Theorem 17: Equal corresponding angles mean that lines are parallel.
Corollary 1: Equal alternate interior angles mean that lines are parallel.
Corollary 2: Supplementary interior angles on the same side of a transversal mean that lines are parallel.
Corollary 3: In a plane, two lines perpendicular to a third line are parallel.

The Parallel Postulate – Through a point not on a line, there is exactly one line parallel to the given line.
Theorem 18: In a plane, two lines parallel to a third line are parallel to each other.

Theorem 19: Parallel lines form equal corresponding angles.
Corollary 1: Parallel lines form equal alternate interior angles.
Corollary 2: Parallel lines form supplementary interior angles on the same side of a transversal.
Corollary 3: In a plane, a line perpendicular to one of two parallel lines is also perpendicular to the other.

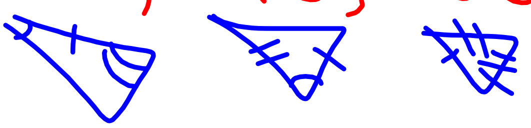
Theorem 20: The Triangle Sum Theorem – The sum of the angles of a triangle is 180°.
Corollary 1: If two angles of one triangle are equal to two angles of another triangle, the third angles are equal.
Corollary 2: The acute angles of a right triangle are complementary.
Corollary 3: Each angle of an equilateral triangle is 60°.

Theorem 21: An exterior angle of a triangle is equal to the sum of the remote interior angles.

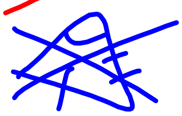
Theorem 22: The AAS Theorem – If two angles and the side opposite one of them in one triangle are equal to the corresponding parts of another triangle, the triangles are congruent.

Theorem 23: The HL Theorem – If the hypotenuse and a leg of one right triangle are equal to the corresponding parts of another right triangle, the triangles are congruent.

ASA, SAS, SSS



~~SSA = ASS~~



Def: A diagonal of a polygon is a line segment that connects any two nonconsecutive vertices.

Theorem 24: The sum of the angles of a quadrilateral is 360°.

Def: A rectangle is a quadrilateral each of whose angles is a right angle.

Corollary to Theorem 24: A quadrilateral is equiangular iff it is a rectangle.

In general, if a polygon has n sides, in terms of n,

- n-3 diagonals can be drawn from one vertex
- these diagonals form n-2 triangles
- the sum of the angles of an n-gon is (n-2)*180°
- If the n-gon is equiangular, each angle measures (n-2)*180°/n

Def: A parallelogram is a quadrilateral whose opposite sides are parallel.

A figure has point symmetry if it looks exactly the same when it is rotated about a point.

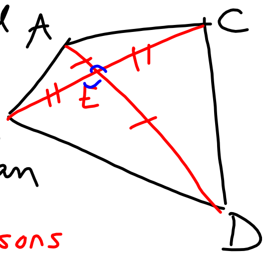
Def: Two points are symmetric with respect to a point iff it is the midpoint of the line segment joining them.

Parallelograms have point symmetry about the point in which their diagonals intersect.

Theorem 25: The opposite sides and angles of a parallelogram are equal.
Theorem 26: The diagonals of a parallelogram bisect each other.
Theorem 27: A quadrilateral is a parallelogram if its opposite sides are equal.
Theorem 28: A quadrilateral is a parallelogram if its opposite angles are equal.
Theorem 29: A quadrilateral is a parallelogram if two opposite sides are both parallel and equal.

Theorem 30: A quadrilateral is a parallelogram if its diagonals bisect each other.

Given: ABCD is a quadrilateral
AD and BC bisect each other



Prove: ABCD is a parallelogram

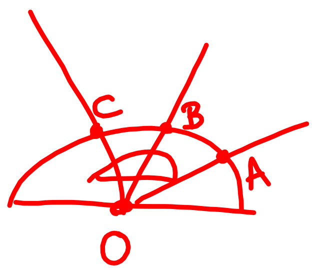
Proof:

Statements	Reasons
1. ABCD is a quadrilateral AD & BC bisect eachother	Given
2. $\angle AEC = \angle BED$	vertical angles
3. BE=EC and AE=ED	bisectors divide line segments into two equal parts
4. $\triangle AEC \cong \triangle DEB$	SAS congruence
5. $\angle CAE = \angle BDE$	corresponding parts of congruent triangles are equal
6. $AC \parallel BD$	equal alternate interior angles means lines are parallel
7. AC = BD	corresponding parts of congruent triangles are equal
8. ABCD is a parallelogram	a quadrilateral is a parallelogram if two opposite sides are both parallel and equal

Betweeness of Points

Def: A-B-C iff $A<B<C$ or $A>B>C$

Theorem: $AB+BC=AC$



Betweeness of Rays

Def: OA-OB-OC iff $A<B<C$ or $A>B>C$

Theorem: $\angle AOB + \angle BOC = \angle AOC$

HW #1 (submitted Friday, 11/7)
- Ch 1 Review Problems pp. 36-38
- Start working on Geometry badge on Khan Academy

HW #2 (submitted Friday, 11/14)
- Ch 2 Review Problems pp. 71-74
- Ch 3 Review Problems pp. 124-128
- Khan Academy exercises: "Introduction to Euclidean geometry," "Angles and intersecting lines"

HW #3 (submitted Friday, 11/21)
- Ch 4 Review Problems pp.176-180
- Khan Academy exercises: "Congruence"

HW #4 (submitted Friday, 12/5)
- Ch 5 Review Problems pp. 206-209
- Work toward mastery of practiced Khan Academy exercises in "Introduction to Euclidean Geometry," "Angles and Intersecting Lines," and "Congruence"

HW #5 (submitted Monday, 12/15)
- Ch 6 Review Problems pp. 250-254

HW #6 (due January)
- Ch 7 Review Problems pp. 292-295

TEST #2 - WEDNESDAY 12/18