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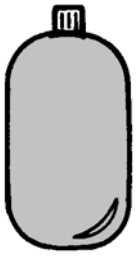
Down We Go

Submarines rise or sink using water pumped into or out of ballast tanks. Make a simple model that demonstrates how this works by following the instructions. The eye dropper will be your mini-submarine.

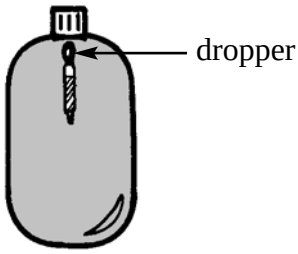
Materials

- clear, plastic pint-size (.5 L) bottle
- glass eyedropper (for use as submarine)
- water

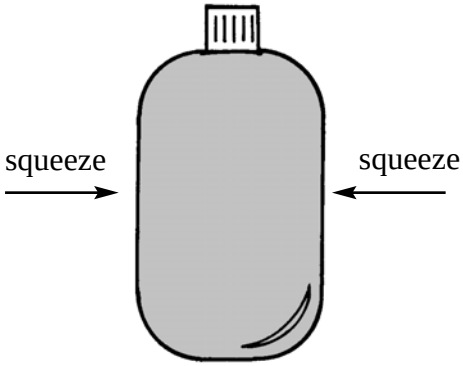
Directions



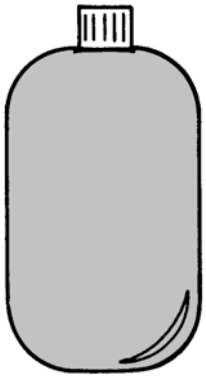
1. Fill the bottle nearly to the top with water; leave a small air space between the water and the lid.



2. Fill the dropper with water so that, when placed in the bottle, it will just barely sink below the surface of the water. Put the lid tightly on the bottle.



3. Squeeze the bottle in the middle and watch to see what happens to the dropper. Repeat this several times. Draw a picture which depicts exactly what happened to the dropper when the bottle was squeezed.



4. Release the pressure on the bottle. Watch to see what happens to the dropper. Repeat this several times. Draw what you observed.

5. Write an explanation of how the dropper submarine works. If necessary, repeat the action until you develop your theory.

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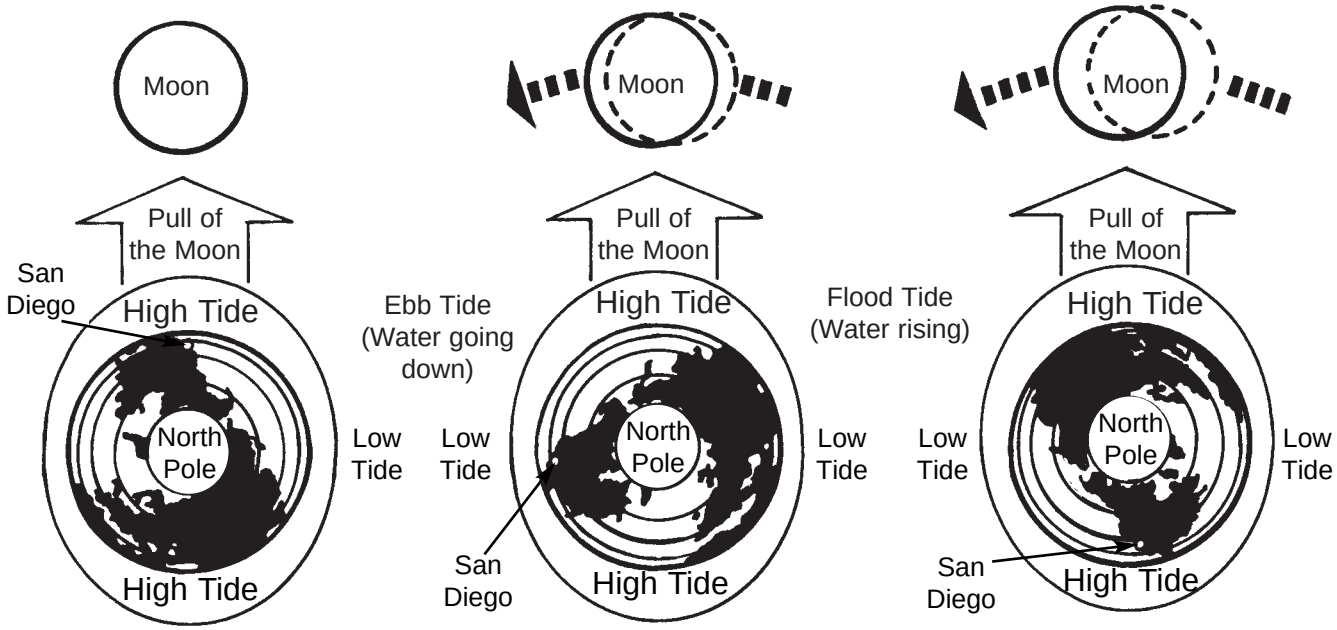
Explanation of the Tides

Tides in the ocean are caused mostly by the pull on Earth by the moon. The moon's gravity pulls the water which is directly beneath it up, creating a high tide there. Another high tide occurs on the other side of the earth since the moon pulls the solid earth away from the water. As the earth turns, high tide occurs at each place on the ocean twice a day.



High tide occurs directly below the moon and on the opposite side of Earth. When the earth is in the position shown above, San Diego has a high tide.

As the earth turns, the tides rise and fall all along coastlines. About 6 hours and 13 minutes after a high tide, San Diego has a low tide (above).

The next high tide at San Diego is about 12 hours and 25 minutes after the first.

