

## Division Prior Learning Assessment Questions 8 and 9

**Objective:** I can identify prime numbers to 20.

**I can say if a number to 100 is a prime number or not.**

**NC: NMD2 know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers**

**3. establish whether a number up to 100 is prime and recall prime numbers up to 19**

### Teacher Input Ideas:

- Place the numbers 2, 3, 13, 5, 7, 11, 12, 9, 24 and 15 on to the board. Ask the children to pick a number from the list and make rectangles or arrays out of these numbers. Alternatively, you could link this with factor and multiple knowledge and the children could list all the factors of these numbers. Demonstrate that a rectangle, square or an array can be made with these factors. Discuss what the children have noticed about the factors of these numbers. Discuss how some have more options than others. Establish that some numbers only have factors that are 1 and itself. Discuss that these are called prime numbers.
- Place a variety of numbers around the room pinned up for the children to explore and walk around. Children to collect on whiteboards prime numbers and not prime (we call these composite numbers) from the ones displayed. Examples of numbers: 64, 42, 21, 17, 19, 18, 29, 30, 6, 5.
- Encourage the children to understand that any number ending in an even digit is not a prime number. Model and explain why. Also discuss how 2 is a prime number as it is only divisible by 1 and itself. You may want to model ways of working systematically to check if a number is a prime number or a composite number. Such as, list factors starting from 1, then 2, then 3 etc. The children should be able to suggest that if the number has a factor of 2 then it can be ruled out straight away. If not they should then look if it has a factor of 3 etc.

### Practice Activities

**Purple Practice:** Most suited for children who made errors in Question 8 of the prior learning assessment and are not yet confident with prime numbers to 20.

The children are provided with numbers 1 - 20 to explore if any of the numbers have divisors other than one or itself. Children could have objects initially to see how many different ways they can be shared and explore with different numbers. Alternatively they can work through their times table and circle the numbers in each times tables.

Once the children notice which numbers can only be divided by itself or one, they are encouraged to record these and identify that these are the prime numbers to 20. The children are also encouraged to identify that numbers that can be divided by anything other than 1 or itself are composite numbers.

**Green Practice:** Most suited for children who made errors in Question 9 and need to explore prime numbers to 100 .

For the green activity the children are provided with numbers to 100 and a hundreds square. This activity is to support children who will benefit from working systematically through their times tables to identify prime numbers to 100.

The children are to list the prime numbers that they have found (any numbers that have not been circled) and they are also given the opportunity to explain words such as composite and prime. This activity can be amended so that children find numbers to 50 first if they are finding it challenging to 100.

Challenge: Explore applying knowledge of multiples - such as the times tables for 2,4,6,8 all have multiples that are even , so by eliminating every even number, this will help to speed up finding prime numbers. Additionally, amounts that end in 5 must be a multiple of 5. Therefore lets focus on the 3, 7 and 9 times tables. Some children may also notice that every multiple of 9 is also a multiple of 3. Why?

**Yellow Practice:** Most suited for children who show understanding in Question 9 of the prior learning assessment and will benefit from identifying prime numbers to 100 from a group of given numbers.

The children are provided with a variety of numbers between 1 and 100. The children do not have times table charts or hundred squares to support them for this activity . The children should be encouraged to develop strategies to help them to work out if a number is prime or composite. The children should be able to use their knowledge of multiples and patterns in their times tables such as:

- every even number is a multiple of 2 (you may want to talk about the number 2).
- Every multiple of 5 ends in zero or 5.
- Multiples of 6 and 9 are also multiples of 3.
- Multiples of 4, 6, 8 are all multiples of 2.
- Apart from the number 2, all prime numbers are odd.

Initial facts and observations about multiples should then help the children to pick out the composite numbers in the task. Then encourage the children to explore if the remaining numbers are multiples of or can be divided by 3 or 7. Discuss why and methods for working this out.

### **Mastery: practical**

Have cards with 50, 100, 150, 200, 250 and 300 written on them. The children to pick a card and to find the largest prime number possible less than that number.

For example if a child collected the card 100, they should work out that 97 is the largest prime number. Encourage the children to suggest strategies for working this out such as :

- Using their hundred squares from the green task for numbers less than 100.
- Starting at the first possible number such as 99, 149, 199, 249, 299 and suggest how they can work this out using their knowledge of multiples . What can they divide this number by to check if it is prime or not? Encourage discussions suggested in the yellow task.
- Ruling out any even number using their knowledge of prime numbers.

### **Answers:**

**Purple** explanation that identifies that the blocks are prime numbers and that they are only divisible by 1 or itself and they do not appear in any other times table. The children should also be encouraged to use the word composite.

### **Green:**

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47, 53, 59, 61, 67, 71, 73, 79, 83, 89, and 97

### **Yellow:**

13, 53, 97, 71, 37, 29

### **Mastery:**

47

97

149

199

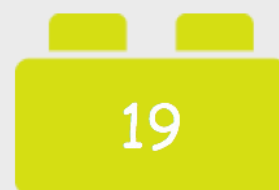
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Look at the numbers 1-20 below. Colour in or circle any number in the following times table:

2 3 4 5 6 7 8 9 10  
(Do not circle the first number in each times table)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20



Why are these blocks special? What are these numbers called?

Challenge: What are the other numbers called?

Look at the numbers 1-100 below. Colour in or circle any number in the following times table:

2 3 4 5 6 7 8 9 10  
(Do not circle the first number in each times table)

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Write the prime numbers from 1 to 100:

Challenge: Write an explanation of what prime and composite numbers are.

Look at the numbers below. Circle the prime numbers.

TIP

Which ones do you know are composite numbers straight away?

13 24 39 53 56 72 87 63 94 97 71 37 65 24 29

Explain how you worked out which are the prime numbers. Have you found all of them?