

# Dive and Discover

## Antarctic Math

[www.divediscover.whoi.edu](http://www.divediscover.whoi.edu)

1. If one solitary salp has 1000 babies in chains called aggregates, and each salp in the chain gives birth to one solitary salp, how many offspring will the beginning salp have after 5 generations? (Assume that each solitary has 1000 babies)

*Answer:*

1<sup>st</sup> generation=1000 (in aggregate)

2<sup>nd</sup> generation=1000 (solitaries)

3<sup>rd</sup> generation=1000 x 1000=1,000,000 (in aggregates)

4<sup>th</sup> generation=1,000,000 (solitaries)

5<sup>th</sup> generation=1,000,000 x 1,000=1,000,000,000 (in aggregates)

- add up each generation: Total=1,002,002,000 salps!

2. Seawater does not freeze at 0 degrees Celsius (32 degrees Fahrenheit). The salt in the water lowers the freezing point. On average, seawater freezes at -1.94 degrees Celsius.

Use the formula below and convert this temperature to Fahrenheit.

Fahrenheit=Celsius x 1.8+32

*Answer:* 28.5 degrees Fahrenheit.

3. The research vessel *Laurence M. Gould* is 76 meters long. How many feet is the *Gould*?

Use the information below and convert 76 meters into feet.

One meter = 39 47/127 inches One foot=12 inches

*Answer:* 76 x 39 47/127=2992.13

2992.13 inches/12=249.34 feet

4. Scientists use sonar to measure the depth of the ocean floor. They bounce sound waves off the bottom of the ocean and measure the time it takes for the sound wave to return to the ship.

The speed of sound in ocean water is about 1,500 meters per second.

If it took the sound wave 2 seconds to return to the ship, how deep is the ocean floor at that location?

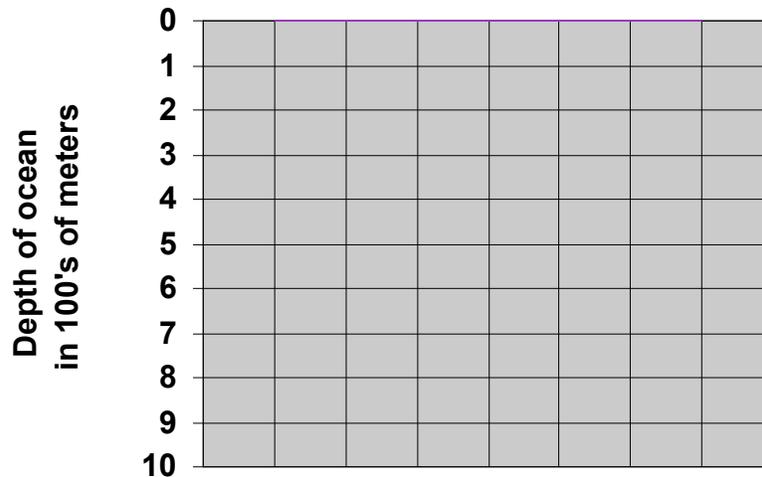
Use this formula: Depth in meters =  $\frac{1500 \times (\text{seconds})}{2}$

*Answer:* 1500x2=3000/2=1500 meters deep!

5. Pretend that you are taking several sonar readings of the ocean floor as your ship moves forward at a regular pace. Below are your readings. Using the formula, find the ocean floor depth in meters. Then plot your results on the graph below.

- .1 seconds                      answer: 75m
- .25 seconds                    answer: 187.5m
- .50 seconds                    answer: 375m
- .75 seconds                    answer: 562.5m
- 1 second                        answer: 750m
- 33 seconds                     answer: 247.5m
- .2 seconds                      answer: 150m

### Ocean Floor Depth



Sonar Reading Sites