Geevor and Crown Maths Distance Learning w/b 11th May

**Learning Objectives;**

**Geevor**; I am aiming to find common factors and common multiples

**Crown**; I am aiming to find highest common factors and lowest common multiples.

**Notes to parents;**

*20 is a* ***multiple*** *of 1, 2, 4, 5, 10 and 20. These numbers are called its* ***factors***.

*Factors come in pairs, all multiples have an even number of factors except square numbers*.

*E*.g. 16. 1 and 16, 2 and 8, 4

*Encourage children to think systematically*. Halving or doubling one of the factors to find more

*E*.g. Factors of 36

*1 and 36 2 and 18 4 and 9 3 and 12 6*

*When 2 numbers are multiplied together the answer is the* ***product.***

*The product of 4 and 8 is 32.*

**Learning input;**

* Ask children to list, all the factor pairs for 36.
* Take one pair, e.g. 9 and 4. *If we know 4 × 9 = 36, what is 4 × 90? 4 × 900? 4 × 9000? What is 36 ÷ 9? 360 ÷ 9? 360 ÷ 90? 3600 ÷ 9?*
* Ask children to use one other **pair of factors** to generate a similar list of facts using place value.
* Write : 24 and 36. Ask children to list the factors of 24 which are also factors of 36, i.e. the **common factors**.
* *What is the* ***highest common factor*** *of 24 and 36, the biggest number that goes into both 24 and 36?*
* Write 18 and 24. *Ask children to list all the common factors – the numbers which ‘go into’ both 18 and 24. Now circle the* ***highest*** *common factor.*
* Write 3 and 4.  *Write at least three numbers which have both 3 and 4 as factors*. *These numbers are* ***common multiples*** *of 3 and 4. Which is the* ***lowest common multiple*** *of 3 and 4, the smallest number that both 3 and 4 go into?*
* Repeat with 6 and 9. Point out that unlike 3 and 4, the lowest common multiple of 6 and 9 is a lot smaller than the product of 6 and 9.

**Applying Knowledge and Understanding;**

**Geevor;** Factors and Multiples Sheet 1

**Crown**; Factors and Multiples Sheet 2

**Crown** ; A game to play with someone at home. <https://nrich.maths.org/5468>

**Learning Objectives;**

**Geevor**; I am aiming to identify square numbers and prime numbers

**Crown;** I am aiming to identify square numbers and prime numbers

**Notes to Parents;**

A **square numbe**r is the product of a number multiplied by itself.

A **prime number** is a whole **number** with exactly two factors, itself and 1. 1 is not considered a prime number as only has one factor, itself.

A **composite number** has more factors than just itself and one.

**Learning Input**;

* Remind children that numbers with only two factors: themselves and 1, are called **prime** numbers. *2 is the smallest prime, as 1 just has 1 factor not 2.*
* Say that numbers that have more than themselves and 1 as factors are called **composite** numbers.
* *Ask children to list all the prime numbers from 2 to 20*.
* Take feedback. *Apart from 2, are there any even numbers in your list? Why not?*
* *Are all prime numbers odd?* (2 is the only prime number that is not odd.) *Are all odd numbers prime?* (No.)
* Write down 41. *Is this number prime? How can we find out?*
* Say that we could divide it by every number up to 41 to see if we get a whole number answer but actually we don’t need to try all those numbers. If we tried dividing it by 6 for example, it would also be a multiple of 2 and 3, and if we’ve already tried those, we needn’t try 6, or another multiple of 2 or 3. *So in fact we only need to try to divide the number by prime numbers!*
* *41 is odd, so we don’t need to try 2. So, let’s try to divide 41 by 3, 5 and 7.* Ask children to do this.
* *Do we need to try more numbers?* Point out that if 41 is divisible by a number greater than 7, then the other number in the factor pair must be less than 7, (we don’t need to try numbers greater than the square root) and we’ve already tried those! *We only tried to divide 41 by three numbers before we knew it was prime!*
* Write the following numbers : 1, 4, 9, 16, 25… *What’s special about these numbers?* Remind children that these are **square numbers**.

Draw squares to show the first four numbers as 1 × 1, 2 × 2, 3 × 3, 4 × 4 and write 12 = 1, 22 = 4, 32 = 9, 42 = 16. *Children continue writing square numbers up to at least 100.*

**Using knowledge and understanding**;

**Geevor;** Prime Numbers and Square Numbers . sheet 1

**Geevor Problem Solving**

Is the lowest common multiple of 6 and 4 smaller than the highest common factor of 30 and 45?

Write common factors of 24 and 48.  
Write common multiples of 3 and 5 up to 60.  
Are any numbers in both sets?

True or false?  
There are exactly four 2-digit, common multiples of 3 and 7.  
4 and 5 are common factors of all 2-digit multiples of 10.  
15 is a factor of 100.

**Crown** ; Prime Numbers and Square Number sheet 2

Crown Problem Solving

Which pair(s) of numbers under 25 have the largest number of common factors?  
What is the highest common factor?

Write common multiples of 3 and 5 up to 60. What is the lowest common multiple?

Use this information to find the lowest common multiple of 6 and 10.

True or false?  
 - The lowest common multiple of 2 prime numbers, a and b is always  
a x b.  
 - The highest common factor of two multiples of 7 is always 7.

Answers for Parents

**Geevor answers**

Is the lowest common multiple of 6 and 4 smaller than the highest common factor of 30 and 45? Yes.

The lowest common multiple of 6 and 4 is 12.

The highest common factor of 30 and 45 is 15.

Write common factors of 24 and 48. 1, 2, 3, 4, 6, 8, 12 and 24, i.e. all the factors of 24 are also factors of 48 (but not vice versa).  
Write common multiples of 3 and 5 up to 60. 15, 30, 45 and 60.  
Are any numbers in both sets? No.

True or false?  
There are exactly four 2-digit, common multiples of 3 and 7.

True – 21, 42, 63 and 84.  
4 and 5 are common factors of all 2-digit multiples of 10.

False - they are common factors of 20, 40, 60 and 80 but not of 30, 50, 70 or 90.  
15 is a factor of 100. False.

**Crown answers**

Which pair(s) of numbers under 25 have the largest number of common factors? 12 and 24 have 6 common factors – 1, 2, 3, 4, 6 and 12.  
What is the highest common factor? 12.

Write common multiples of 3 and 5 up to 60. What is the lowest common multiple? 15 (lowest), 30, 45, 60.

Use this information to find the lowest common multiple of 6 and 10.

30 – the common multiples of 6 and 10 will be double those of 2 and 5.

True or false?  
 - The lowest common multiple of 2 prime numbers, a and b is always  
a x b. True, since they are prime numbers they will have no other factors so cannot have any other multiples in common.  
 - The highest common factor of two multiples of 7 is always 7.

False, e.g. 14 and 42 which have a HCF of 14.