

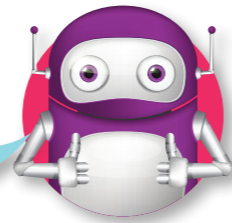
Prime numbers

Learn

A number that can only be divided by itself or 1, with no remainder, is called a prime number. For example, 2, 3 and 5 are all prime numbers.

2 is the only even prime number. All other even numbers can be divided by 2 as well as 1 and themselves.

1 is not counted as a prime number.

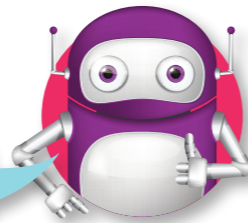


1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Look at the numbers 1 to 10. We can circle 2 as a prime number. We know that all even numbers can be divided by 2, so we can delete all other even numbers because we know that none of these can be prime numbers.

We can also circle 3, and then delete 9. We know from the times tables that 9 can be divided by 3, so it cannot be a prime number.

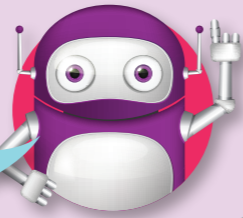
I have circled all the prime numbers for you.



✓ Tips

- There are rules that can help you decide if any number is a prime or not.
- A number that is even can be divided by 2, so no even numbers are prime numbers, except 2 itself of course!
- Add the digits of the number together. If the sum can be divided by 3, so can the number, and so it is not a prime number, for example 207: $2 + 0 + 7 = 9$, 9 can be divided by 3, so 207 is not a prime number!
- If a number ends in 0 or 5 it can be divided by 5, so it is not a prime number, for example 115 is not a prime number.

Warning! These rules only help you to decide, you may still need to check for other prime factors!

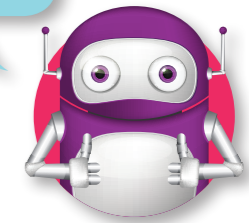


Talk maths

Challenge an adult or a friend to a game of *Prime Time*. You need something to time minutes on, such as a stopwatch. You will also need a pencil and paper, for keeping scores and remembering which numbers have been used.

Take it in turns to say a number and challenge the other player to decide whether it is a prime number or not, and record how long it took to answer the question. If challenged, a player must prove why their answer is yes or no, with a sensible explanation.

Play *Prime Time*!



Did you know?

Mathematicians are still discovering new prime numbers. Imagine how enormous those numbers must be!

Activities



1. What is a prime number?
2. Write all the prime numbers between 1 and 20 (there are eight altogether).
3. Say which of these numbers are prime, and explain each of your answers.
 - a. 25
 - b. 71
 - c. 87
4. Can you think of a prime number greater than 100?

Problems



Brain-teaser

77 cannot be divided by 2, 3 or 5. Does this make it a prime number? Explain your answer.

Brain-buster

Mohammed says that 7 is a prime number, and so is 17, so 27 must also be a prime number. Explain why he is wrong.