



ACID OCEANS

Remember that
CO₂ = CARBON
DIOXIDE

THE SCIENCE : Egg shells (like snails shells, sea shells, fish, corals, some seaweed, etc) are made from calcium carbonate (CaCO₃)

Adding an acid (vinegar or lemon) to them will break apart the components, releasing ions from the acid (H⁺) and the shells (CO₃⁻²). They combine to form bicarbonate (HCO₃⁻) releases bubbles and dissolves in the water.

The CO₂ in the sea is similar to what the acid does to the shells.

CHALLENGE: see if you notice a difference in the amount or size of bubbles when you add vinegar, lemon or carbonated drinks. Which is the strongest acid?

TO LEARN MORE: Complete the crossword with other animals that might be affected by ocean acidification.

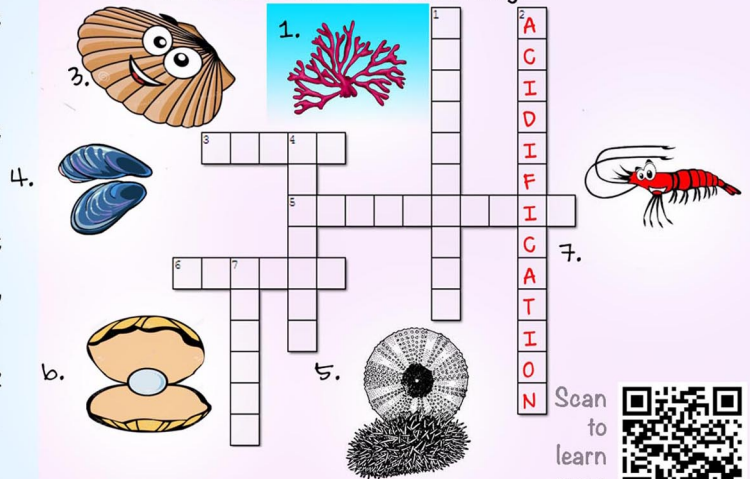
SOLUTIONS: 1. CORAL REEF 2. ACIDIFICATION 3. CLAMS 4. MUSSELS 5. SEA URCHIN 6. SHRIMP

CO₂ DISSOLVES SHELLS

LEARN HOW CLIMATE CHANGE DISSOLVES MARINE ORGANISMS THROUGH THIS INTERESTING EXPERIMENT:
STEP 1: TAKE SOME CLEAN DRY EGG SHELLS AND CRUSH INTO TINY FLAKES (THE SMALLER, THE BETTER!) YOU CAN DO THE SAME WITH SEA SHELLS.

STEP 2: ADD A SMALL AMOUNT OF VINEGAR (ENOUGH TO COVER THE EGG SHELL PIECES) AND OBSERVE.

STEP 3: TRY LEAVING THE MIXTURE OVERNIGHT AND SEE WHAT IS LEFT IN THE MORNING.



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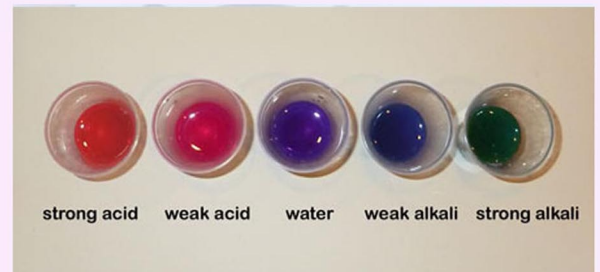
STEP 1: WITH AN ADULT, PLACE TWO LEAVES FROM THE RED CABBAGE IN A SAUCEPAN AND COVER WITH JUST ENOUGH WATER. BOIL ON THE HOB FOR 5 MINUTES.

STEP 2: ONCE IT HAS COOLED (**BE VERY CAREFUL!**) REMOVE THE LEAVES AND PUT A FEW DROPS OF THE PURPLE LIQUID INTO SEVERAL SMALL, CLEAR CUPS.

STEP 3: TRY ADDING DIFFERENT THINGS FROM AROUND THE HOUSE AND SEE WHAT HAPPENS TO THE COLOUR. TRY LEMON JUICE, SALT, SOAP, BICARBONATE OF SODA, COLA AND VINEGAR.

CABBAGE CHEMISTRY

THE SCIENCE : THE RED CABBAGE CONTAINS A SUBSTANCE CALLED FLAVIN, WHICH GIVES THE CABBAGE IT'S BRIGHT COLOUR. THIS SPECIAL INGREDIENT CHANGES COLOUR AND LET'S US SEE WHETHER THINGS ARE ACIDIC, NEUTRAL, OR ALKALI!



CHALLENGE: TRY SEEING HOW MANY DIFFERENT COLOURS YOU CAN MAKE!

TO LEARN MORE: LOOK UP THE FOLLOWING WORDS: ALKALI, ACID, PH

