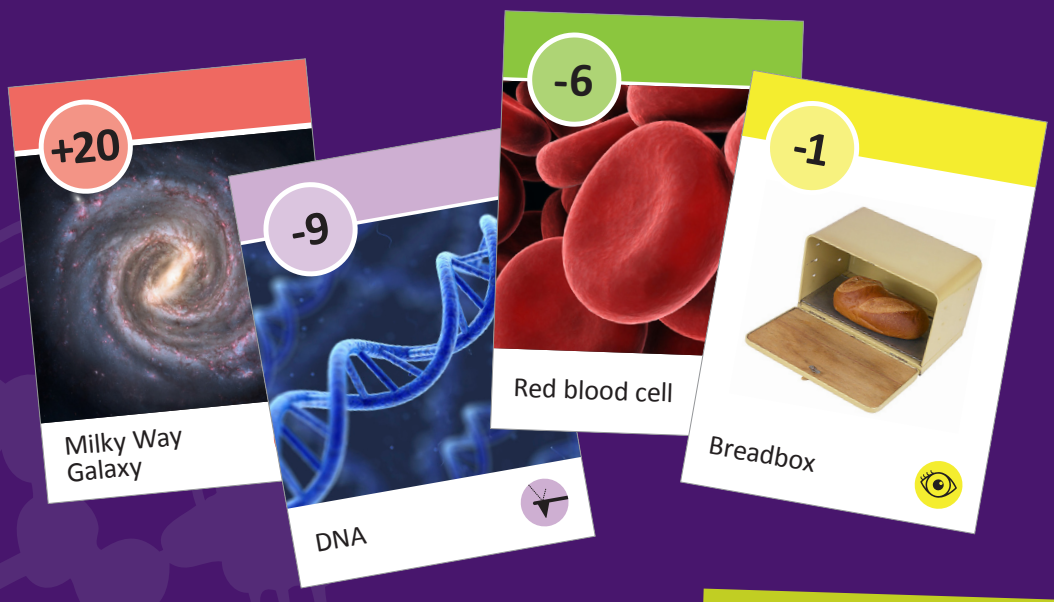
Exploring Size—Powers of Ten Game

Can you sort the universe according to size?



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Exploring Size—Powers of Ten Game

Try this!

Sample row

1. Each player is dealt five cards.
2. Three cards are placed face up on the table, starting three rows of play.
3. Players take turns adding a card from their hand above or below one of the rows of play.
   - You must place the cards in the correct size order. Smaller objects go at the bottom of the row. Larger objects go at the top.
   - Each card has a number on it that tells you how big or small the object is. Bigger objects have positive numbers. Smaller objects have negative numbers.
   - Cards can't be played if they are identical in rank to the end of the row.
   - You can't sneak a card into the middle of a row—it has to go on the top or bottom.
   - If you can't play a card, pass on your turn.
4. Whoever gets rid of all their cards first wins! (If no one can get rid of every card, then whoever has the fewest cards wins.)

What's going on?

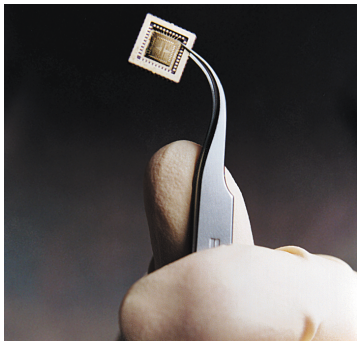
Things in the universe come in different sizes—and size is important! The objects on the cards are organized according to powers of ten.

Each number on the scale represents a ten-fold change in size. An object marked with a 0, like a pirate, is about a meter tall. An object marked with a +1, like the Statue of Liberty, is around ten times bigger than a pirate. An object marked with a -1, like a chicken, is around ten times smaller.

Really tiny objects, like DNA, are marked with even lower numbers. DNA (-9) is so tiny it's measured in nanometers! A nanometer is a billionth of a meter. In the emerging field of nanotechnology, scientists work with very tiny things measured in nanometers.

Nanometers, centimeters, and meters are all part of the metric system. The metric system is a measuring system using units based on powers of ten. Scientists use the metric system because it makes calculations easier.

How is this nano?


Computer chip

A nanometer is a billionth of a meter. That's really tiny! Nanometers are used to measure things that are too small to see, like atoms and molecules, the basic building blocks of our world.

Nanoscale science focuses on things that are measured in nanometers. Scientists use special tools and equipment to work with things that have nanometer-sized parts, such as microchips.

In the field of nanotechnology, scientists and engineers make new materials and tiny devices. Nanotechnology allows them to make things like smaller, faster computer chips and new medicines to treat diseases like cancer.