

# YELLOW DWARF

## Math Moment

Earth's diameter is about 13,000 kilometers. A single solar flare can be 20 times longer than Earth's diameter. How long would that solar flare be?

This image shows ultraviolet light from the Sun, not light we see with our eyes.

## OUR SUN

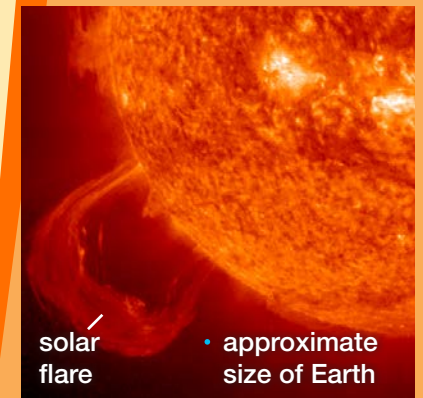
Kara gazed out the window of the *Stella* and saw a familiar sight. "The Sun!" she exclaimed. She recognized the bright yellow dwarf star. Her Star Reader told her that the Sun's diameter was about 109 times that of Earth's, but it looked even bigger up close.

"Let's go in close and catch the solar wind," Captain Gamma said. "We can use it to push us out of the solar system." Kara steered the *Stella* toward the Sun.

"Be careful!" cried Manolo. "The Sun may be a yellow dwarf, but it's still a giant nuclear furnace—it's over 5,500 degrees Celsius down there!" He had always thought of the Sun as a smooth disk, but up close it looked more like a bowl of boiling chili. Hot gas bubbled up

between crusty sunspots. Solar flares erupted from the surface with plumes larger than Earth.

But Kara had already turned the *Stella* to catch the solar wind. "Here we go!" she said. A stream of invisible particles from the Sun helped push the ship out into space. The crew had more stars to see.



A solar flare is an explosion of hot gas from the surface of the Sun.

# Lighting a Star

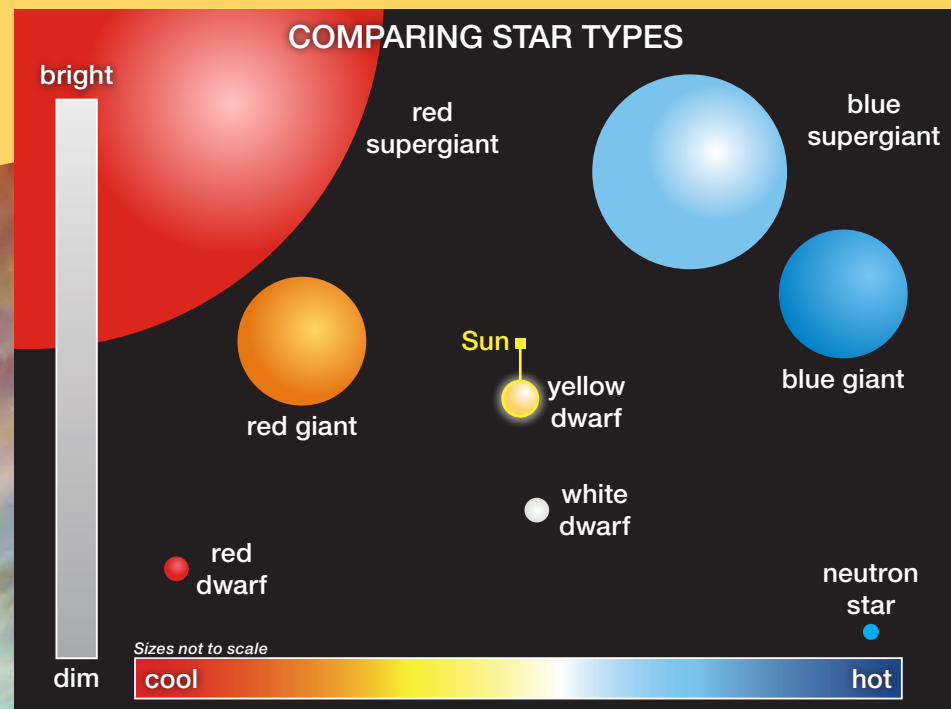
The Sun began to form about five billion years ago. Like all stars, it started out as a cloud of gas and dust. The gas was mostly hydrogen, with some helium. This wasn't exactly a *little* cloud. The Sun's cloud was bigger than our whole solar system!

Gravity drew the cloud in, squeezing and crushing the gas and dust. It squeezed the hydrogen atoms so tightly that their nuclei combined. The Sun was "born."

The Sun and other yellow dwarfs release energy through nuclear fusion. Most of this energy is given off as light and heat. When a yellow dwarf runs out of hydrogen, it expands and becomes a red giant. But don't worry! The Sun has enough hydrogen to last another five billion years. It will have a total life span of about ten billion years!



Stars form in towering clouds of gas and dust, like these.

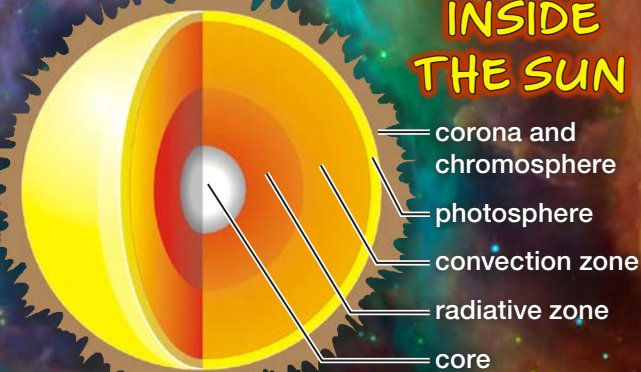


The Sun is a yellow dwarf star. Yellow dwarfs are yellow because of their moderate temperature. They are also fairly bright.

**Wowser!**

Over 99% of all the mass in our solar system is in the Sun itself!

## INSIDE THE SUN



**Do You Know?**

Astronomers use the mass of the Sun, called  $M$ , as a unit of measurement. For example, a star with ten times the mass of the Sun has a mass of  $10M$ .