

**INTEGRATING PHYSICS****● High Up in the Himalayas****Why Mount Everest Is Slowly Growing**

The world's highest mountain—Mount Everest, part of the Himalayan mountain range—reaches 8,850 m (29,035 ft) above sea level at its highest peak. As time passes, it will get even higher. Mount Everest gains about 5 mm in height every year because the geological processes that formed the Himalayas are still occurring today.

**Land Masses Collided to Form the Himalayas**

What exactly are those processes? Many mountain ranges, including the Himalayas, are the result of collisions between large land masses due to the movement of tectonic plates. In this case, India, which was once a separate continent, began drifting north toward Eurasia about 200 million years ago. The two continents first began colliding about 70 million years ago.

At that time, the oceanic crust of India smashed into Eurasia and was pushed downward. Then, when the continental crust of India hit Eurasia about 600,000 years ago, the two land masses exerted a tremendous force on each other. As a result of this force, the land folded up to form the Himalayas and to join India to Eurasia. Mountains formed in this way are often called *folded mountains*.

**Earth's Crust Is Thicker Under the Himalayas**

The Himalayas are supported by Earth's thick outer crust, called the lithosphere. Just as thick ice can support more weight than thin ice, thicker parts of the lithosphere can support higher mountain ranges. Earth's crust, which is typically 6–7 km thick below the oceans and 35 km thick under most continents, is 55 km thick under the highest peaks of the Himalayas.

**Your Turn to Think**

1. Explain why Earth's crust needs to be thicker beneath the Himalayas.
2. Explain why Mount Everest gains about 5 mm in height each year.
3. Today, India continues to move north into Eurasia at a speed of 2 cm/year. How far will India have moved in 1,000,000 years? (Hint: Use the equation  $d = vt$ ).