

# Math Facts for the SHSAT

## Prime Numbers

A **prime number** is a natural number that has for factors only itself and 1.

A **composite number** is a whole number that has more than the two factors of 1 and itself.

**Fundamental Theorem of Arithmetic:**

**Every composite number can be expressed as a unique product of prime numbers.**

### Sieve of Eratosthenes\*

Start at the first number, 2—which is a prime number *and* the only even prime number. Circle 2 and then cross out every other even number. **(2 is the only even prime number!)** Return to the beginning. The first number you encounter (in this case, 3) without a circle round it or a line through it *should* be a prime number; circle 3 and then cross out all multiples of 3. Return to the beginning...continue until all numbers are either circled or crossed out. The **circled** numbers are **prime** numbers; the **crossed out** numbers are **composite** numbers.

	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												

\*Eratosthenes was a polymath (mathematician, astronomer, music theorist, and poet) in ancient Greece