


1 January 21, 2015


### Warm-Up!

Today you will need your notebook, pencil and colored pencils.

o **Review & Apply:**  
Which of the following substances is less dense than water? Why?



Gasoline  
D = 0.70 g/mL




Milk  
D = 1.03 g/mL

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### Warm-Up!

Today you will need your notebook, pencil and colored pencils.

o **Review & Apply:**  
Which of the following substances is less dense than water? Why?



Gasoline  
D = 0.70 g/mL

**Because the density is less than the density of water, 1 g/mL**

## Changing Sea Levels

January 21, 2015



## Today:

- **Our Goal:**
  - o Analyze and explain the trend in sea level data
- **Outline:**
  - o Introduction **Video** on Measuring Sea Levels
  - o **Demonstration** with Expanding Water
  - o Colored Pencil – Paper **Lab** on Changing Sea Levels

## Changing Planet: Ocean Temperatures

- As you watch the video think about: *Why the research the scientists are conducting is important.*

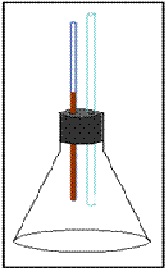
Introduction Video (6:05)  
[http://www.windows2universe.org/earth/changing\\_planet/ocean\\_temperatures\\_intro.html](http://www.windows2universe.org/earth/changing_planet/ocean_temperatures_intro.html)

- In your groups, share your ideas from the video. I will call on two people to report their group's opinion.

(10 minutes)

## Demonstration

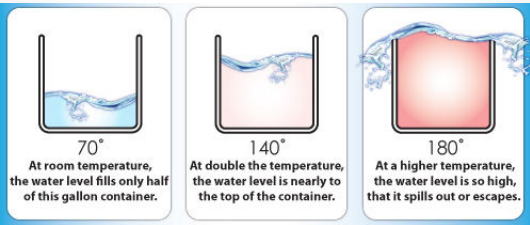
- Flask with a cork, thermometer and a tube to measure water level.
- Starting with cool water and slowly heating it up!
- As the temperature of the water increases, what is happening in the tube?
- **Answer:** The water level is rising in the tube



(15 minutes)

## What Causes the Water to Rise?

- **Thermal expansion:** When water heats up, it expands.
- About half of the past century's rise in sea level is attributable to warmer oceans simply occupying more space.



## Think About it...

- Heat leads to thermal expansion of water increasing sea level
- **Question:** What other result of heat also produces a rise in sea level?
- **Answer:** Melting of glaciers and polar ice caps



## Information

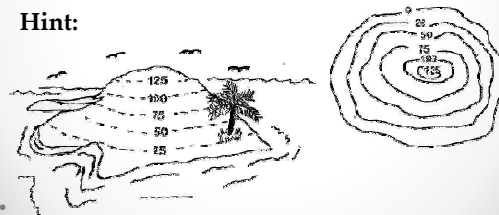
- Scientists have not only detected rising temperatures on land surfaces, but they have detected rising temperatures in our oceans as well.
- Given that over 70% of the Earth is covered by water, there is concern that warming oceans can lead to sea level rise and impact low lying land surfaces such as the small islands found in our equatorial region.

## Review Question

**Question:** What are topographic maps used for?

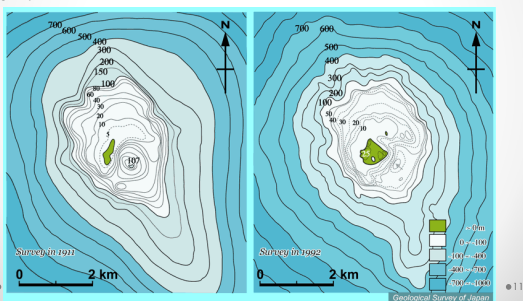
**Answer:** They show the shape of the land. Contour lines for elevation.

**Hint:**



## Topographic vs. Bathymetric Map

- While a **topographic map** has contour lines that describe the shape of the land surface, a **bathymetric map** has contour lines that describe the shape of the ocean floor.
- Bathymetric maps, like topographic ones, use sea level as a reference point.



## Sea Level Change and Ancient Coastlines Lab

- Working with your table group, complete today's lab.
- **Turn in** your finished individual lab papers at the end of class to be graded as a classwork grade.
- If you don't finish, **wrap it up for homework** and turn in tomorrow.

(20 minutes)