

Lesson: Comparing Numbers in Scientific Notation

Different First Factor but Same Power of 10	<p>The width of a human hair is about 1×10^{-4} meter wide. The width of mechanical pencil lead is about 7×10^{-4} 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 4×10^{16} meters. The distance from the Sun to the Cone Nebula is about 8×10^{16}. About how many times farther from the Sun is the Cone Nebula than Proxima Centauri?</p>
	<p>Human skin has a thickness of about 5×10^{-3} meter. A grain of sand has a thickness of about 1×10^{-3} 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 3×10^2 meters per second. Which travels faster?</p> <p>About how many times faster?</p>
	<p>An average-sized ant is about 4×10^{-3} meter long. The circumference of the Earth is about 4×10^7 meters. About how many ants would it take to wrap around the Earth?</p>

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	<p>The average diameter of an atom's nucleus is about 1×10^{-14} meter. The diameter of a proton is about 1×10^{-15} 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 7×10^3 kilometers per hour. The duck hawk is the world's fastest bird, traveling at speeds over 3×10^2 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 4×10^{22} meters. The estimated width of the universe is roughly 9×10^{26} meters. About how much wider is the universe than our local galactic group?</p>
	<p>An ant weighs about 4×10^{-3} gram. An average-sized elephant weighs 8×10^6 grams. About how many ants would be needed to weigh the same as an elephant?</p>

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