

Discovery Channel School Video Library for Scott Foresman-Addison Wesley Mathematics



SEGMENT 4: WAVES AND TIDES

Waves begin far out at sea, where they're whipped up by the wind. These swells carry energy from the wind across the surface water, all the way to the beach.

Surfers can ride waves because, as the waves roll ashore, they climb.

In shallow water, wave length decreases. The bottom of the wave drags on the sea floor and the crest of the wave rises, moving along until it breaks.

Changes in ocean levels are caused by tides. Tides rise and fall with the gravitational tug of the moon and the sun. The effects of the moon's gravity is the stronger of the two. The effect changes as the moon rotates around the Earth. Physicist James Trefil explains.

When you have the situation of the moon pulling on this side and then pulling the Earth away from the ocean on the other side, it looks like you've got a bulge, where the ocean is sort of football-shaped and the Earth is baseball-shaped inside. And then that moves around the Earth, and follows the moon.

Twice a day, tides rise and fall, and waves constantly lap our shores. Over time, waves can change the shape of our coastlines and create new beaches. And maybe the surfers have it right after all.

Riding a wave is... it's dancing with the ocean's pulse, with its mystery. It's like playing music with the ocean.