018 1F

15 Write 360 as a product of its prime factors.
Show your working clearly.

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(Total for Question 15 is 2 marks)

January 2018 2F

9 (a) Find **two** common factors of 12 and 18

..... , ...

(2)

(b) Find **one** common multiple of 12 and 18

.....

(1)

8

Two factors of 24 have a sum of 18

(b) Find these two factors.

..... and .....

(2)

20 $1426 = 2 \times 23 \times 31$

(i) Find all the factors of 1426

.....

(3)

(ii) Write 713 as a product of its prime factors.

.....

(1)

10 (a) Find the Lowest Common Multiple (LCM) of 12 and 20

.....

(2)

(b) Find the Highest Common Factor (HCF) of 24 and 56

.....

(2)

20 (a) Find the highest common factor (HCF) of 96 and 120

(2)

$A = 2^3 \times 5 \times 7^2 \times 11$
$B = 2^4 \times 7 \times 11$
$C = 3 \times 5^2$

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

(2)

24 $N = 480 \times 10^9$

(a) Write N as a number in standard form.

(1)

(b) Write N as a product of powers of its prime factors.
Show your working clearly.

(3)

(c) Find the largest factor of N that is an odd number.

(1)

14 (a) Find the highest common factor (HCF) of 40 and 64

.....

(2)

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

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

.....

(2)

18 (a) Find the highest common factor (HCF) of 21 and 35

.....

(1)

(b) Write 720 as a product of its prime factors.
Show your working clearly.

.....

(3)

(c) Find the smallest whole number that 720 can be multiplied by to give a square number.

.....

(1)

23 $A = 3^2 \times 5^4 \times 7$ $B = 3^4 \times 5^3 \times 7 \times 11$

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

(2)

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

(2)

15 (a) Find the highest common factor (HCF) of 28 and 70

.....

(2)

(b) Find the lowest common multiple (LCM) of 28 and 105

.....

(2)

12

(d) Write 800 as a product of its prime factors.
Show your working clearly.

.....

(2)

23 $A = 2 \times 3^{43}$
$B = 16 \times 3^{37}$

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

(1)

(b) Express the number $A \times B$ as a product of powers of its prime factors.
Give your answer in its simplest form.

(2)

12 (a) Write down all the factors of 9

(1)

(b) Find the lowest common multiple (LCM) of 15 and 70

(2)

23

$$A = 2^3 \times 3^2 \times 5^2 \times 11$$
$$B = 2^4 \times 3 \times 5^4 \times 13$$

Find the lowest common multiple (LCM) of A and B.
Give your answer as a product of powers of prime numbers.

.....

(Total for Question 23 is 2 marks)

24 $A = 2^8 \times 3^5 \times 11^4$ $B = 2^6 \times 3 \times 11^8$

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

.....

(2)

(b) Find the lowest common multiple (LCM) of $2A$ and $3B$.
Give the LCM as a product of powers of its prime factors.

.....

(2)

13 Buses leave a bus station to go to the hospital every 16 minutes.
Buses leave the same bus station to go to the college every 20 minutes.

At 9 am a bus leaves the bus station to go to the hospital and at the same time a bus leaves the bus station to go to the college.

Work out the next time that a bus leaves the bus station to go to the hospital and at the same time a bus leaves the bus station to go to the college.

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(Total for Question 13 is 3 marks)

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

.....

(Total for Question 15 is 3 marks)

19 Write 3.6×10^3 as a product of powers of its prime factors.
Show your working clearly.

(Total for Question 19 is 3 marks)

13 Trains leave Agra station to go to New Delhi every 40 minutes.
Trains leave Agra station to go to Mumbai every 48 minutes.

At 6 am a train leaves Agra station to go to New Delhi and at the same time a train leaves Agra station to go to Mumbai.

Work out the next time a train leaves Agra station to go to New Delhi and at the same time a train leaves Agra station to go to Mumbai.

(Total for Question 13 is 3 marks)

22 Find the lowest common multiple (LCM) of 28, 42 and 63
Show your working clearly.

(Total for Question 22 is 3 marks)

20 (a) Work out the lowest common multiple (LCM) of 36 and 120

(2)

$A = 5^2 \times 7^4 \times 11^p$
$B = 5^m \times 7^{n-5} \times 11$

m, n and p are integers such that
$m > 2$
$n > 10$
$p > 1$

(b) Find the highest common factor (HCF) of A and B
Give your answer as a product of powers of its prime factors.

(2)

(Total for Question 20 is 4 marks)

18 (a) Find the highest common factor (HCF) of 56 and 84
Show your working clearly.

(2)

(b) Find the lowest common multiple (LCM) of 60 and 72
Show your working clearly.

(2)

10 It takes a machine 8 seconds to produce a bolt.

Each day, the machine starts producing bolts at 09 30
The machine produces bolts continuously every 8 seconds until it stops at 16 10 on the same day.

Work out how many bolts the machine produces each day.

.....

(Total for Question 10 is 4 marks)

19 Write 1200 as a product of powers of its prime factors.
Show your working clearly.

(Total for Question 19 is 3 marks)

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12

(b) Find the highest common factor (HCF) of 130 and 208
Show your working clearly.

.....

(2)

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6 (a) Write down all the factors of 10

.....

(1)

(b) Find the lowest common multiple (LCM) of 18 and 60

.....

(2)

21 (a) Find the highest common factor (HCF) of 200 and 420

(2)

$A = 2^3 \times 3 \times 5 \times 7^2$
$B = 2 \times 3^2 \times 7$
$C = 3 \times 5^2 \times 11$

(b) Find the lowest common multiple (LCM) of A, B and C
Write your answer as a product of powers of prime factors.

(2)

23 (a) Write 300 as a product of its prime factors.
Show your working clearly.

(2)

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

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

(b) Find the lowest common multiple (LCM) of $5A$ and $7B$
Show your working clearly.

(2)

17 Sandeep wants to buy some packets of pens and some boxes of pencils for his stationery shop.

Each packet of pens contains 9 pens.
Each box of pencils contains 12 pencils.

Each packet of pens costs £7.60
Each box of pencils costs £4.80

Sandeep can only buy full packets of pens and full boxes of pencils.
He wants to buy exactly the same number of pens as pencils.

Work out the minimum amount Sandeep needs to pay.

£.....

(Total for Question 17 is 4 marks)

21 $A = 5^3 \times 7^3 \times 11^6$ and $B = 5^6 \times 7^2 \times 11^4$

Find the highest common factor (HCF) of A and B
Give your answer as a product of powers of its prime factors.

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(Total for Question 21 is 2 marks)