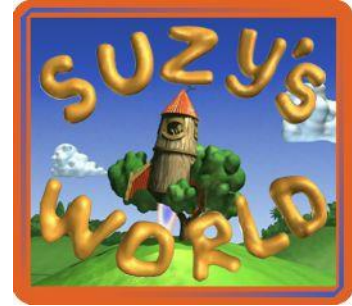


Distance - Why do things look smaller the further away they are?



Fact

- Things don't actually get smaller the further away they are. It just looks that way.
- Our brain has a few ways of working out how big something is and how far away it is. If something takes up a lot of our vision it is probably up very close. If it takes up less of our vision it is probably further away. Our brain also uses this method to work out how big something is.
- Our brain gets clues about the real size of things it is seeing, when it can also see at the same time familiar objects that have a fixed size. The brain can then take into consideration how distance affects the size of the object.

Do you know

- The scientific term for how much of our vision something takes up is how much of an angle the object subtends.
Use your arms to work out how much an object subtends the angle of your vision.
What you do is hold up your arms straight out in front of you then move them outwards until you can just see them in the corners of your vision – they should be pretty wide.
Now have a look at something in the middle of the room like a table or a coffee table. Move your arms inwards until your hands stop just on either side of the object. That's how much the object subtends the angle of your vision. Now try it with something even further away like a door or something out the window.

The further away something is the less space it will take up in your vision – the less it subtends the angle of your vision.
- Before people understood this term painters used to paint very "flat" looking pictures. But artists like Leonardo da Vinci used this information to make paintings that looked very real.

Experiments you can do

- We can use our arms to work out the position of the sun or moon in the sky. Extend your arms at full length and hold them at right angles to your body so that to make a horizon level. Spread your fingers wide and work out how many hand spans it takes to reach straight up overhead. (From the tip of your thumb to the tip of your little finger)
Write down what time you take the measurement and take it again over the next couple of nights. Do you find a pattern?
- Choose a sunny day to do this hand span measurement to measure how high the sun is in the sky. Check the sun in the morning and again at lunchtime. Remember to stand in the same place facing the same way. why do you have to do that?

Other Investigations

Have a look at the artwork of famous artists who lived hundreds of years ago in books in the library. Compare the pictures and see if you can work out which artists knew how to make things look real by putting them into scale – the painted things in the distance smaller so they looked like they were in the distance and painted things closer bigger so they looked like they did in real life.