

GCSE MATHS
FACTORS, MULTIPLE and PRIME
H.C.F and L.CM

FACTORS

Two whole numbers that multiply to get a given number

eg: **Factors of 12**

$$1 \times 12 = 12$$

$$2 \times 6 = 12$$

$$3 \times 4 = 12$$

1, 2, 3, 4, 6, 12

MULTIPLES

These are the number which are there in the times table of a particular number or the number you get by multiplying a number with a whole number

eg, **Multiples of 10**

$$10 \times 1 = 10$$

$$10 \times 3 = 30$$

$$10 \times 2 = 20$$

$$10 \times 4 = 40$$

10, 20, 30, 40

PRIME NUMBERS

A number that can be divided by 1 and itself only.

eg: 2, 3, 5, 7, 11 etc

Square Number

A number that is obtained by the number itself

$$1^2 = 1 \times 1 = 1$$

$$3^2 = 3 \times 3 = 9$$

$$2^2 = 2 \times 2 = 4$$

$$4^2 = 4 \times 4 = 16$$

QUESTIONS

a) Write the factors of 20

$$1 \times 20 = 20$$

$$2 \times 10 = 20$$

$$4 \times \underline{5} = 20$$

1, 2, 4, 5, 10, 20

b) Write the multiple of 6

$$6 \times 1 = 6$$

$$6 \times 2 = 12$$

$$6 \times 3 = 18$$

$$6 \times 4 = 24$$

6, 12, 18, 24

For the number: 50

a) Write all the factors

1, 2, 5, 10, 25, 50

$$1 \times 50 = 50$$

$$2 \times 25 = 50$$

$$5 \times \underline{10} = 50$$

b) Write three multiples

50, 100, 150

$$50 \times 1 = 50$$

$$50 \times 2 = 100$$

$$50 \times 3 = 150$$

c) Write the prime factors

2, 5

Here is a list of numbers.

2 9 11 15 18 31 32

From the numbers on the list,

(a) write down a factor of 8

2

(1)

(b) write down a multiple of 6

18

(1)

(c) write down all of the prime numbers on the list.

2, 11, 31

(1)

Barry is thinking of a number.

He says,

“My number is even. It is a factor of 30 and a multiple of 5”

There are two possible numbers Barry can be thinking of.

Write down these two numbers

Even

factor of 30
 $1 \times 30 = 30$
 $2 \times 15 = 30$
 $3 \times 10 = 30$
 $5 \times 6 = 30$

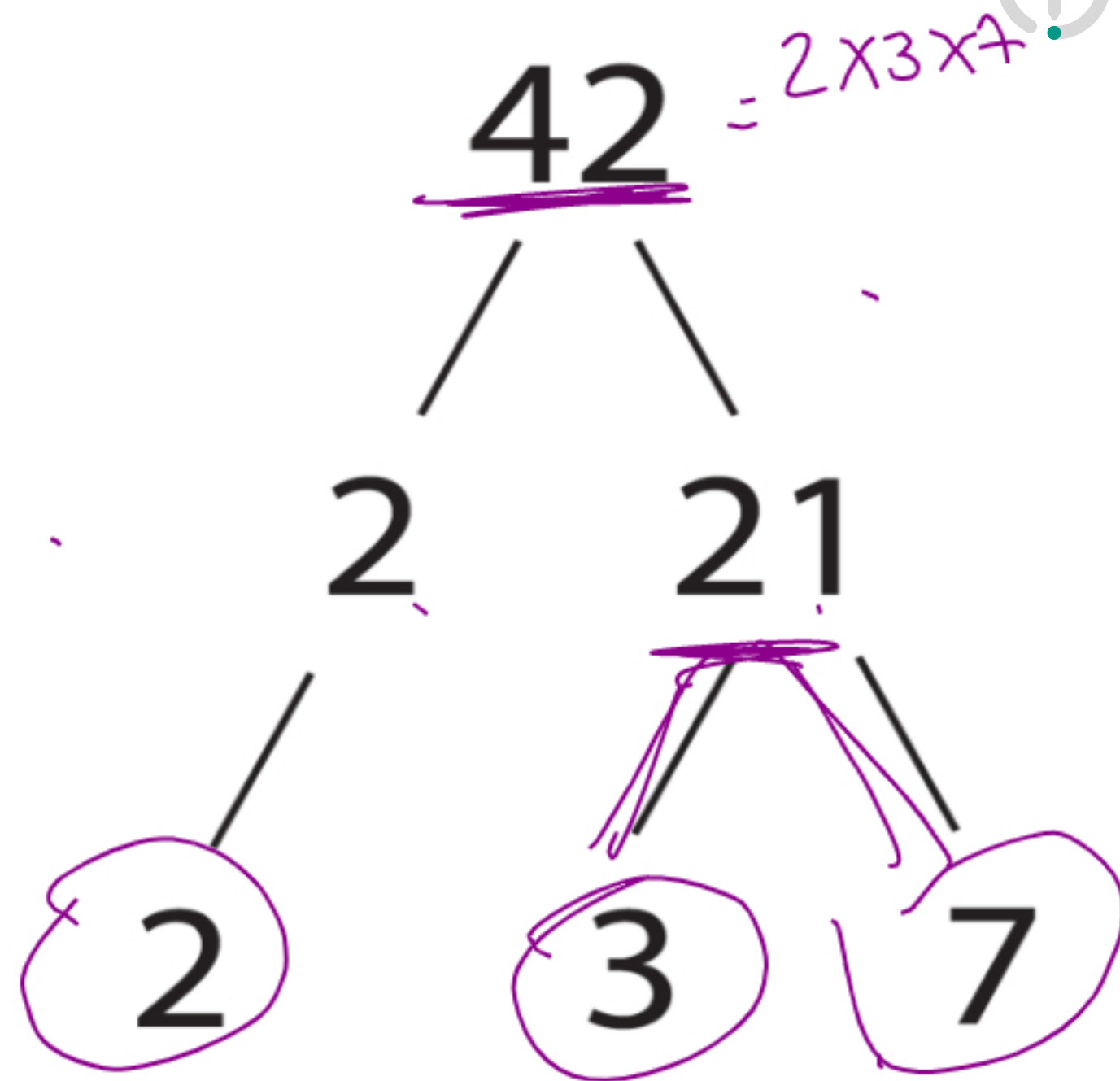
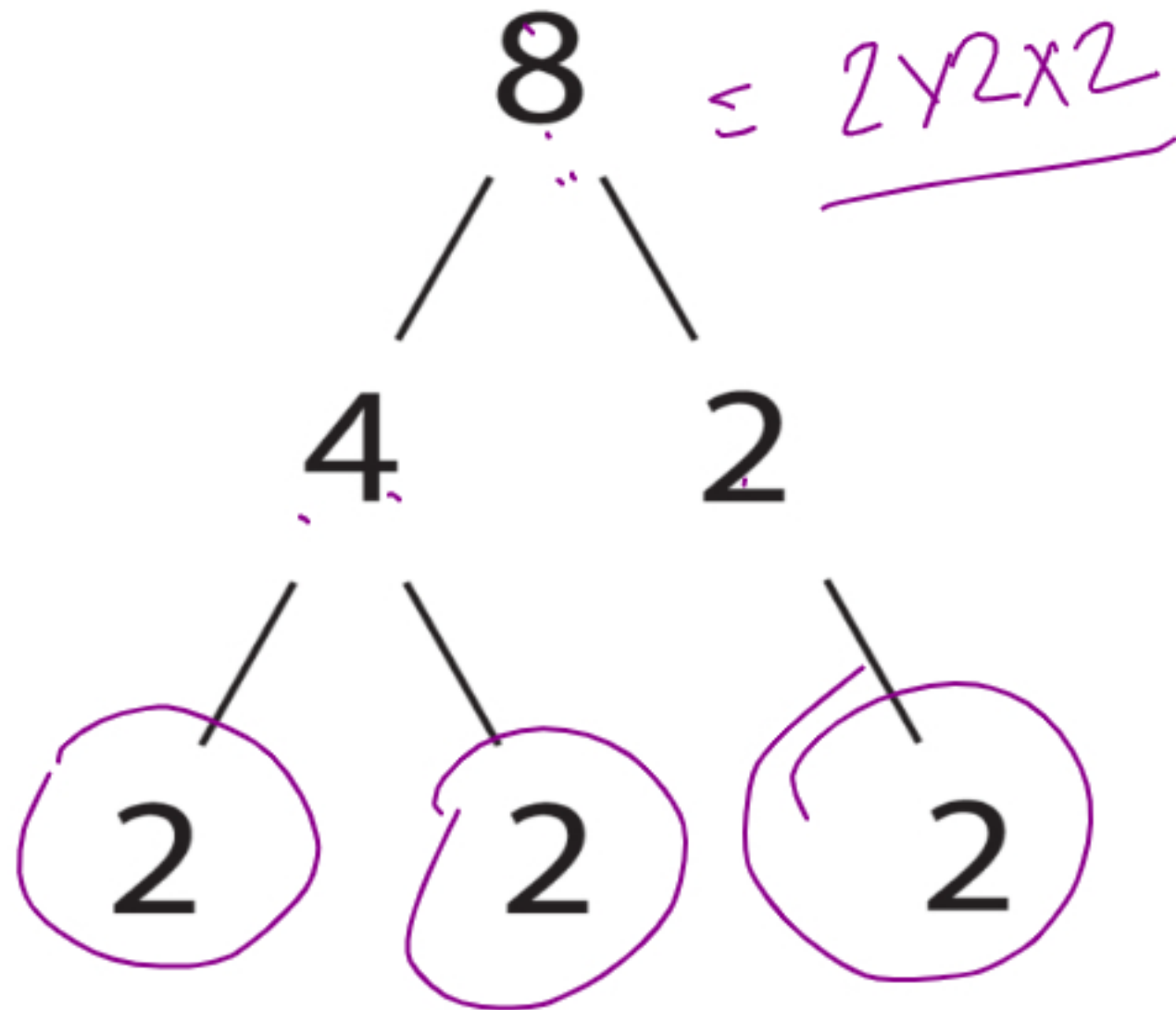
Multiples of 5
1

10, 30



EXPERT GUIDANCE

PRIME FACTORS

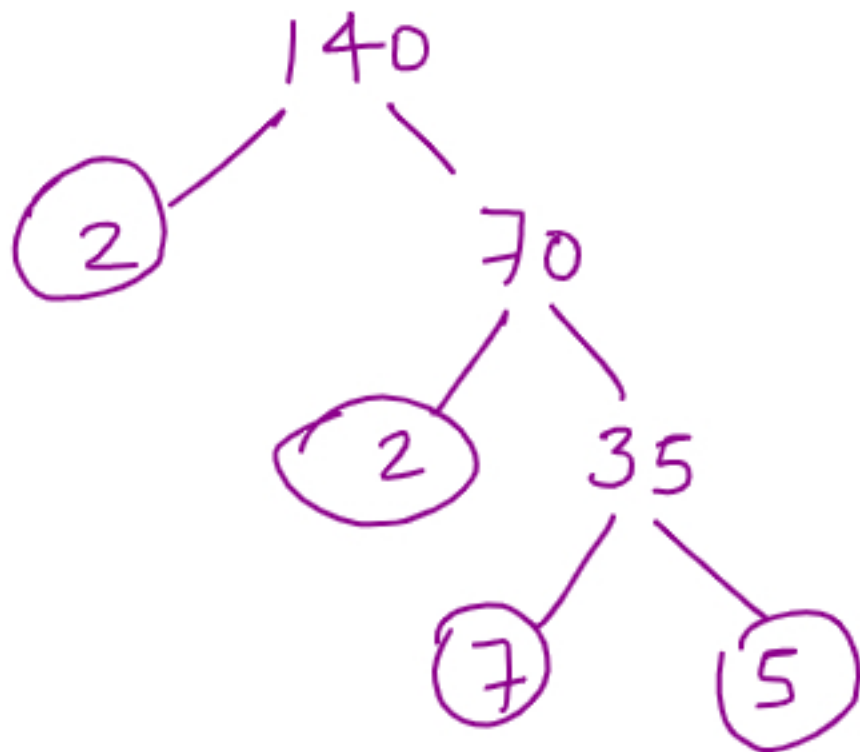




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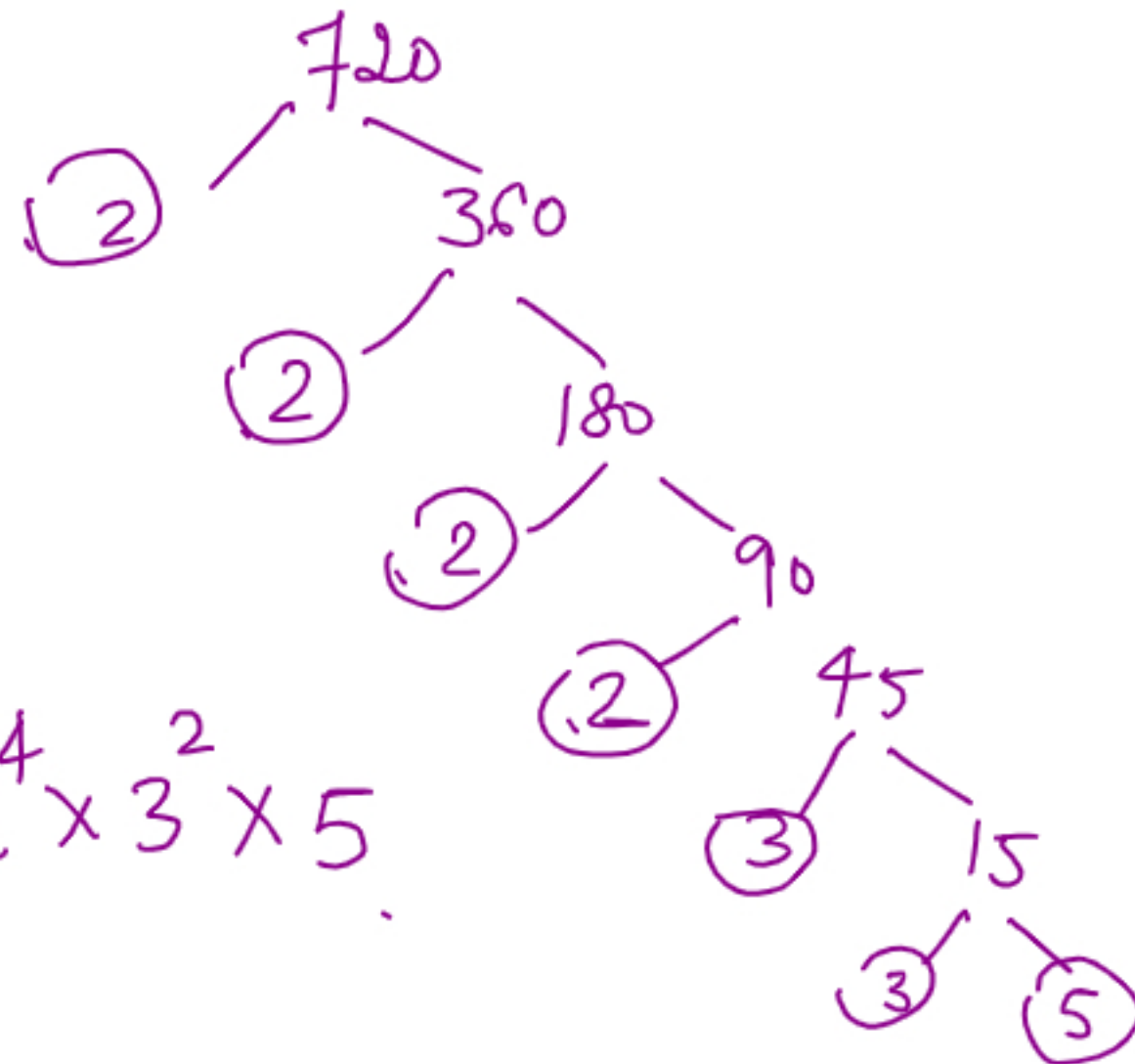
PRIME FACTORS QUESTIONS

✓ ✓ WRITE 140 as the product of prime factors



$$140 = 2 \times 2 \times 7 \times 5$$

Write 720 as the product of its prime factors.



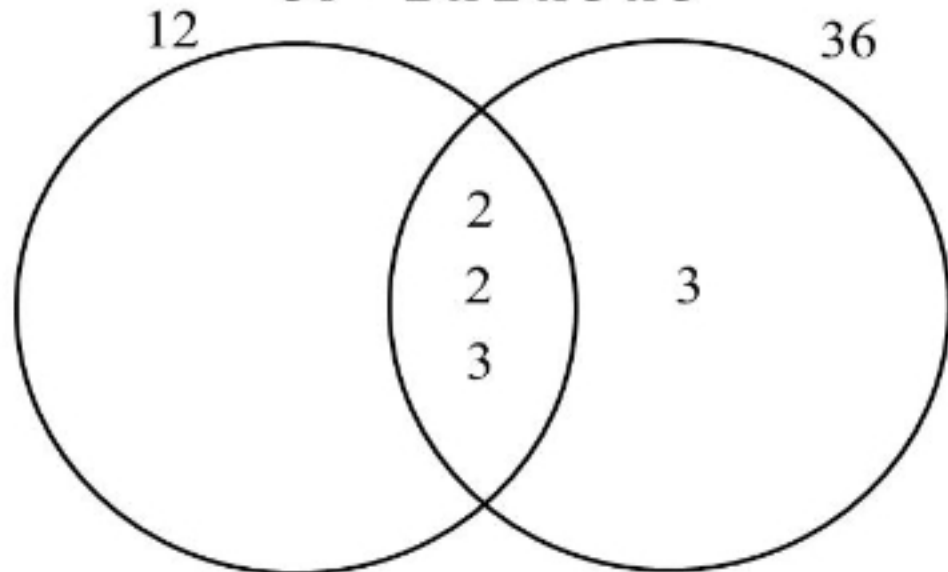
$$720 = 2^4 \times 3^2 \times 5$$



EXPERT GUIDANCE

HIGHEST COMMON FACTOR

$12 = 2 \times 2 \times 3$
 $36 = 2 \times 2 \times 3 \times 3$



$HCF = 2 \times 2 \times 3$
 $= 12$

Highest common factor that divide both the numbers.

HCF AND LCM

Write both the number in the form of prime factors



Make a Venn diagram and write the common factors in the middle



The product of the common factors will be the HCF.

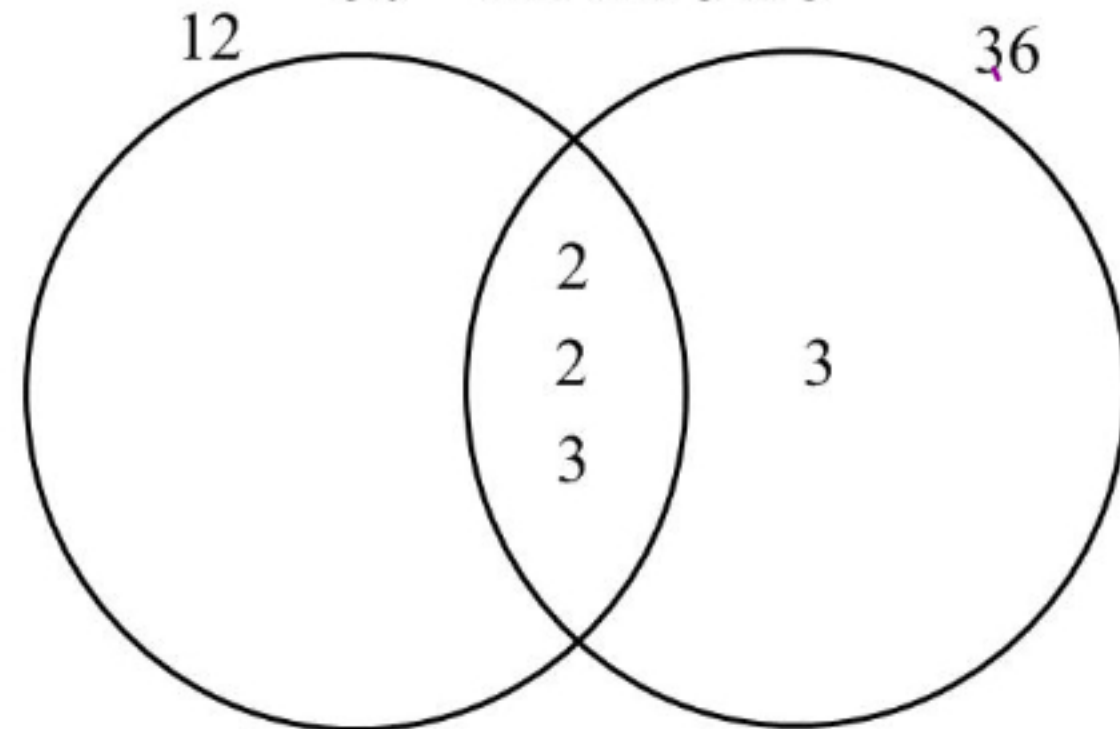


Product of all the three sections will be L.C.M

Least Common Multiple



$12 = 2 \times 2 \times 3$
 $36 = 2 \times 2 \times 3 \times 3$



$LCM = 2 \times 2 \times 3 \times 3$

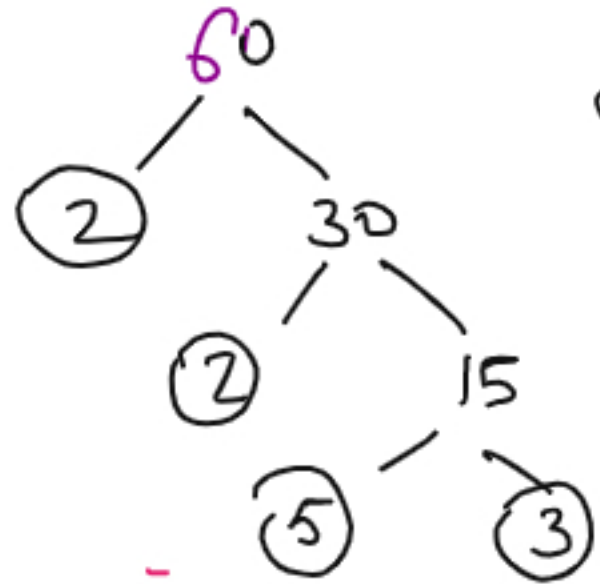
or

$LCM = 2^2 \times 3^2$

$LCM = 36$

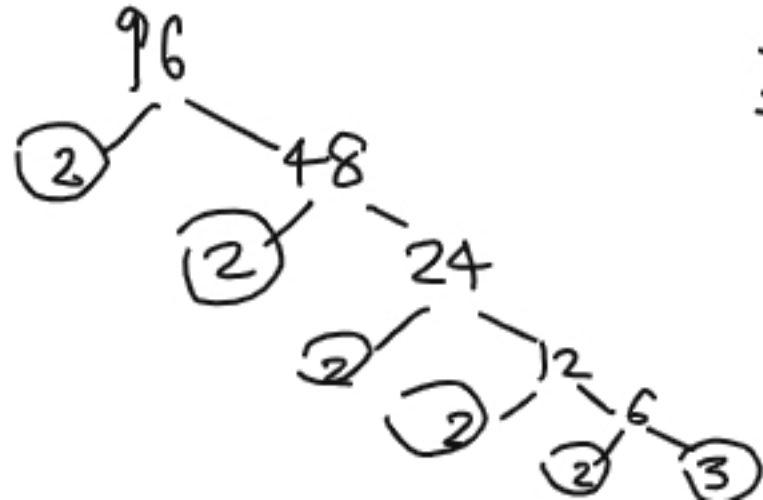
The smallest possible number that is the multiple of both the number.

a) Write the prime factors of 60 and 96

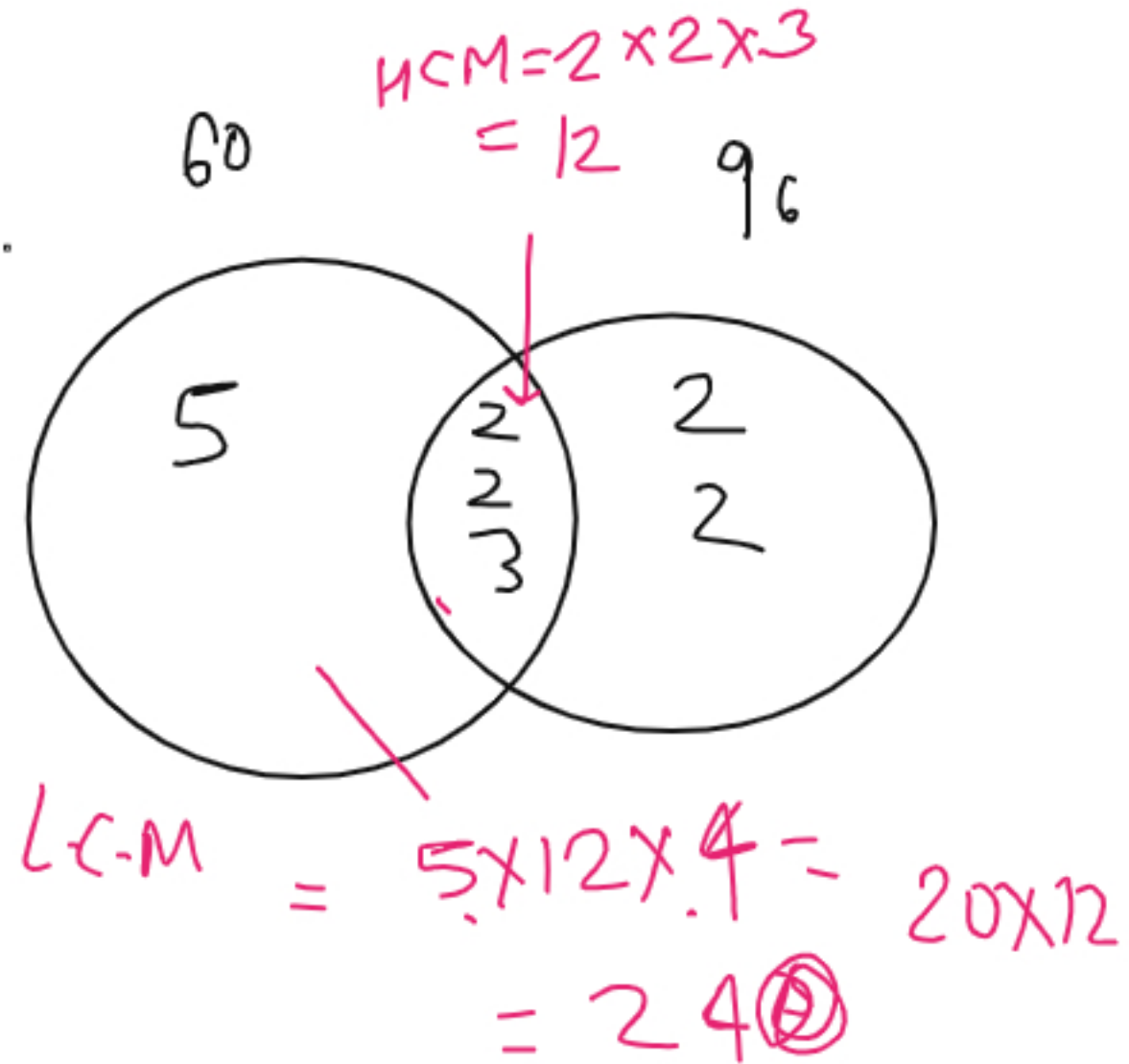


$$60 = \cancel{2} \times \cancel{2} \times 5 \times \cancel{3}$$

$$96 = 2 \times 2 \times \cancel{2} \times \cancel{2} \times \cancel{3}$$



b) Write the HCF and LCM of 60 and 96



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