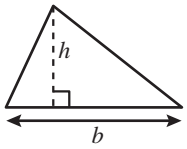
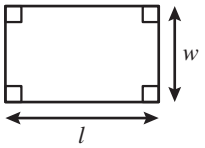
Algebra II Formula Sheet
2016 *Mathematics Standards of Learning*

Geometric Formulas:

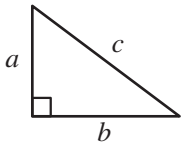


$A = \frac{1}{2}bh$



$p = 2l + 2w$

$A = lw$



$a^2 + b^2 = c^2$

Quadratic Formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}, \text{ where } ax^2 + bx + c = 0 \text{ and } a \neq 0$$

Statistics Formulas:

Given:

- x represents an element of the data set,
- x_i represents the i^{th} element of the data set,
- n represents the number of elements in the data set,
- μ represents the mean of the data set,
- σ represents the standard deviation of the data set, and
- σ^2 represents the variance of the data set

z-score: $z = \frac{x - \mu}{\sigma}$

standard deviation: $\sigma = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \mu)^2}{n}}$

variance $(\sigma^2) = \frac{\sum_{i=1}^{n} (x_i - \mu)^2}{n}$

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Sequence and Series Formulas:

Given:

a_n represents the value of n^{th} term

S_n represents the sum of first n terms

S_∞ represents the sum of an infinite geometric series

r represents the common ratio

d represents the common difference

Arithmetic	**Geometric**
$a_n = a_1 + (n-1)d$	$a_n = a_1 r^{n-1}$
$a_n = a_{n-1} + d$	$a_n = a_{n-1} \cdot r$
$S_n = \frac{n}{2}(a_1 + a_n)$	$S_n = \frac{a_1(1-r^n)}{(1-r)}, r \neq 1$
$S_n = \frac{n}{2}\left[2a_1 + (n-1)d\right]$	$S_\infty = \frac{a_1}{(1-r)}, \lvert r \rvert < 1$

Permutations and Combinations Formulas:

If n and r are positive integers and $n \geq r$,

$$n^P r = \frac{n!}{(n-r)!}$$

$$n^C r = \frac{n!}{r!(n-r)!}$$