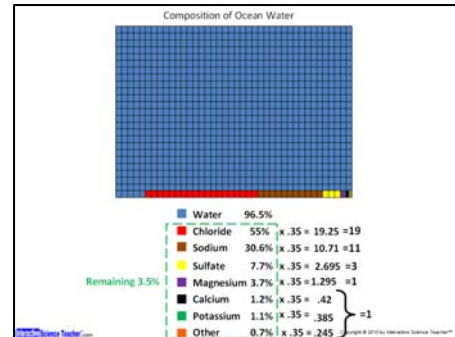


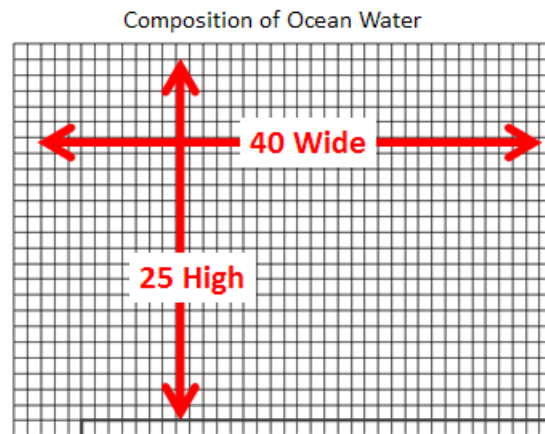
Composition Of Ocean Water

What exactly is in ocean water? In this fun activity students color in 1,000 tiny squares based on the composition of a drop of real ocean water.

Materials- calculator (1 per student), colored pencils- students need 8 colors- each will need their own blue. The others colors they can share with other students around them

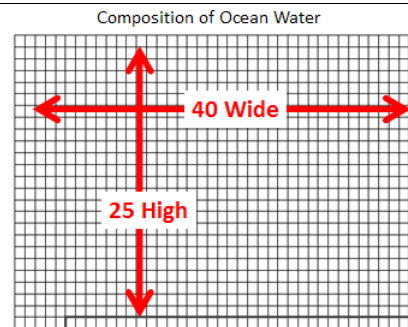


1. If you aren't using the student handout (see last page) give each student a sheet of graph paper and have them mark off an area near the top that is 40 squares across by 25 high. That will make 1000 squares.



2. Go over the percents of things that compose ocean water. If needed, make changes to percents and components to match your book.

3. Beneath the grid write the largest component, "water", and its percent- 96.5%. Have students use a blue colored pencil to put a little blue box next to it.



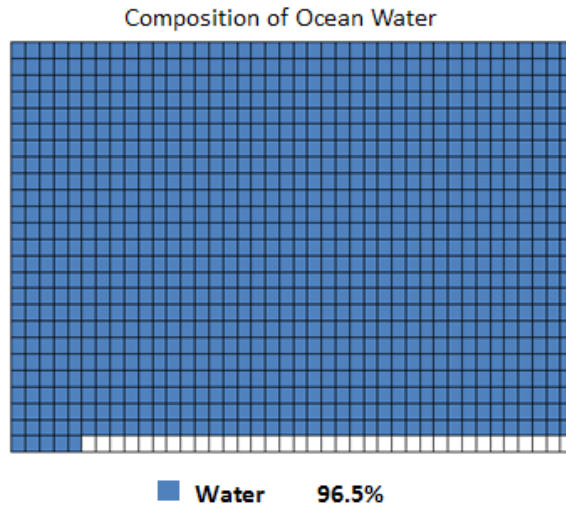
$$40 \times 25 = 1000 \text{ squares}$$

$$\begin{array}{r} -965 \\ \hline 35 \end{array}$$

4. We're now going to color 96.5% of the 1,000 squares, which is 965. So we

need to shade 965 squares blue. Ask students if they want to do this the hard way, or the easy way, with math. Since each row is 40 squares, have students lightly draw a box around all but 5 boxes on the bottom row. Everything else besides those will add up to 965.

5. Shade 965 squares blue. Give them about 2-3 minutes to do this. If they go slow, just tell them to get some blue in the squares and not be too perfect.

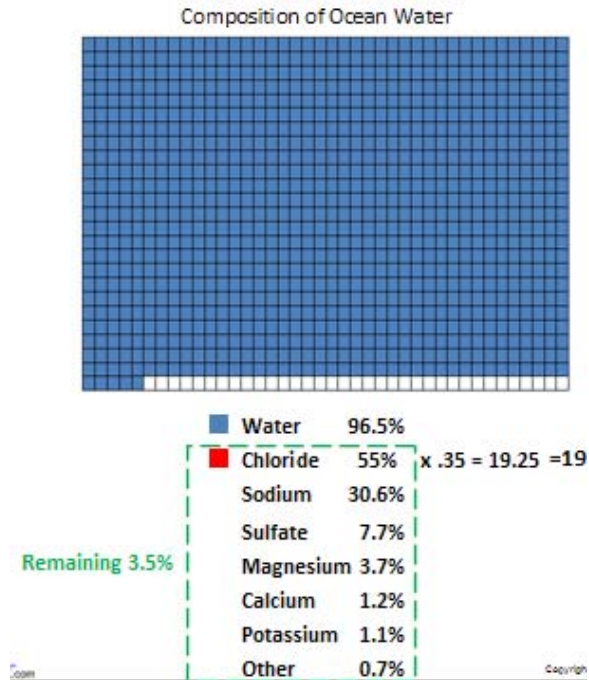


6. Now for the other 3.5%. We're going to handle them as their own separate group. List the remaining ingredients. Chloride is the largest one remaining at over half (55%) of the 3.5% remaining.

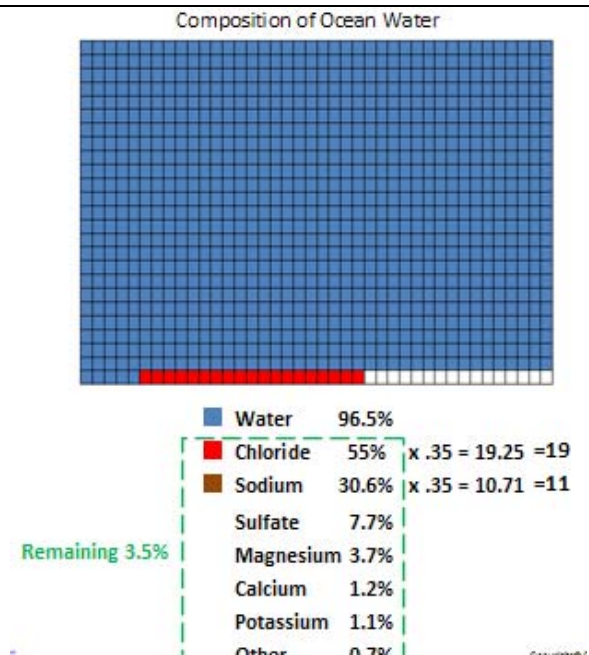
7. Get another colored pencil besides blue (any color) and put a little colored box next to “Chloride”.

To calculate how many of the remaining 35 boxes they will shade that color, have them write “x 35” after the percent and perform the calculation. Round the answer to the nearest whole number. This one will be 19, so color 19 of the remaining 35 squares on the bottom row.

If anyone’s confused, just have them cope everything they see on the screen, and keep trying. The next one will get better.

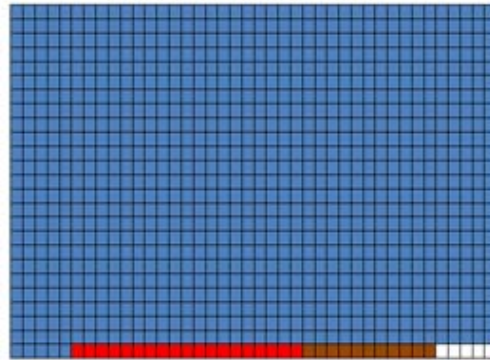


8. Switch colored pencils and put a new colored box next to sodium. Multiply the percent (30.6) by 35 and round. Have students write all this down and not just steal the answers! It rounds to 11.



9. Switch colored pencils, put new colored box next to “sulfate”, multiply x 35, and round to the answer (3).

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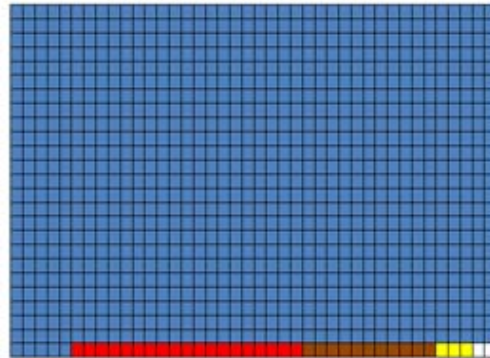


Water	96.5%	
Chloride	55%	$x .35 = 19.25 = 19$
Sodium	30.6%	$x .35 = 10.71 = 11$
Sulfate	7.7%	$x .35 = 2.695 = 3$
Magnesium	3.7%	
Calcium	1.2%	
Potassium	1.1%	
Other	0.7%	

Remaining 3.5%

10. Repeat for magnesium.

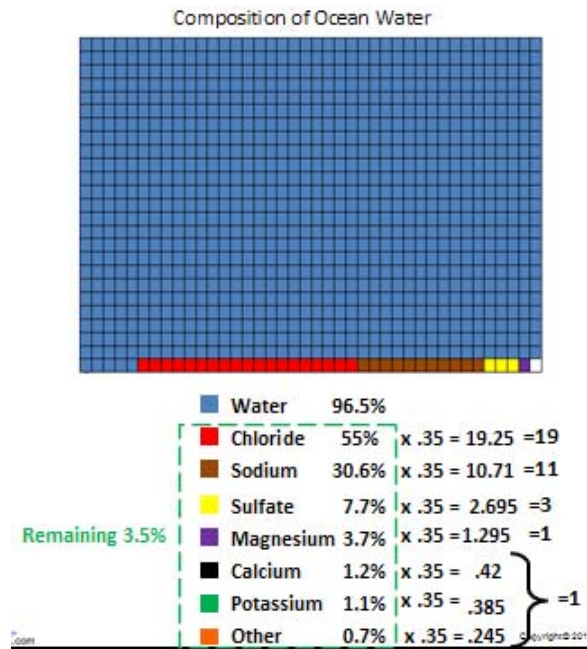
Composition of Ocean Water



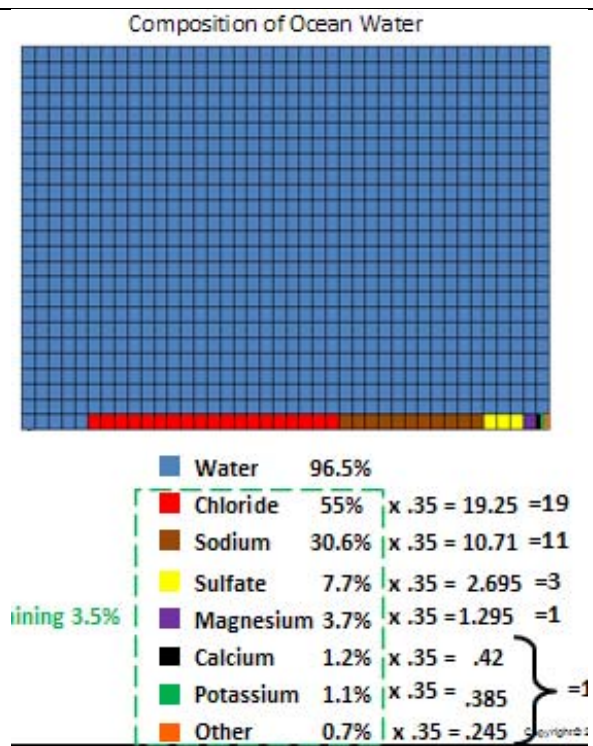
Water	96.5%	
Chloride	55%	$x .35 = 19.25 = 19$
Sodium	30.6%	$x .35 = 10.71 = 11$
Sulfate	7.7%	$x .35 = 2.695 = 3$
Magnesium	3.7%	$x .35 = 1.295 = 1$
Calcium	1.2%	
Potassium	1.1%	

Remaining 3.5%

11. The last 3 will end up sharing the very last box together because they are such a small percent.



12. This is what the completed chart looks like.



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40 x 25 = 1000 squares
 $\frac{965}{35}$

Water 96.5%

Composition of Ocean Water

Water 96.5%

Chloride 55% $\times .35 = 19.25 = 19$

Sodium 30.6% $\times .35 = 10.71 = 11$

Sulfate 7.7%

Magnesium 3.7%

Calcium 1.2%

Potassium 1.1%

Other 0.7%

Remaining 3.5%

Composition of Ocean Water

Water 96.5%

Chloride 55% $\times .35 = 19.25 = 19$

Sodium 30.6% $\times .35 = 10.71 = 11$

Sulfate 7.7% $\times .35 = 2.695 = 3$

Magnesium 3.7% $\times .35 = 1.295 = 1$

Calcium 1.2% $\times .35 = .42$

Potassium 1.1% $\times .35 = .385$

Other 0.7% $\times .35 = .245$

Remaining 3.5% } = 1

Student Handout

