PLANE FIGURES: LINES AND ANGLES

Plane figures in regards to lines and angles refer to the coordinate plane and the various lines and angles within the coordinate plane. Lines in a coordinate plane can be **parallel or perpendicular**.

Angles in a coordinate plane can be **acute, obtuse, right or straight.**

Angle bisectors and congruent angles can also be found given various information.

Adjacent, complementary, supplementary and vertical angles can all be identified in the coordinate plane. Polygons can be measured to find their angles or missing angles. The **sum of the interior angles** of a polygon can found using a simple formula.

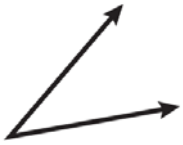
How to use plane figures: lines and angles

In the coo I, the x and y valu negative and the y values are negati y value is negative.

Angles in the coordinate plane can be **measured** using a tool called a **protractor**.

- An angle is called an **acute angle** if it is less than 90°.
- An angle is an **obtuse angle** if it is greater than 90°.
- A **right angle** is exactly 90°.
- A **straight angle** is exactly 180°.

Triangles can be classified based on the measure of the angles within it. An acute triangle has all angles less than 90°, an obtuse triangle has one angle that is over 90° and a right triangle has one right angle. For example, what type of angle is shown? What type of triangle would be made from this angle?

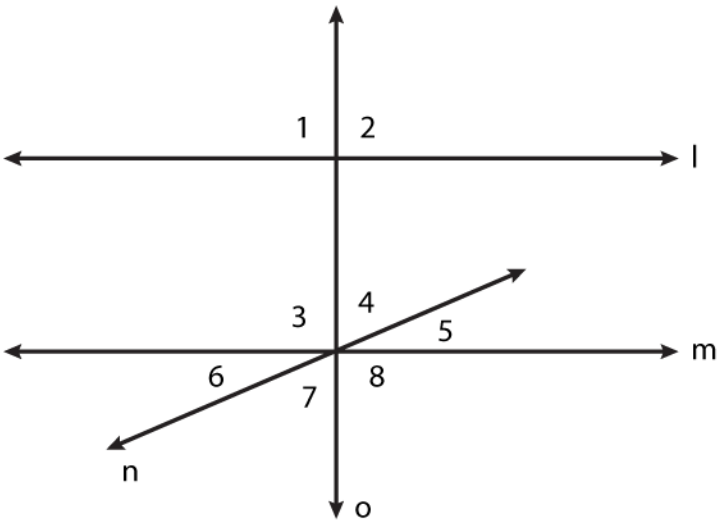


The angle is an acute angle because it is less than 90°. If the arrowheads were connected, the triangle made would be an acute triangle. If the angle above was measured to be 30° and a line was drawn to cut the angle in half, the line would be called the angle bisector. The two angles formed by the **angle bisector** would be 15° each because together the angles would have to equal 30°.

Intersecting Lines Make Angles

Lines can also be drawn to make angles.

- **Perpendicular lines** intersect to form **right angles**.
- Othe [illegible] are next to ea
- **Vert** **Com**
- **Sup**
- Lines that never cross a called **parallel lines**. For example, identify an adjacent and vertical angle, identify perpendicular and parallel lines and give one example of complementary and supplementary angles.



Given the lines, l, m, n, and o, the adjacent angles are 1 & 2, 3 & 4, 4 & 5, 5 & 8, 3 & 6, 6 & 7 and 7 & 8. The vertical angles are 3 & 8, 4 & 7 and 5 & 6. There are two sets of perpendicular lines, line l & line o and line m
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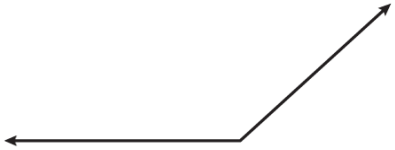
compleme
e
supplemer

Sum of A

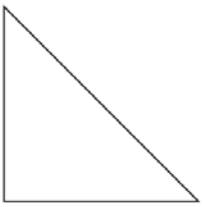
- In a tria
- In a quadrilateral, the angles add up to 360°.
- In a polygon with n sides, the **sum of the interior angles = (n - 2) · 180°**.
- If given 3 angles of a quadrilateral, the fourth angle can be found by subtracting the known angles from 360°.
- If two angles of a triangle are known, the third angle can be found by subtracting the known angles from 180°.

Try This!

1. What type of angle is shown?



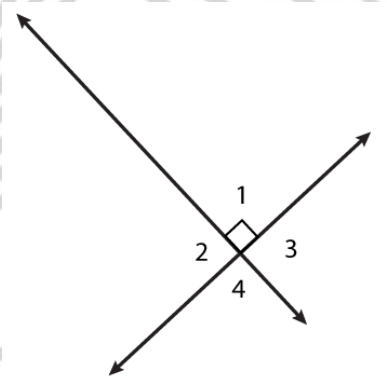
2. What type of triangle is shown?



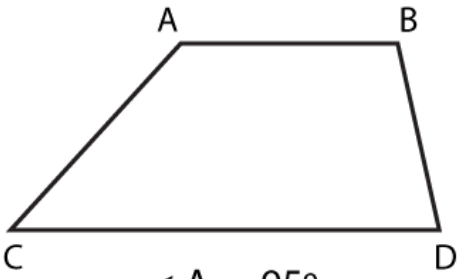
3. Wha

4. Wha

5. For the diagram shown, name a pair of vertical, adjacent and supplementary angles.



6. What is the missing angle for the quadrilateral and triangle shown?



$< A = 95^{o}$

$< B = 98^{o}$

$< C = 65^{o}$

$< D = ?$