

Degrees, Minutes, Seconds

There are several ways to measure the size of an angle. One way is to use units of degrees. (Radian measure is another way.)

In a complete circle there are three hundred and sixty degrees.

An angle could have a measurement of 35.75 degrees. That is, the size of the angle in this case would be thirty-five full degrees plus seventy-five hundredths, or three fourths, of an additional degree. Notice that here we are expressing the measurement as a decimal number. Using decimal numbers like this one can express angles to any precision - to hundredths of a degree, to thousandths of a degree, and so on.

There is another way to state the size of an angle, one that subdivides a degree using a system different than the decimal number example given above. The degree is divided into sixty parts called minutes. These minutes are further divided into sixty parts called seconds. The words minute and second used in this context have no immediate connection to how those words are usually used as amounts of time.

In a full circle there are 360 degrees.

Each degree is split up into 60 parts, each part being $1/60$ of a degree. These parts are called minutes.
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Each minute is split up into 60 parts, each part being $1/60$ of a minute. These parts are called seconds.
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The size of an angle could be stated this way: 40 degrees, 20 minutes, 50 seconds.

There are symbols that are used when stating angles using degrees, minutes, and seconds. Those symbols are shown in the following table.

Symbol for degree: °

Symbol for minute: ′

Symbol for second: ″

So, the angle of 40 degrees, 20 minutes, 50 seconds is usually written this way:

$$40^{\circ} 20' 50''$$