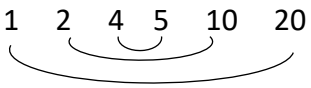
Level 3 Maths Revision – Multiples, factors and prime numbers

A: Multiples and Factors

Reminder

1, 2, 4, 5, 10, and 20 are **factors** of 20 – all these numbers go into 20 without remainder.

When we are finding the factors of a number it is a good idea to write them in order, linking the pairs of factors so we don't miss any out.



20, 40, 60, 80, 100…….. are **multiples** of 20 – these numbers are made up from a whole number of 20s.

Now try to answer these questions: -

1) Write down the factors of 24.

2) Write down the factors of 60.

3) Write down the factors of 100.

4) Write down four multiples of 2.

5) Write down five multiples of 8.

6) Is it true that all multiples of 8 are also multiples of 2? Explain your answer.

7) Write down as many numbers as you can which are multiples of 3 and factors of 60.

8) Decide whether each of the following statements are true of false.

a) 12 is a multiple of 3

b) 12 is a factor of 4

c) 12 is a multiple of 60

d) 12 is a multiple of 12

e) 12 is a factor of 12

f) All multiples of 12 are also multiples of 3

g) Some factors of 12 are also multiples of 3

h) None of the factors of 12 are multiples of 4

9) Is 504 a multiple of 7? Show your working and explain your answer.

10) Is 6 a factor of 932? Show your working and explain your answer

B: Prime Numbers

Reminder

A prime number has only two factors – one and the number itself.

Examples: -

13, 17, 19 and 23 are prime numbers – they do not appear in any times table.

14 is not a prime number because it can be divided by 2 and 7 without a remainder.

15 is not a prime number because it can be divided by 3 and 5 without a remainder.

16 is not a prime number because it can be divided by 2, and 8 without a remainder.

1 is not a prime number – see why here https://youtu.be/lQofiPqhJ_s

2 is the only even prime number

Now try these questions: -

10) Write down the prime numbers in this list:-

1 2 3 4 5 6 7 8 9 10

11) How many prime numbers are there between 10 and 20? List them.

12) Look at this list of numbers and then write the numbers (if any) which are: -

20 21 22 23 24 25 26 27 28 29 30

a) prime numbers

b) multiples of 5

c) factors of 100

d) multiples of 3

e) factors of 120

f) have only three factors

g) are even and prime numbers

h) have eight factors

C: Lowest Common Multiples (LCM) and Highest Common Factors (HCF)

Reminder

The lowest common multiple (LCM) is the smallest number which is a multiple of the two or more numbers we are looking at.

Example

Find the lowest common multiple of 6 and 8.

Multiples of 6 are 4, 12, 18, **24**, 30, 36, 42, 48……

Multiples of 8 are 8, 16, **24**, 32, 40, 48, 56, 64……..

24 is the LCM of 6 and 8 (It is the smallest number to appear on both lists.)

Now try these examples, remembering to write the lists of multiples : -

13) LCM of 7 and 5

14) LCM of 6 and 10

15) LCM of 6 and 7

16) LCM of 7 and 10

17) LCM of 5 and 10

18) LCM of 5, 6 and 10

Notice that: -

Sometimes the LCM is the product of the two numbers (e.g. 21 is the LCM of 3 and 7) but this is not always the case (LCM of 4 and 10 is 20, not 40)

When the second number is a multiple of the first, it is the LCM (e.g. 12 is the LCM of 6 and 12).

It is possible to find the LCM of any number of numbers (e.g. LCM of 2, 3, 4 and 5 is 60).

Reminder

The highest common factor (HCF) is the largest number which goes into the two or more numbers we are looking at without a remainder.

Example

Find the highest common factor (HCF) of 24 and 32

Factors of 24 are 1, 2, 3, 4, 6, **8**, 12, 24.

Factors of 32 are 1, 2, 4, **8**, 16, 32.

8 is the highest common factor of 24 and 32 (It is the biggest number which appears on both lists)

Now try these examples, remembering to write the lists of factors : -

19) HCF of 32 and 36

20) HCF of 30 and 40

21) HCF of 36 and 60

22) HCF of 28 and 42

23) HCF of 30 and 60

24) HCF of 32, 48 and 64