Unplugged – Measuring Angles

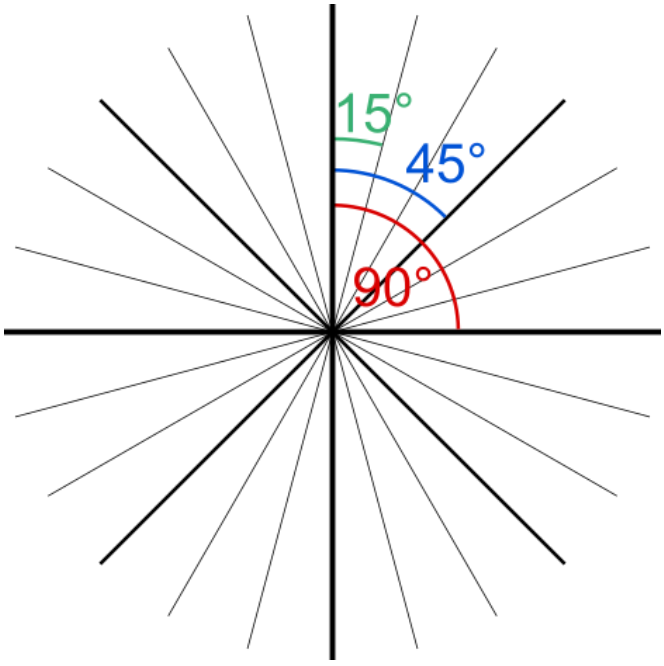
Why are there 360 degrees in a circle?

Nobody knows for sure why we have 360 degrees in a circle. In fact, there are three different units that can be used to measure angles – degrees, radians, and gradians. There are a few theories as to why there are 360 degrees in a circle. First, it is a highly composite number. This means that it is divisible by lots of other numbers; it has 24 whole number factors.

Many ancient civilizations used 360-day calendars, including the Mayans, the ancient Egyptians, ancient Romans, and Rigveda (a set of ancient Indian writings). The Babylonians also used a base sixty number system (in the modern western world, we use a base ten system). A lot of our knowledge of geometry comes from studies performed during these ancient times, so it makes sense that the scientists and mathematicians of the time used numbers that they were familiar with.

Creating your Floor Protractor

Either using masking tape or a disposable tablecloth and a permanent marker, we will create a protractor on the floor that we can use to teach and learn angles. Use a strip of tape or draw a straight line around 1m long to create two 180° angles. With another piece of tape or line, divide the first line into two equal parts so that you have a cross with four 90° angles. Dividing both of these angles again into two equal parts will give eight 45° angles. Finally, using a protractor if you have one, divide each 45° angle into thirds to create a total of twenty four 15° angles.



Turning and learning angles

Have someone stand in the centre of the floor protractor. Give them instructions to turn a particular amount, e.g. right 60° or left 45°. How far would you need to turn in the opposite direction to reach the same position? For example, turning 60° right will result in you facing in the same direction as if you had turned 300° left.

Left	**Right**
330°	30°
300°	60°
270°	90°
240°	120°
210°	150°
180°	180°

Walking and turning

Start off the floor protractor. Take a step into the centre, turn 60°, and take a step off.

Now imagine that you were drawing a line behind you. What would be the angle that you have drawn?