

## Lesson: Comparing Numbers in Scientific Notation

Different First Factor but Same Power of 10	<p>The width of a human hair is about <math>1 \times 10^{-4}</math> meter wide. The width of mechanical pencil lead is about <math>7 \times 10^{-4}</math> meter wide. About how many pieces of hair would it take to match the width of a piece of mechanical pencil lead?</p>
	<p>The distance from the Sun to the star Proxima Centauri is a little more than <math>4 \times 10^{16}</math> meters. The distance from the Sun to the Cone Nebula is about <math>8 \times 10^{16}</math>. About how many times farther from the Sun is the Cone Nebula than Proxima Centauri?</p>
	<p>Human skin has a thickness of about <math>5 \times 10^{-3}</math> meter. A grain of sand has a thickness of about <math>1 \times 10^{-3}</math> meter. Which is thicker, human skin or a grain of sand?</p> <p>About how many grains of sand would it take to match the thickness of human skin?</p>
Same First Factor but Different Powers of 10	<p>The speed of light is about 300,000,000 meters per second. The speed of sound in dry air is about <math>3 \times 10^2</math> meters per second. Which travels faster?</p> <p>About how many times faster?</p>
	<p>An average-sized ant is about <math>4 \times 10^{-3}</math> meter long. The circumference of the Earth is about <math>4 \times 10^7</math> meters. About how many ants would it take to wrap around the Earth?</p>

## Lesson: Comparing Numbers in Scientific Notation

	<p>The average diameter of an atom's nucleus is about <math>1 \times 10^{-14}</math> meter. The diameter of a proton is about <math>1 \times 10^{-15}</math> meter. Which is larger?</p> <p>How many times larger?</p>
<p>Different First Factor AND Different Powers of 10</p>	<p>The North American X-15 rocket-powered aircraft is the world's fastest manned plane on record. It travels about <math>7 \times 10^3</math> kilometers per hour. The duck hawk is the world's fastest bird, traveling at speeds over <math>3 \times 10^2</math> kilometers per hour. Which flies faster?</p> <p>About how much faster?</p>
	<p>The width of our local galactic group, which includes our own Milky Way galaxy and 52 nearby galaxies, is <math>4 \times 10^{22}</math> meters. The estimated width of the universe is roughly <math>9 \times 10^{26}</math> meters. About how much wider is the universe than our local galactic group?</p>
	<p>An ant weighs about <math>4 \times 10^{-3}</math> gram. An average-sized elephant weighs <math>8 \times 10^6</math> grams. About how many ants would be needed to weigh the same as an elephant?</p>

## Lesson: Comparing Numbers in Scientific Notation

	<p>The thickness of DNA is about <math>3 \times 10^{-9}</math> meter. The thickness of the smallest thing visible to the naked eye is <math>1 \times 10^{-4}</math> meter. Can DNA be viewed by the naked eye?</p> <p>Compare the thickness of DNA to the smallest thing visible to the naked eye.</p>
<b>Recap</b>	<p>Break it into two steps.</p> <ol style="list-style-type: none"><li>1. Compare the powers of 10 to know which number is larger. Figure out how many factors of 10 the numbers differ by.</li><li>2. Compare the other two factors.</li></ol> <p>Example: Compare <math>4 \times 10^{-3}</math> and <math>8 \times 10^6</math></p>