

Prime Numbers

Prime numbers can be **tricky**, but they're a **lot less tricky** if you just **learn** these basics:

PRIME Numbers DON'T DIVIDE BY ANYTHING

And that's the **best** way to think of them.

The **only way** to get **any** prime number is: $1 \times \text{ITSELF}$.

2 3 5 7 11 13 17 19 23 29 31 37 ...

As you can see, they're an **awkward-looking** bunch (that's because they don't divide by anything).



But I've already got a head.



EXAMPLE:

The **only numbers** that multiply to give 11 are 1×11 .

The **only numbers** that multiply to give 23 are 1×23 .

So **any** prime number has **exactly 2 factors** — itself and 1.

1 is NOT a Prime Number — it Just Isn't

- 1) **1 is NOT a prime number** — it doesn't have exactly 2 factors, and prime numbers do.
- 2) The first 4 primes are **2, 3, 5 and 7**.
- 3) **2 and 5 are the EXCEPTIONS** because all the rest end in **1, 3, 7 or 9**.
- 4) But **NOT ALL** numbers ending in 1, 3, 7 or 9 are primes, as shown here: (Only the circled ones are primes.)

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

Is it Prime?

To check if a number is **prime**, first check it ends in 1, 3, 7 or 9 (or is 2 or 5), then (using the method on P. 44) check to see if it has any **factors** (other than itself and one). If it has any, it's not a prime.

1999 is a Prime Year...

- 1) Explain why 22 can't be a prime number.
- 2) Cover up the page, and write down what a prime number is, and how to check if a number's prime or not.