Operations With Signed Numbers

ADDITION - SUM $a + b$

$5 + 3 = 8$
$(-5) + (-3) = -8$
} Add in Absolute Value, Keep the Sign

$7 + (-4) = 3$
$(-7) + 4 = -3$
} Subtract in Absolute Value, Use the Sign of the Number that is Larger in Absolute Value

SUBTRACTION - DIFFERENCE $a - b$

$8 - 2 = 6$

$5 - 7 = 5 + (-7) = -2$
$-6 - 3 = -6 + (-3) = -9$
} Subtracting a number is the same as Adding its Opposite.

$6 - (-2) = 6 + 2 = 8$
$-8 - (-6) = -8 + 6 = -2$
} Change the two '—' signs to an addition sign. i.e. '– –' $\rightarrow$ +

MULTIPLICATION - PRODUCT $a \times b$, $a \cdot b$, ab, $a * b$, $a(b)$, $(a)(b)$, $(a)b$

$(+)(+) = +$
$(-)(-) = +$
} If the Signs are the SAME, then their product is POSITIVE

$(+)(-) = -$
$(-)(+) = -$
} If the Signs are OPPOSITES, then their product is NEGATIVE

$(-1)(-2)(-3)(-4) = 24$ If you have an EVEN number of '–' signs, then their product is POSITIVE

$(-1)(-2)(-3)(4) = -24$ If you have an ODD number of '–' signs, then their product is NEGATIVE

DIVISION - QUOTIENT $a \div b$, a / b, $\frac{a}{b}$, $b\overline{)a}$

$\frac{+}{+} = +$ or $\frac{-}{-} = +$ If the Signs are the SAME, then their quotient is POSITIVE

$\frac{+}{-} = -$ or $\frac{-}{+} = -$ If the Signs are OPPOSITES, their quotient is NEGATIVE

$\frac{0}{2} = 0$ Zero in the NUMERATOR, the fractional value is ZERO

$\frac{2}{0}$ is Undefined Zero in the DENOMINATOR, the expression is UNDEFINED

$\frac{-1}{2} = \frac{1}{-2} = -\frac{1}{2}$ If ONLY ONE of the numbers is NEGATIVE, their quotient is NEGATIVE