

PINE CONE MAGIC



Illinois Extension
UNIVERSITY OF ILLINOIS URBANA-CHAMPAIGN

OBJECTIVES

LEARN THE PARTS OF A PINE CONE AND THE STEPS SCIENTIST TAKE TO CONDUCT AN EXPERIMENT.

GUIDING QUESTIONS

1. WHAT IS A PINE CONE?
2. WHAT ARE THE PHYSICAL CHARACTERISTICS OF PINE CONES?
3. HOW DO SCIENTISTS LEARN ABOUT THE NATURAL WORLD?

MATERIALS

3 - CUPS
3 - PINE CONES
WARM WATER, COLD WATER
1 - PIECE OF CARDSTOCK
5 PIECES OF COPY PAPER
RULER
TIMER (ON PHONE OR WATCH)

CONCEPTS

- THE MAIN JOB OF THE PINE CONE IS TO KEEP THE SEEDS SAFE.
- SCIENTISTS LEARN ABOUT THE NATURAL WORLD THROUGH EXPERIMENTS.
- PINE CONES CAN OPEN AND CLOSE THEIR SCALES DEPENDING ON THE CONDITIONS.

FACTS

- PINE CONES AND PINE TREES BELONG TO A GROUP OF PLANTS CALLED GYMNOSPERMS AND DATE BACK TO PREHISTORIC TIMES.
- PINE CONES CLOSE THEIR SCALES TO PROTECT THE SEEDS FROM COLD TEMPERATURES, WIND, AND EVEN ANIMALS THAT MIGHT TRY TO EAT THEM.
- PINE CONES OPEN UP AND RELEASE THEIR SEEDS WHEN IT IS WARM AND IT IS EASIER FOR THE SEED TO GERMINATE.
- ALL CONIFERS PRODUCE MALE AND FEMALE CONES. SOMETIMES ON THE SAME TREE, SOMETIMES NOT. THE PINE CONES WE SEE ARE ONLY THE FEMALE CONES. THE MALE CONES ARE MUCH SMALLER AND NOT SHOWY. THEY ARE ALSO USUALLY ONLY AROUND IN SPRING TIME.





INTEREST APPROACH-ENGAGEMENT

ASK A QUESTION(S):

1. WHAT DO YOU THINK A PINE CONE IS FOR?
A. TO PROTECT THE SEEDS OF THE PINE TREE.
2. WHAT DO THEY LOOK LIKE?
3. HOW DO YOU THINK SCIENTISTS FIGURED OUT HOW THE PINE CONE WORKS?

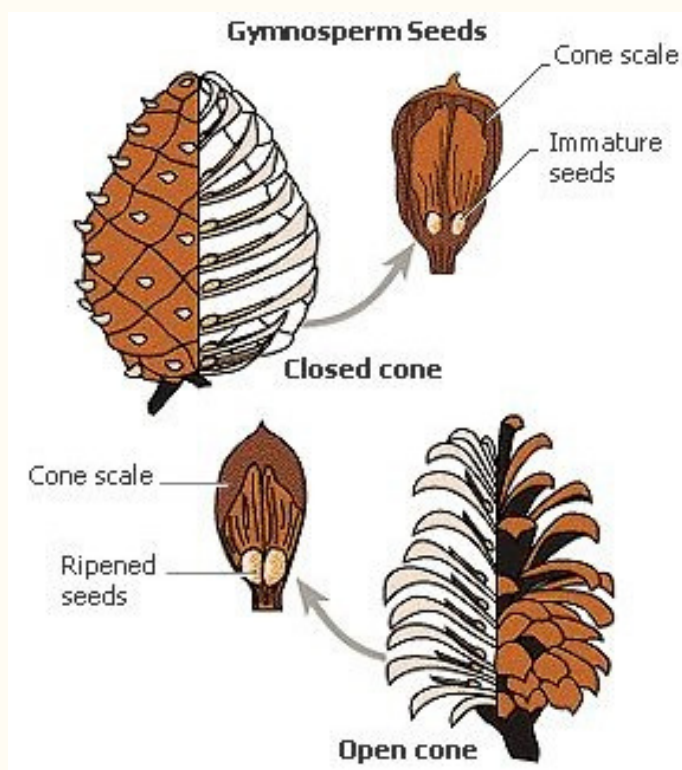


ACTIVITY 1: MAKING OBSERVATIONS

- MAKE YOUR SCIENTIFIC NOTEBOOK.
- ALL SCIENTISTS TAKE NOTES WHEN THEY DO AN EXPERIMENT OR MAKE OBSERVATIONS.
- TAKE THE PIECE OF CARDSTOCK AND FOLD IT IN HALF, "HAMBURGER STYLE." DO THE SAME WITH THE COPY PAPER, FORMING A BOOK FOR YOUR OBSERVATIONS.
- LOOK CLOSELY AT YOUR PINE CONES. DRAW WHAT YOU SEE. MAKE NOTES ABOUT THE COLOR, SIZE, SHAPE, AND ANYTHING ELSE THAT YOU OBSERVE.
- COMPARE THE PINE CONES TO THE DRAWINGS PROVIDED. WHAT IS THE SAME OR DIFFERENT?
- CAN YOU TELL WHAT SPECIES OF TREE IT IS FROM?
- SHARE YOUR OBSERVATIONS.

ACTIVITY 2: EXPERIMENTATION - WHAT IS THE EFFECT OF WATER ON PINECONES?

- PLACE ONE PINE CONE IN EACH CUP.
- LABEL EACH CUP. (COLD WATER, HOT WATER, AND AIR)
- THE CONTAINER WITH JUST THE PINE CONE AND AIR ACTS AS THE "CONTROL." SCIENTISTS ALWAYS HAVE ONE ITEM THEY ARE STUDYING THAT THEY DO NOTHING TO SO THEY CAN SEE THE DIFFERENCE THE TREATMENT OR EXPERIMENT CAUSED. THIS IS CALLED A "CONTROL."
- START RECORDING THE CHANGES YOU SEE. DO THIS EVERY 5 MINUTES FOR A TOTAL OF APPROX. 20 MINUTES.
- ARE THERE OTHER THINGS YOU NOTICE? (LIKE PINE CONES FLOAT?)
- CONTINUE THE EXPERIMENT TO SEE WHAT HAPPENS NEXT. LEAVE THE PINECONES IN THE WATER OVERNIGHT AND THEN RECORD WHAT YOU SEE.



PINECONES



