

How Far Can We See and Why?

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Taking into account the many factors that affect eyesight, as well as other considerations, the human eye can actually see pretty far.

Seeing distances

- **Based on the curve of the Earth:** Standing on a flat surface with your eyes about 5 feet off the ground, the farthest edge that you can see is about 3 miles away.
- **Detecting a candle flame:** [Researchers](#) believe that without obstructions, a person with healthy but average vision could see a candle flame from as far as 1.6 miles.
- **Without the Earth's curve and from higher up:** You might be able to identify objects from dozens, even hundreds, of miles away.

When standing on the ground, what's going on to affect how far people can see? It's things like:

- your eyesight, including the health and function of the eye itself
- the size of the object that you're viewing
- the curvature of the Earth
- any obstructions in your line of sight

Let's take a look at these influences to understand how the human eye can see as far as it does.

Visual acuity and your eyesight

The phrase "visual acuity" refers to the clarity of your vision.

Experts consider normal, or healthy, [visual acuity](#) to be 20/20 vision. That simply means that you can clearly see something 20 feet away that you should be able to see from that distance.

If you have 20/100 vision, you would still be able to see an object clearly from 20 feet away, but someone with normal vision would see it clearly from 100 feet.

Conversely, if you have 20/12 vision, you can see something clearly at 20 feet that most people need to be 12 feet from to see clearly.

How does the eye process images?

When you look at anything, a rapid and complex sequence of actions will take place in the [eye and brain](#):

- Light reflects off an object and passes through the cornea, which is the transparent outer layer of the eye.
- The cornea bends the light rays to allow them to enter the pupil, or the dark center of the eye.
- At the same time, the muscles in the iris — the colored area around the pupil — control the size of the pupil, making it smaller in bright light and larger in a darker setting.
- Light rays then pass through the lens, which sharpens them as they reach the retina, the thin tissue layer at the back of the eye that contains tiny nerve cells known as rods and cones.
- The rods and cones convert the light rays into electrical impulses, and these travel from the eye through the optic nerve to the brain, which converts them into images.

Assuming that all of the body parts and processes that are necessary for clear vision are working normally, then the limitations on how far you can see come down to:

- line of sight, or sightline
- light
- the size of the object that you're viewing

Earth's curvature

People often use the term “sightline” in a theater to describe the line of sight from an audience member's seat to the stage. But, a sightline is really any uninterrupted visual angle from a person's eyes to what the person is trying to see.

Aside from obvious visual obstructions like trees, buildings, and clouds, there's one major factor that can reduce your sightline: the curvature of the Earth.

The Earth curves about [8 inches per mile](#). As a result, on a flat surface with your eyes 5 feet or so off the ground, the farthest edge that you can see is about 3 miles away.

To put it another way, if you're standing on a beach in Florida or driving past the farms of Nebraska (both places where it's relatively flat), the farthest part of the horizon that you can see is about 3 miles away.

Angles and lines of sight

If you were lying down on the beach with your head less than a foot off the ground, your eyes would be able to see about a mile out over the water.

However, if your vantage point were much higher off the ground, then the horizon line could be a lot farther away. The curvature of the Earth wouldn't start to cut things off from your view quite so soon.

Let's say your drive through Nebraska took you to Scotts Bluff National Monument, and you climbed to the summit at 4,659 feet.

From here, you could see Laramie Peak, which is about 100 miles away in Wyoming, according to the [National Park Service](#). That's on a clear day. It's not limitless, but it's pretty far

Brightness affects distance

Consider the constellation Lyra and its brightest star Vega, which is about [25 light years](#) from Earth. Without a telescope or any other visual aid, Vega looks like a little candle flame in the night sky.

That got scientists wondering: How far away could you be from an actual candle flame on Earth and still see it the way you see Vega?

Scientists measure the brightness of stars by magnitude. A pair of researchers from Texas A&M University did some experiments and concluded that a candle flame from [about 1,286 feet](#) away would have a brightness similar to that of Vega.

To take their research a little further — and farther — the scientists experimented to determine the maximum distance you could be from a candle flame to see it at all.

Seeing a candle flame

The researchers decided that someone with healthy vision could detect a candle flame from about 1.6 miles away, assuming that there was no fog or other obstructions.

Other objects and distances

The Moon's face

The moon is about [238,900 miles](#) away, and it's easy to see some of its craters, valleys, and plains on a cloudless night.

From the highest peak

Even closer to home, the view from Mount Everest in the Himalayas — the world's tallest summit at about 29,000 feet above sea level — offers a view of close to 211 miles in every direction, according to a [user-generated map](#).

Due to the elevation though, clouds often obscure the view.

Skyscrapers

The 124th floor of the Burj Khalifa in Dubai, which is the world's tallest building at more than 2,700 feet, offers a view of about [50 miles](#) on a clear day, Reuters reports.

The nearly literal skyscraper can also provide visitors with [two sunsets a day](#), according to an article in the The Daily Mail.

If you time your elevator ride to the top just right, you can see the sun setting over the horizon. You can then catch the sun again a little later, as the curvature of the Earth and the amazing building height conspire to keep you looking to the west.

Remember

As a takeaway, remember this example: If you're in an airplane at a cruising altitude of around 35,000 feet, you're nearly 7 miles above the Earth.

Yet, in daylight, you can look down and see highways, farms, rivers, and other landmarks pretty easily. Nothing is blocking your view, and the curvature of the Earth isn't putting any of those landmarks out of visual reach.

In that situation, the only real limit to how far you can clearly see is your eye health and visual acuity.