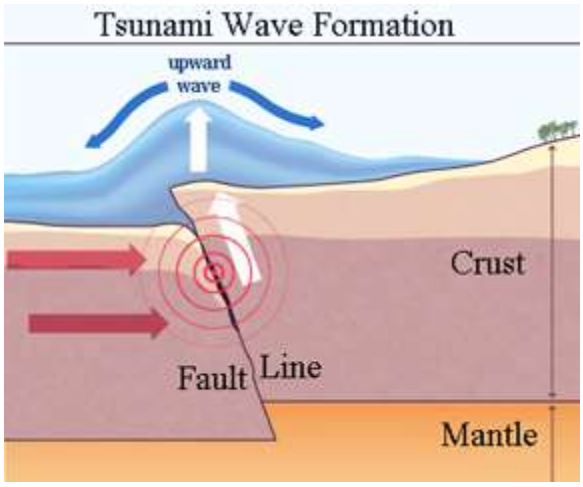
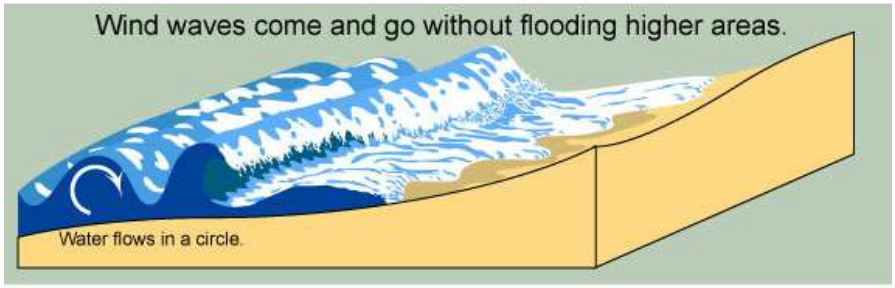
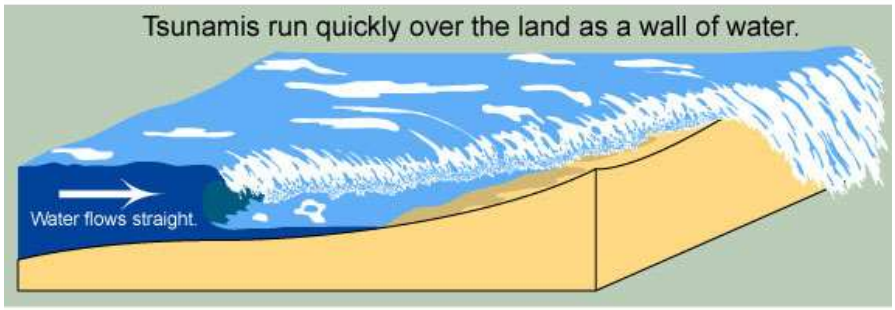
2009 Tsunami



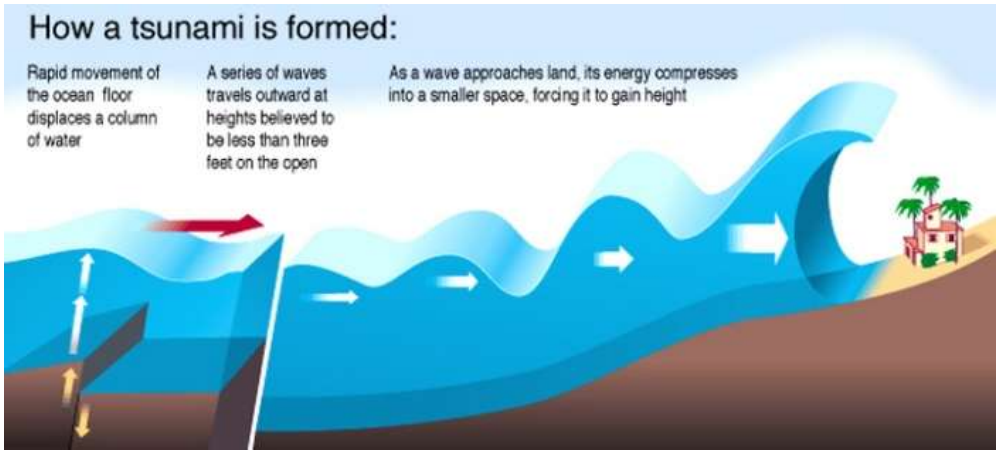
Tsunamis are often no taller than normal wind waves, but they are much more dangerous.





Even a tsunami that looks small can be dangerous!

Any time you feel a large earthquake, or see a disturbance in the ocean that might be a tsunami, head to high ground or inland.



Wind-generated waves usually have period (time between two successional waves) of **five** to **twenty** seconds and a wavelength (distance between two successional waves) of about **100** to **200** meters (300 to 600 ft). A tsunami can have a period in the range of **ten minutes (600 seconds)** to **two hours (7200 seconds)** and a wavelength in excess of 300 miles (500 km). It is because of their long wavelengths that tsunamis behave as shallow-water waves. A wave is characterized as a shallow-water wave when the ratio between the water depth and its wavelength gets very small. The speed of a shallow-water wave is equal to the square root of the product of the acceleration of gravity (32ft/sec/sec or 980cm/sec/sec) and the depth of the water. The rate at which a wave loses its energy is inversely related to its wavelength. Since a tsunami has a very large wave length, it will lose little energy as it propagates. Hence in very deep water, a tsunami will travel at high speeds and travel great transoceanic distances with limited energy loss. For example, when the ocean is 20,000 feet (6100 m) deep, unnoticed tsunami travel about 550 miles per hour (890 km/hr), the speed of a jet airplane. And they can move from one side of the Pacific Ocean to the other side in less than one day.
(http://wcatwc.arh.noaa.gov/physics.htm)

QUESTIONS:

WAVE	Period	Frequency	Wavelength meters	Speed meters/second	MPH[A]
5sec wave			100m		
20sec wave			200m		
600sec wave			435km		
7200sec wave			687km		

On a separate sheet of paper explain how a Tsunami is formed?

[A]conversion = 1m/s * 2.2 MPH