

Grade 4 - Measuring and Drawing Angles - Lesson

Common Core 4.MD.C.5, 4.MD.C.6, 4.MD.C.7 · maths-pdf.fr/en/

An angle is formed by two rays that share an endpoint, and it is measured in degrees. A full turn is 360 degrees, a half turn is 180 degrees, and a quarter turn is 90 degrees. One degree is $\frac{1}{360}$ of a full circle. Use a protractor to measure angles, and add parts to find a whole angle.

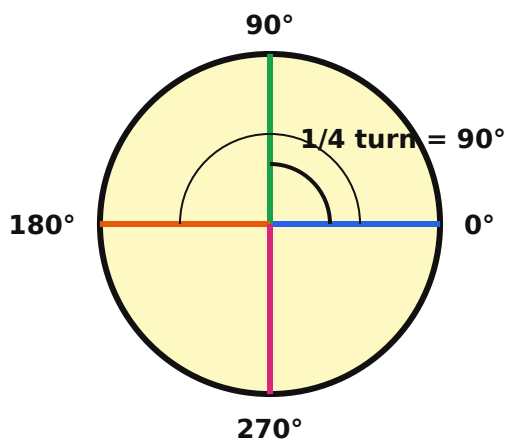
Grade 4 · Common Core State Standards: **4.MD.C.5, 4.MD.C.6, 4.MD.C.7**

Key facts

- An angle has two rays and one shared endpoint called the vertex.
- A full circle is 360 degrees, a half turn is 180 degrees, and a quarter turn is 90 degrees.
- A one-degree angle turns through $\frac{1}{360}$ of a circle.
- Acute angles are less than 90 degrees, right angles are exactly 90 degrees, and obtuse angles are greater than 90 degrees.
- If an angle is split into parts, the whole angle is the sum of the parts.

What is an angle?

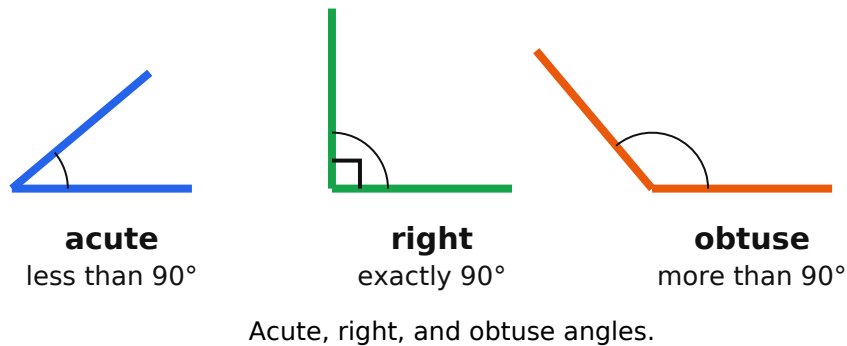
An angle is made by two rays that start at the same point. That point is the **vertex**. You can think of an angle as a turn: the more you turn, the bigger the angle. A full turn all the way around a circle measures 360 degrees, written 360° .



Turns around a circle.

One-degree angle

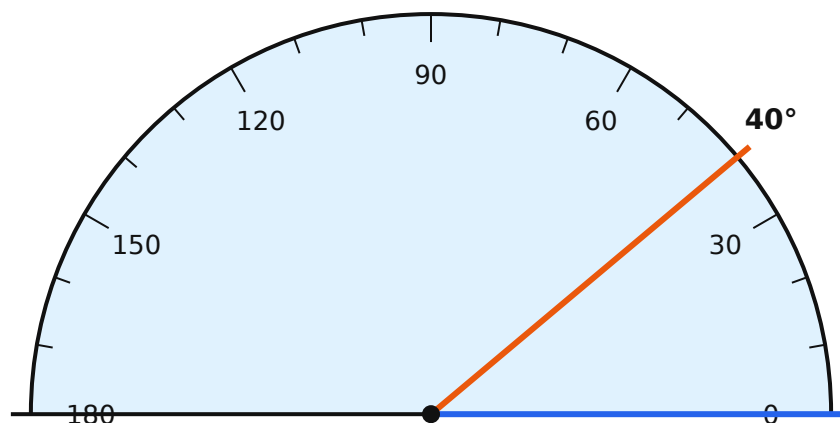
If you split a full circle into 360 equal slices, each slice has an angle of **1 degree**. So a one-degree angle is $\frac{1}{360}$ of a circle. An angle that cuts through n of these slices measures n degrees.



Angles get names from their size. An **acute** angle is smaller than a right angle, like the tip of a slice of pie. A **right** angle is the corner of a book. An **obtuse** angle opens wider than a corner but is not yet a straight line. A straight line is 180° .

How do you measure an angle with a protractor?

1. Put the center hole of the protractor on the vertex.
2. Line up one ray with the zero line.
3. Follow the scale that starts at 0 on that ray.
4. Read the number where the other ray crosses the scale.



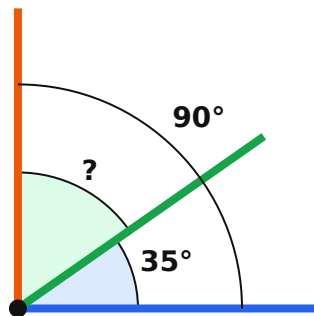
This angle measures 40° .

To **sketch** an angle, do the same steps backward. Draw one ray, put the protractor center on its endpoint, make a small dot at the number you want, and draw a second ray from the vertex through the dot. A quick check keeps you honest: a 45° sketch must look smaller than a

corner, and a 120° sketch must look wider than one.

How do you find an unknown angle?

Angles add. If you put two angles side by side without gaps, the big angle is the sum. A right angle is 90° , so if one part is 35° , the other part is $90 - 35 = 55$ degrees.



The parts must add up to 90° .

Example. A pizza is cut into 8 equal slices. What is the angle of one slice, and what is the angle of 3 slices?

1. A full circle is 360° .
2. One slice: $360 \div 8 = 45^\circ$.
3. Three slices: $3 \times 45 = 135^\circ$.

Questions about measuring and drawing angles

What is a degree?

A degree is a unit for measuring angles. One degree is the angle that cuts off $1/360$ of a circle, so a full turn measures 360 degrees.

How many degrees are in a right angle?

A right angle is exactly 90 degrees. It looks like the corner of a sheet of paper and is one quarter of a full turn.

How do you read a protractor correctly?

Place the center on the vertex, line one ray up with zero, and read the scale that starts at zero. Check the answer: an acute angle must be less than 90.

How do you find an unknown angle in a right angle?

Subtract the known part from 90. For example, if one part is 35 degrees, the unknown part is $90 - 35 = 55$ degrees.

How many degrees are in a straight line?

A straight line is a half turn, so it measures 180 degrees. Angles that sit together on a straight line add up to 180 degrees.