Cheatography

Geometry Final Cheat Sheet

by ColdZera via cheatography.com/28389/cs/8343/

Vocabulary	
Segment	Part of a line consisting of two end points and the points between them
Ray	Part of a line consisting of an end point and all the points to one side
Opposite rays	2 collinear rays with the same endpoint; forms a line
Parallel Lines	Coplaner lines that do not intersect
Skew Lines	Non-coplaner lines that do not intersect
Parallel Planes	Planes that do not intersect
Congruent Segments	2 segments with the same length
Midpoint	Point on a segment that divides a segment into 2 congruent segments
Angle	Formed by two rays with the same endpoint.
Acute Angle	Angle Greater than 0 and less than 90
Right angle	90 degree angle
Obtuse angle	Angle greater than 90 but less than 180
Straight Angle	180 degree angle
Congruent angles	Angles with the same measure
Vertical angles	Opposite angles formed by intersecting lines
Adjecent angles	2 coplaner angles that share a common vertex and a common side
Complementary angles	2 angles that add up to 90 degrees
Supplementry angles	2 angles that add up to 180 degrees
Conditional	An if/then statement

Vocabulary (cont)	
Hypothesis	What follows the If in a conditional
Conclusion	What follows the then in a conditional
Truth Value	If a conditional is true or false
Converse	Palendrome of a conditional
Biconditional	The combination of a conditional statement and its converse
Deductive Reason-ing/Logical Thinking	The process of reasoning from a given statement to a conclusion
Negation	Opposite of the truth value
Inverse	Negates both the hypothesis and the conclusion
Contrapos-otove	Switches the hypothesis and the conclusion and negates both
Transversal	A line that intersects 2 or more coplaner lines at distinct points
Equiangular Triangle	All angles are congruent
Acute Tringle	all angles are acute
Right Triangle	one right angle
Obtuse Triangle	one obtuse angle
Equalateral Triangle	All sides are congruent
Isosceles Triangle	2 congruent sides
Scalene Triangle	No congruent sides
Exterior angle	Angle formed by a side and an extention of an adjacent side
Polygon	A closed plane figure with at least 3 sides that are segments. The sides only intersect at end points, no adjacent sides are congruent
Convex Polygons	No "dents"

Vocabulary (cont)

Concave polygon	Has a "dent" or "dents"
Equilateral Polygon	a polygon where all sides are congruent
Equiangular polygon	a polygon where all angles are congruent
regular polygon	a polygon that is both equiangular and equalateral
Congruent Polygons	Polygons with congruent corresponding sides and angles
Corollary	a statement that follows directly from a theorem
Midsegment	a segment that connects the midpoints of 2 sides of a triangle
Perpendicular Bisector	a line segment or ray that is perpendicular to a segment through its midpoint
Concurrent	When 3 or more lines intersect in one point
Point of concurrency	Point where 3 concurrent lines intersect
Circumcenter	The point of concurrency of the perpendicular bisectors of a triangle
circumscribed circle	circle that passes through all the vertices of a triangle
Obtuse Circumcenter	Lies outside the triangle
Right Circum-center	midpoint of the hypotenuse
Acute circum-center	Lies within the triangle
Angle Bisector	Ray that divides an angle into to congruent segments
Incenter	Point of concurrency of the angle bisectors of a triangle
Inscribed Circle	Largest circle contained in a triangle that touches all three sides

Vocabulary (cont)

Median	Segment whose endpoints are a vertex and the midpoint of the opposite side
centroid	point of concurrency of the medians; always lies within the triangle
Altitude	Height of a triangle
Quadri-lateral	Polygon with 4 sides
Parall-elogram	A quadrilateral with 2 pairs of opposite parallel sides
Rhombus	Quadrilateral with all sides congruent and 2 pairs of opposite parallel sides
Rectangle	Parallelogram with four right angles
Square	A parallelogram with four congruent sides and four right angles
Kite	Quadrilateral with two pairs of adjacent sides congruent and no opposite sides congruent
Trapezoid	A quadrilateral with exaclty one pair of parallel sides
Isosceles Trapezoid	A trapezoid whose non-parallel sides are congruent
Consecutive Angles	Angles of a polygon that share a side; are supple-mentary
Base angles	two angles that share a base of a trapezoid
Proportion	a statement that 2 ratios are equal
Indirect Measur-ement	Used to find the lengths of objects that are too difficult to measure directly
Vector	any quantity with magnitude (size) and direction

Vocabulary (cont)

Magnitude	Distance from initial point to terminal point
Tangent line to a circle	A line on the same plane as a circle that intersects the circle at exactly one point
point of tangency	point where a circle and tangent line intersect
Apothem	Perpendicular distance from the center of a regular polygon
Circle	The set of all points in a plane equidistant to a given point called the center
radius	a segment w/ one endpoint at the center and the other in the circle
Diameter	a segment that contains the center and has both endpoints on a circle
Congruent circles	circles with congruent radii or diameters
central angle	an angle whose vertex is the center of the circle
Arc	Part of circle
Semi-circle	Half a circle
Minor Arc	Smaller than a semi-circle
Major arc	Greater than a semi circle
adjacent arc	arcs of the same circle that have exactly one point in common
Circum-ference	Perimeter of a circle
concentric circles	coplanar circles that share a center

All the other crap continued

Theorem 12-1	If a line is tangent to a circle, then the line is perpendicular to the radius drawn to the point of tangency
Theorem 12-2	If a line is in the plane of a circle is a radius at its endpoint on the circle, then the line is tangent to the circle
Theorem 12-3	The two segments tangent to a circle from a point outside the circle are congruent
Perimiter of a Square	4S
Area of a Square	S^2
Perimiter of a Rectangle/Paral-lelogram	2B+2H
Area of a Rectangle/Paral-lelogram	BH
Circumference	PiD or 2PiR
Area of a Circle	PiR^2
Perimiter of a Triangle	S1+S2+S3
Area of a Triangle	.5(b*h)
Area of a Trapezoid	.5(b1*b2)h
Area of a Rhombus/Kite	.5(d1*d2)
Area of Regular Polygons	.5AP
Arc Addition Postulate	The whole is equal to the sum of its parts
Arc Length	

Postulates, Formulas, etc...

Ruler Postulate	The points of a line can be put into 1:1 correspon-dence with the real numbers AB=|A-B|
Segment addition postulate	If three points (A,B,C) are colliner and B is between A and C, then AB+BC=AC; The whole is equal to te sum of its parts

Postulates, Formulas, etc... (cont)	
Vertical Angles Theorem	Vertical angles are congruent
Law of detachment	If P->Q and P is true, then Q is true
Law of syllogism	If P->Q and Q->R are true, then P->R is true
Addition Property	A=B, then A+C=B+C
Subtraction Property	A=B, then A-C=B-C
Multiplication Property	A=B, then A*C*=*B*C
Division Property	A=B and C is not 0, then (A/C)=(B/C)
Reflexive Property	A=A
Symmetric Property	A=B and B=A
Transitive Property	A=B and B=C, then A=C
Substitution Property	A=B, so B can replace A in equations
Distributive property	A(B+C)= AB+AC
Congruent Supplements Theorem	If 2 ngles are supplements of the same angle or of congruent angles, then that angles are congruent
Congruent Complements Theorem	If 2 angles are complements of the same angle or of congruent angles, then the 2 angles are congruent
Right Angle Congruence	All right angles are congruent
Corresponding angles are congruent	Implys parallel lines
Alternate Interior angles are congruent	Implys parallel lines
Same side Interior angles are supplementry	Implys parallel lines
Alternate exterior angles are congruent	Implys parallel lines
Same side Exterior angles are supplementry	Implys parallel lines

Postulates, Formulas, etc... (cont)	
If two lines are parallel to the same line	Then they are Parallel
If 2 coplaner lines are perpendicular to the same line	then they are parallel
Sum of a triangle's angle measures	180 degrees
Triangle exterior angle Theorem	The measure of each exterior angle of a triangle equals the sum of it's two remote exterior angles
Degrees in a Quadrilateral	360
Degrees on a Pentagon	540
Degrees in a hexagon	720
Degrees in a octagon	1080
Theorem 4-1	If two angles of one triangle are congruent to two angles of another triangle, then they are congruent
CPCTC	Corresponding Parts of Congruent Triangles are congruent
SSS; Side Side Side	If 3 sides of a triangle are congruent to 3 sides of another triangle, then they are congruent
SAS; Side Angle Side	If 2 sides and 1 included angle of a triangle are congruent to the 2 sides and angle of another triangle, then they are congruent
ASA; Angle Side Angle	If 2 angles and an included side of a triangle are congruent to 2 angles and included side of another triangle, then they are congruent

Postulates, Formulas, etc... (cont)

AAS; Angle Angle Side	If 2 angles and a non-included side of a triangle are congruent to 2 angles and non-included side of another triangle, then they are congruent
Isosceles Triangle Theorem	If the 2 sides of a triangle are congruent, then the base angles are congruent
Converse Isosceles Triangle Theorem	If the 2 base angles of a triangle are congruent, then the sides are congruent
HL; Hypotenuse Leg	If the hypotenuse and a leg of a right triangle are congruent to the hypotenuse and leg of another right triangle, then they are congruent
Triangle Midsegment theorem	If a segment joins the midpoints if 2 sides of a triangle, then the segment is parallel to the third side and is half the length
Perpendicular Bisector theorem	If a point is on the perpendicular bisector of a segment, then it is equidistant from the endpoints of the segment
Converse of the Perpendicular Bisector theorem	If a point is equidistant from the endpoints of a segment, then it is on the perpendicular bisector of the segment
Angle Bisector theorem	If a point is on the angle bisector of an angle, then the point is wquidistant to the sides of the angle

Postulates, Formulas, etc... (cont)

the converse of the Angle Bisector theorem	If a point in the interior of an angle is equidistant to the sides of the angle, then the point is on the angle bisector
Theorem 5-6	The perpendicular bisectors of the sides of a triangle are concurrent at a point equidistant from the vertices
Theorem 5-7	The Bisectors of the angles of a triangle are concurrent at a point equidistant from the sides
Theorem 5-8	The mediams of a triangle are concurrent at a point that is two thirds the distnce from each vertex to the mid point of the opposite side
Theorem 5-9	The Lines that contain the altitudes of a triangle are concurrent
Comparison Property	If A=B+C and C>0, then A>B
Distance formula	
Midpoint Formula	
Slope Intercept Form	Y=Mx+B
Standard Form	Ax+By=C
Point Slope Form	$Y-Y^1=M(X-X^1)$
Theorem 6-1	Opposite sides of a parallelogram are congruent
Theorem 6-2	Opposite angles of a parallelogram are congruent
Theorem 6-3	The diagonals of a parallelogram bisect each other
Theorem 6-4	If three or more parallel lines cut off congruent segments on one transversal, then they cut off congruent segments on every transversal

Postulates, Formulas, etc... (cont)	
Theorem 6-5	If both pairs of opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram
Theorem 6-6	If both pairs of opposite angles of a quadrilateral are congruent, then the quadrilateral is a parallelogram
Theorem 6-7	If the diagonals of a quadrilateral bisect each other then the quadrilateral is a parallelogram
Theorem 6-8	if one pair of opposite sides of a quadrilateral are both parallel and congruent, then the quadrilateral is a parall-elogram
Theorem 6-9	Each diagonal of a rhombus bisects 2 angles of the rhombus
Theorem 6-10	The diagonals of a rhombus are perpendicular
Theorem 6-11	The Diagonals of a rectangle are congruent
Theorem 6-12	If one diagonal of a parallelogram bisects 2 angles of the parallelogram, then it is a rhombus
Theorem 6-13	If the diagonals of a parallelogram are perpendicular, then it is a rhombus
Theorem 6-14	If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle
Theorem 6-15	The Base angles of an isosceles trapezoid are congruent

Postulates, Formulas, etc... (cont)	
theorem 6-16	Diagonals of an isosceles trapezoid are congruent
AA~; angle angle similarity	If 2 angles of one triangle are congruent to 2 angles of another triangle, then they are similar
SAS~; Side Angle Side similarity	If an angle of one triangle is congruent to an angle of an angle of a second triangle, and the sides surrounding the angle are propotional, then they are similar
SSS~; Side Side Side similarity	If the corresponding sides of two triangles are proportional, then they are similar
Theorem 7-3	The altitude to the hypotenuse of a right triangle divides the triangle into 2 triangles that are similar to the original and eachother
Corollary 1 to Theorem 7-3	The length of the altitude to the hypotenuse of a right triangle is the geometric mean of the lengths of the segments of the hypotenuse
Corollary 2 to Theorem 7-3	The altitude of the hypotenuse of a right triangle separates the hypotenuse so that the length of each leg of the triangle is the geometric mean of the length of the adjacent hypotenuse segment and the length of the hypotenuse

Postulates, Formulas, etc... (cont)	
Side-S-plitter Theorem	If a line is parallel to one side of a triangle and intersects the other two sides, then its divides those sides proportionally
Corollary to Side-S-plitter	If three parallel lines intersect 2 transversals, then the segments intercepted on the transversals are proportional
Theorem 7-5	If a ray bisects an angle of a triangle, then it divides the opposite side into two segments that are proportional to the other two sides of the triangle
Pythag-orean Theorem	$A^2+B^2=C^2$
Pythagoren Triples	{3,4,5} {5,12,13} {8,15,17} {7,24,25}
$C^2=A^2+B^2$	Right Triangle
$C^2>A^2+B^2$	Obtuse Triangle
$C^2<A^2+B^2$	Acute Triangle
45-45-90 Triangle	In a 45-45-90 triangle, both legs are congruent and the length of the hypotenuse is square root of 2 times the length of a leg
30-60-90 Triangle	The Hypotenuse is double the length of the shortest leg and the length of the longer leg is square root of 3 times the length of the shorter leg
Tangent	Opposite/Adjacent
Sine	Opposite/Hypotenuse
Cosine	Adjacent/Hypotenuse
SohCahToa	You know what this means, dummy