Math Facts

These are facts worth memorizing to increase speed on the SAT.

Squares.

$1^2 = 1$	$2^2 = 4$	$3^2 = 9$	$4^2 = 16$
$5^2 = 25$	$6^2 = 36$	$7^2 = 49$	$8^2 = 64$
$9^2 = 81$	$10^2 = 100$	$11^2 = 121$	$12^2 = 144$
$13^2 = 169$	$14^2 = 196$	$15^2 = 225$	$16^2 = 256$

Cubes.

$1^3 = 1$	$2^3 = 8$	$3^3 = 27$
$4^3 = 64$	$5^3 = 125$	$6^3 = 216$
$7^3 = 343$	$8^3 = 512$	$9^3 = 729$

Powers of 2:
2, 4, 8, 16, 32, 64, 128, 256, 512, 1024

Powers of 3:
3, 9, 27, 81, 243

Finding factors - is it divisible by 2, 3, 5, or 9?
If a number is divisible by 2, it's even.
If a number is divisible by 5, it ends in 0 or 5.
If a number is divisible by 3, the digits add up to a number divisible by 3.
If a number is divisible by 9, the digits add up to a number divisible by 9.
Curious about 7? Use your calculator.

Finding factors - is it prime?
To determine if a number is prime, you must attempt to divide it by all the primes up to the root of the next closest square.

Consider 143. The next closest square is 144 – the square root of 144 is 12. 2, 3, 5, and 7 fail, but 143/11 = 13, so 143 is not prime. Any non-prime under 100, for example, will be divisible by 2, 3, 5, or 7. Students do not need to test any additional numbers.

Rules for positive and negative, even and odd

Adding
even + even = even
odd + odd = even
odd + even = odd

- Adding an odd number to something "flips" it – it's now even if it was odd before, or vice-versa.

Multiplying
even x even = even
even x odd = even
odd x odd = odd

- Anything times an even number is still even.
- An odd number to any power is still odd.

Exponents
negative x positive = negative
negative x negative = positive
$\text{negative}^{\text{even}}$ = positive
$\text{negative}^{\text{odd}}$ = negative

$\text{negative}^{\text{even}}$ = positive big number
$\text{negative}^{\text{negative even}}$ = positive tiny fraction
$\text{negative}^{\text{odd}}$ = hugely negative number
$\text{negative}^{\text{negative odd}}$ = negative tiny fraction