



Teacher's Answer Key

What's Happening? Challenge:

Intermolecular Forces

A sewing needle floats on water. The sewing needle is denser than water but it does not sink because the network of hydrogen bonds between water molecules at the surface keep them in tension and thus the surface can support the sewing needle. When a small cotton ball is dipped in a soap solution and the soap is gently applied to the surface of the water the sewing needle immediately sinks. This is the case because the soap molecules disrupt the network of hydrogen bonds by increasing the distance between water molecules and thus weakening the bonds. The sewing needle is thus able to fall through the water's surface.

Question:

What would have happened if the soap had been added before the needle was placed on the surface of the water?

Answer:

If the soap had been added before the needle was placed on the water the needle would not float on the surface of the water, but would fall to the bottom.

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