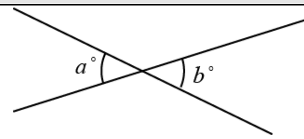
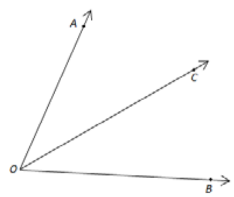
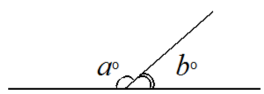
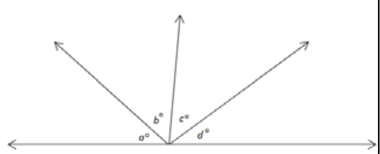
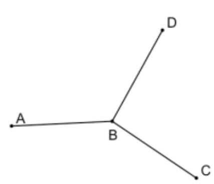
Key Facts and Discoveries from Earlier Grades

Facts (With Abbreviations Used in Grades 4–9)	Diagram/Example	How to State as a Reason in an Exercise or Proof
Vertical angles are equal in measure. (vert. ∠s)	 $a = b$	"Vertical angles are equal in measure"
If C is a point in the interior of $\angle AOB$, then $m\angle AOC + m\angle COB = m\angle AOB$. (∠s add)	 $m\angle AOB = m\angle AOC + m\angle COB$	"Angle addition postulate"
Two angles that form a linear pair are supplementary. (∠s on a line)	 $a + b = 180$	"Linear pairs form supplementary angles"
Given a sequence of n consecutive adjacent angles whose interiors are all disjoint such that the angle formed by the first $n-1$ angles and the last angle are a linear pair, then the sum of all of the angle measures is $180°$. ($\angle s$ on a line)	 $a + b + c + d = 180$	"Consecutive adjacent angles on a line sum to 180°"
The sum of the measures of all angles formed by three or more rays with the same vertex and whose interiors do not overlap is $360°$. (∠s at a point)	 $m\angle ABC + m\angle CBD + m\angle DBA = 360°$	"Angles at a point sum to 360°"

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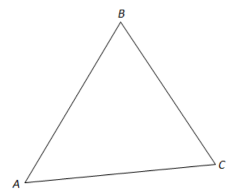
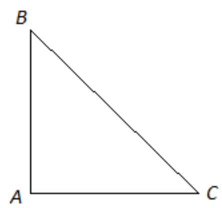
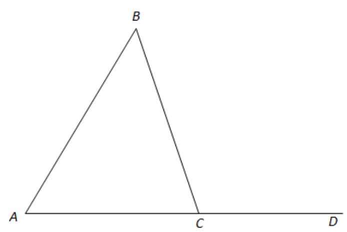
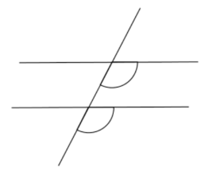
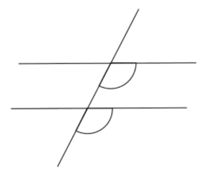
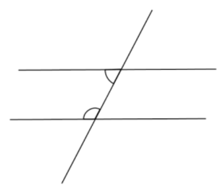
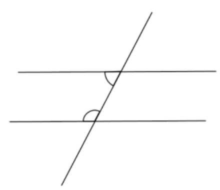
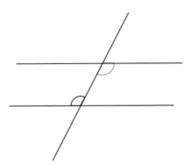
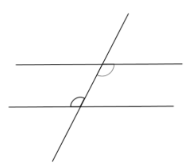
The sum of the 3 angle measures of any triangle is $180°$. ($\angle$ sum of Δ)	 $m\angle A + m\angle B + m\angle C = 180°$	"Sum of the angle measures in a triangle is $180°$"
When one angle of a triangle is a right angle, the sum of the measures of the other two angles is $90°$. ($\angle$ sum of rt. Δ)	 $m\angle A = 90°;\ m\angle B + m\angle C = 90°$	"Acute angles in a right triangle sum to $90°$"
The sum of the measures of two angles of a triangle equals the measure of the opposite exterior angle. (ext. $\angle$ of Δ)	 $m\angle BAC + m\angle ABC = m\angle BCD$	"Exterior angle of a triangle equals the sum of the two interior opposite angles"
Base angles of an isosceles triangle are equal in measure. (base $\angle$s of isos. Δ)		"Base angles of an isosceles triangle are equal in measure"
All angles in an equilateral triangle have equal measure. (equilat. Δ)		"All angles in an equilateral triangle have equal measure"

Facts (With Abbreviations Used in Grades 4–9)	Diagram/Example	How to State as a Reason in an Exercise or Proof
If two parallel lines are intersected by a transversal, then corrsponding angles are equal in measure. (corr. $\angle$s, $\overline{AB} \parallel \overline{CD}$)		"If parallel lines are cut by a transversal, then corresponding angles are equal in measure"
If two lines are intersected by a transversal such that a pair of corresponding angles are equal in meaure, then the lines are parallel. (corr. $\angle$s converse)		"If two lines are cut by a transversal such that a pair of corresponding angles are equal in meaure, then the lines are parallel"
If two parallel lines are intersected by a transversal, then interior angles on the same side of the transversal are supplementary. (int. $\angle$s, $\overline{AB} \parallel \overline{CD}$)		"If parallel lines are cut by a transversal, then interior angles on the same side are supplementary"
If two lines are intersected by a transversal such that a pair of interior angles on the same side of the transversal are supplementary, then the lines are parallel. (int. $\angle$s converse)		"If two lines are cut by a transversal such that a pair of interior angles on the same side are supplementary, then the lines are parallel"
If two parallel lines are intersected by a transversal, then alternate interior angles are equal in measure. (alt. $\angle$s, $\overline{AB} \parallel \overline{CD}$)		"If parallel lines are cut by a transversal, then alternate interior angles are equal in measure"
If two lines are intersected by a transversal such that a pair of alternate interior angles are equal in meaure, then the lines are parallel. (alt. $\angle$s converse)		"If two lines are cut by a transversal such that a pair of alternate interior angles are equal in meaure, then the lines are parallel"