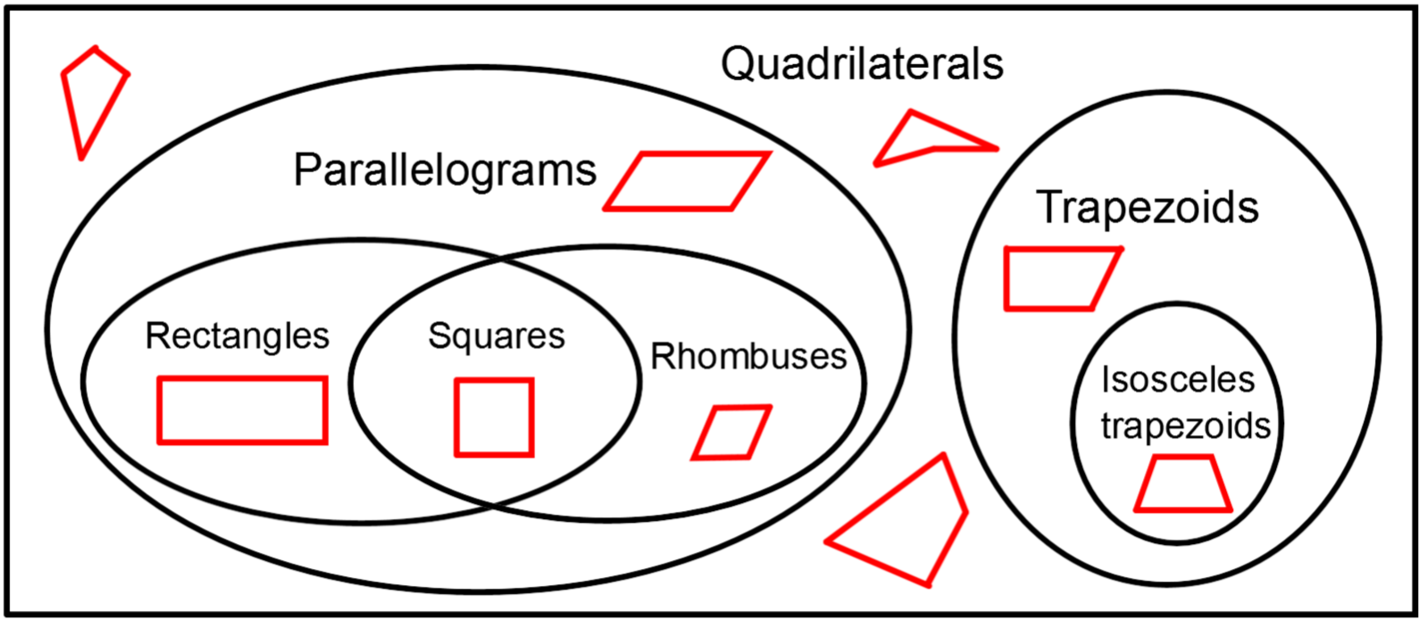
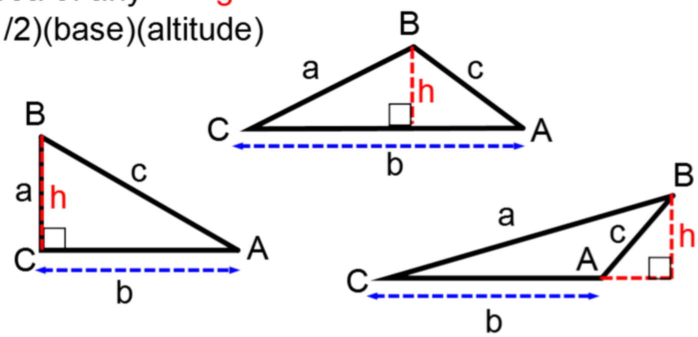


Area Review

Area of any triangle with known altitude is (1/2)(base)(altitude)

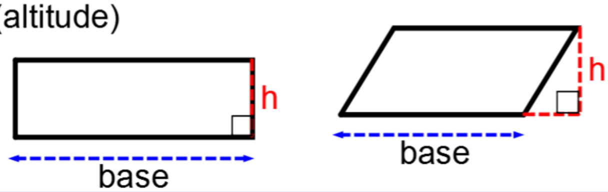


Area of any triangle with unknown altitude, but known side lengths a, b, and c, is

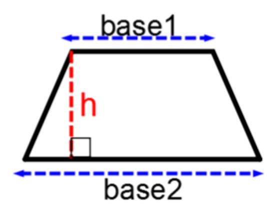
$$\sqrt{s(s-a)(s-b)(s-c)}$$

where s is half the perimeter s=(1/2)(a+b+c)

Area of any parallelogram (including rectangles) is (base)(altitude)



Area of any trapezoid is (1/2)(base1 + base2)(altitude)



Tues./Wed. 02/03 (2nd per.) 02/04 (3rd per.) - **Quiz #7** (Ch 10 similarity)

Fri. 02/06 - **HW #10** (Ch 10 Review) due; **Test #4**

Tues./Wed. 02/10 (2nd per) 02/11 (3rd per.) 9:00-11:00 - **Final Exam**

Chapter 10 - Similarity

Def: The **ratio** of the number a to the number b is the number $\frac{a}{b}$.

A **proportion** is an equality between ratios. $\frac{a}{b} = \frac{c}{d}$

a, b, c, and d are called the *first, second, third, and fourth terms*.

The second and third terms, b and c, are called the means.

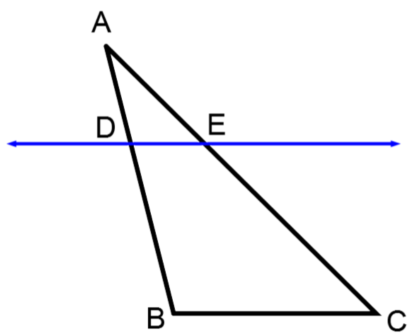
The first and fourth terms, a and d, are called the extremes.

The product of the means is equal to the product of the extremes.

If $\frac{a}{b} = \frac{c}{d}$, then $ad = bc$.

Def: The number b is the **geometric mean** between the numbers a and c if a, b, and c are positive and $\frac{a}{b} = \frac{b}{c}$.

Def: Two triangles are **similar** iff there is a correspondence between their vertices such that their corresponding sides are proportional and their corresponding angles are equal.



Theorem 44 - **The Side-Splitter Theorem**

If a line parallel to one side of a triangle intersects the other two sides in different points, it divides the sides in the same ratio, that is, if in triangle ABC, DE||BC, then $\frac{AD}{DB} = \frac{AE}{EC}$.

Corollary to the Side-Splitter Theorem:

If a line parallel to one side of a triangle intersects the other two sides in different points, it cuts off segments proprtional to the sides, that is,

$\frac{AD}{AB} = \frac{AE}{AC}$ and $\frac{DB}{AB} = \frac{EC}{AC}$

Theorem 45 - **The AA Theorem** - If two angles of one triangle are equal to two angles of another triangle, the triangles are similar.

Corollary to the AA Theorem - Two triangles similar to a third triangle are similar to each other.

Theorem 46 - Corresponding altitudes of similar triangles have the same ratio as that of the corresponding sides.

Given: $\Delta ABC \sim \Delta DEF$; BG and EH are altitudes Prove: $\frac{BG}{EH} = \frac{AC}{DF}$

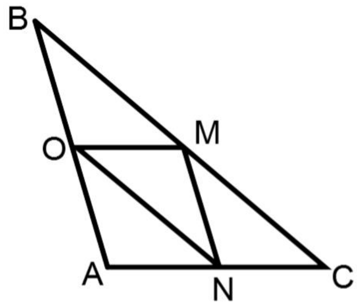
Theorem 47 – The ratio of the perimeters of two similar polygons is equal to the ratio of the corresponding sides.

Given: $\Delta ABC \sim \Delta A'B'C'$ Prove: $\frac{\rho \Delta ABC}{\rho \Delta A'B'C'} = r$, where $r = \frac{AB}{A'B'} = \frac{BC}{B'C'} = \frac{CA}{C'A'}$

Theorem 48 – The ratio of the areas of two similar polygons is equal to the square of the ratio of the corresponding sides.

Given: $\Delta ABC \sim \Delta A'B'C'$ Prove: $\frac{\propto \Delta ABC}{\propto \Delta A'B'C'} = r^2$, where $r = \frac{AB}{A'B'} = \frac{BC}{B'C'} = \frac{CA}{C'A'}$

10.4



50.

Given: ΔABC with midsegments MN, MO, and NO
Prove: ΔMNO~ΔABC

10.5 (#40-61)

SAS Similarity Theorem: If an angle of one triangle is equal to an angle of another triangle and the sides including these angles are proportional, then the triangles are similar.

Given: ΔABC and ΔA'B'C' with ∠A=∠A' and $\frac{b}{b'} = \frac{c}{c'}$.
Prove: ΔABC~ΔA'B'C'

SSS Similarity Theorem: If the sides of one triangle are proportional to the sides of another triangle, then the triangles are similar.

Given: ΔABC and ΔA'B'C' with $\frac{a}{a'} = \frac{b}{b'} = \frac{c}{c'}$.
Prove: ΔABC~ΔA'B'C'

10.6

Triangle Ratios (#1-9)

SAT Problem (#32-36)