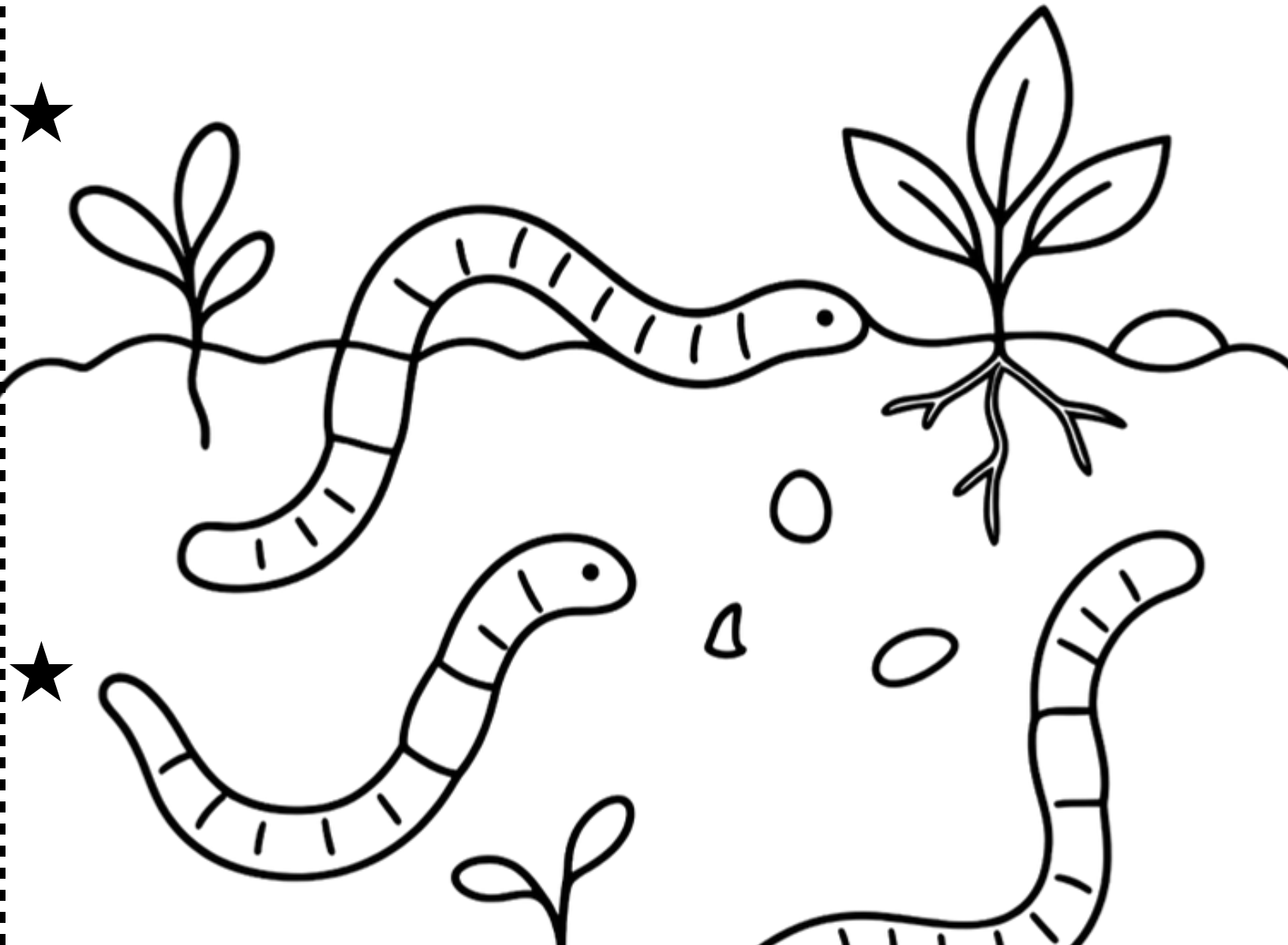
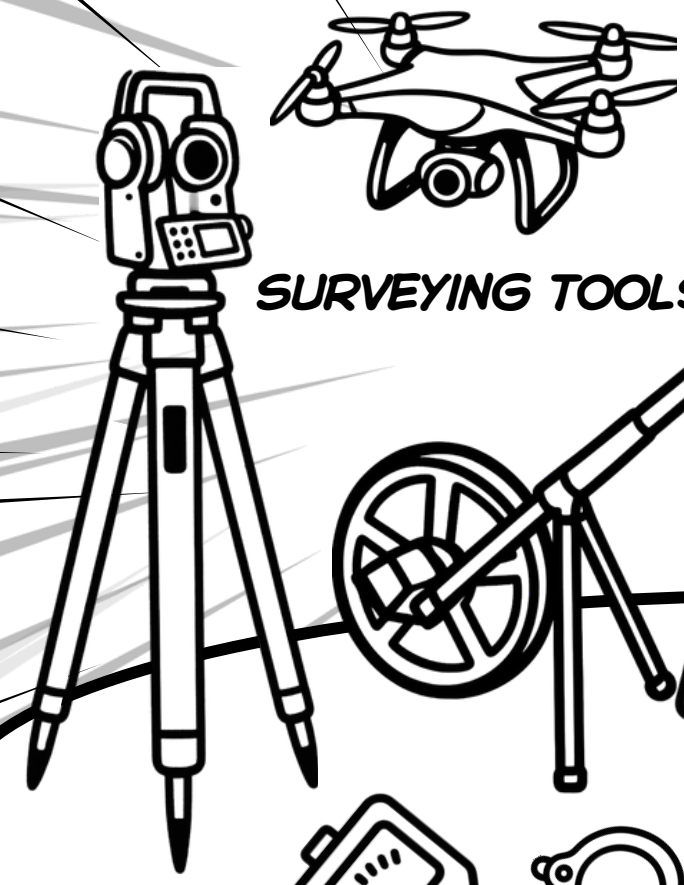
NORTH CAROLINA
Department of Environmental Quality
Energy, Mineral, and
Land Resources

_____ FIELD JOURNAL!



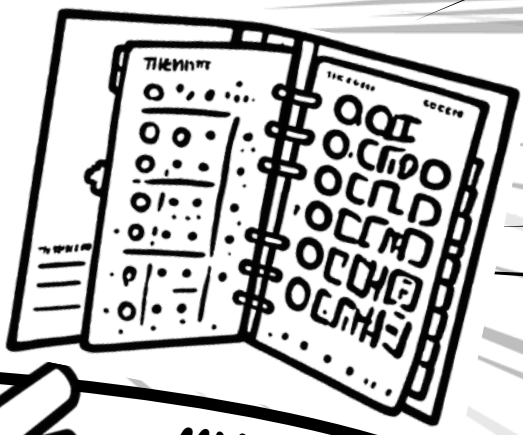

DRAW YOURSELF
AS A PART OF THE
EROSION PATROL!

WHAT TOOLS DO THEY USE?

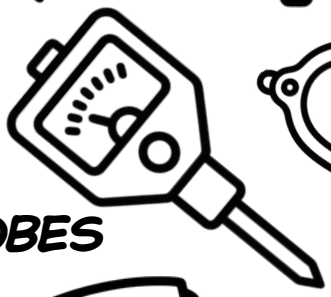


SURVEYING TOOLS

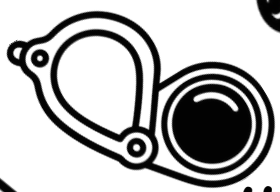
MAPS AND PLANS



MUNSELL COLOR CHART



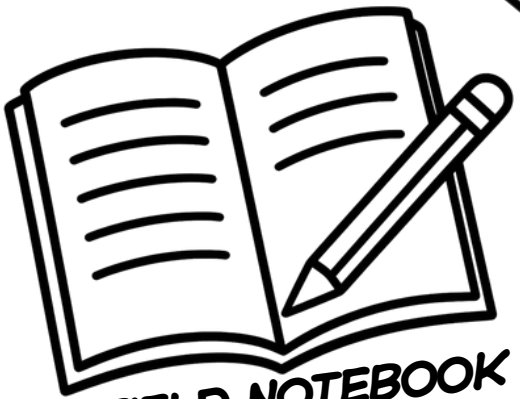
SOIL PROBES



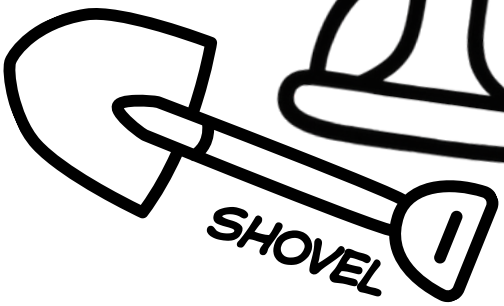
HAND LENS



SAFTEY GEAR



FIELD NOTEBOOK



SHOVEL

ACTIVITY #1

WHAT DO PLANTS NEED?

WHAT DO YOU NEED TO GROW?

WHAT DO YOU THINK PLANTS NEED TO GROW?

TODAY WE ARE GOING TO DO AN EXPERIMENT THAT SHOWS YOU WHAT PLANTS NEED IN ORDER FOR THEM TO GROW!

YOU WILL NEED:

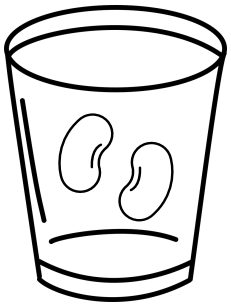
- 12 LIMA BEANS (SOAK THEM OVERNIGHT)
- 6 SMALL, CLEAR CUPS
- SOIL
- WATER
- SUNLIGHT

ACTIVITY #1

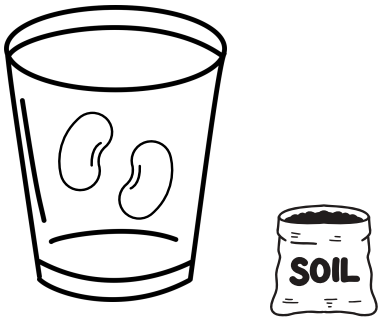
WHAT DO PLANTS NEED?

USING YOUR MATERIALS, ARRANGE THE BEANS LIKE THIS:

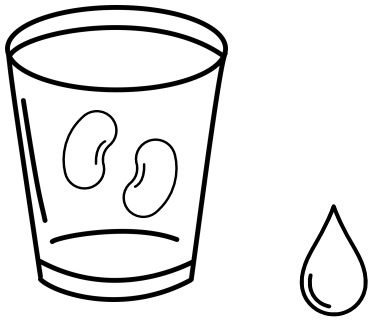
CUP #1
2 BEANS AND AIR



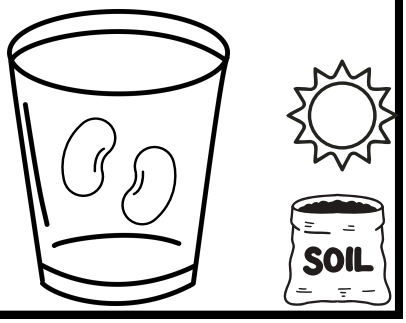
CUP #2
2 BEANS IN DRY SOIL



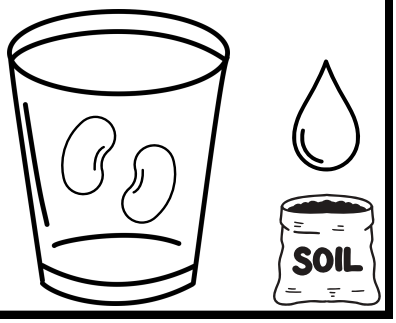
CUP #3
2 BEANS IN WATER ONLY



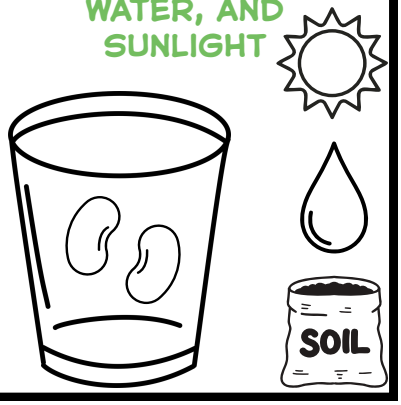
CUP #4
2 BEANS IN DRY SOIL WITH SUNLIGHT



CUP #5
2 BEANS IN SOIL AND WATER, BUT NO SUNLIGHT



CUP #6
2 BEANS IN SOIL, WATER, AND SUNLIGHT



CHECK YOUR BEANS EVERY DAY, AND WATER CUPS 3,5 AND 6 IF NEEDED. RECORD YOUR OBSERVATIONS AT THE END OF WEEKS 1 AND 2 IN YOUR FIELD JOURNAL.

ACTIVITY #1

WHAT DO PLANTS NEED?

WEEK 1			
CUP SET UP	STEM HEIGHT	WHAT DOES IT LOOK LIKE? (CIRCLE ONE)	DID IT GROW? (CIRCLE ONE)
CUP 1	HEIGHT: ____CM	(DRIED UP) (GREEN STEM) (NO CHANGE)	YES NO
CUP 2	HEIGHT: ____CM	(DRIED UP) (GREEN STEM) (NO CHANGE)	YES NO
CUP 3	HEIGHT: ____CM	(DRIED UP) (GREEN STEM) (NO CHANGE)	YES NO
CUP 4	HEIGHT: ____CM	(DRIED UP) (GREEN STEM) (NO CHANGE)	YES NO
CUP 5	HEIGHT: ____CM	(DRIED UP) (GREEN STEM) (NO CHANGE)	YES NO
CUP 6	HEIGHT: ____CM	(DRIED UP) (GREEN STEM) (NO CHANGE)	YES NO

ACTIVITY #1

WHAT DO PLANTS NEED?

WEEK 2

CUP SET UP	STEM HEIGHT	WHAT ARE YOUR BEANS DOING? (CIRCLE ONE)	ROOT STATUS (CIRCLE ONE)
CUP 1	HEIGHT: ____CM	(SLEEPING) (CRACKED OPEN) (SPROUTING)	NO ROOTS YET I SEE BABY ROOTS!
CUP 2	HEIGHT: ____CM	(SLEEPING) (CRACKED OPEN) (SPROUTING)	NO ROOTS YET I SEE BABY ROOTS!
CUP 3	HEIGHT: ____CM	(SLEEPING) (CRACKED OPEN) (SPROUTING)	NO ROOTS YET I SEE BABY ROOTS!
CUP 4	HEIGHT: ____CM	(SLEEPING) (CRACKED OPEN) (SPROUTING)	NO ROOTS YET I SEE BABY ROOTS!
CUP 5	HEIGHT: ____CM	(SLEEPING) (CRACKED OPEN) (SPROUTING)	NO ROOTS YET I SEE BABY ROOTS!
CUP 6	HEIGHT: ____CM	(SLEEPING) (CRACKED OPEN) (SPROUTING)	NO ROOTS YET I SEE BABY ROOTS!

ACTIVITY #1

WHAT DO PLANTS NEED?

WRAPPING UP:

NOW THAT YOU HAVE DONE YOUR EXPERIMENT, WHAT DO PLANTS NEED?

DRAW A PICTURE OF THE CUP THAT GREW THE BEST, AND THE WORST.

GREW THE BEST	GREW THE WORST

ACTIVITY #2

WHAT IS SOIL?

WHAT IS THE DIFFERENCE BETWEEN SOIL AND DIRT?

_____

_____

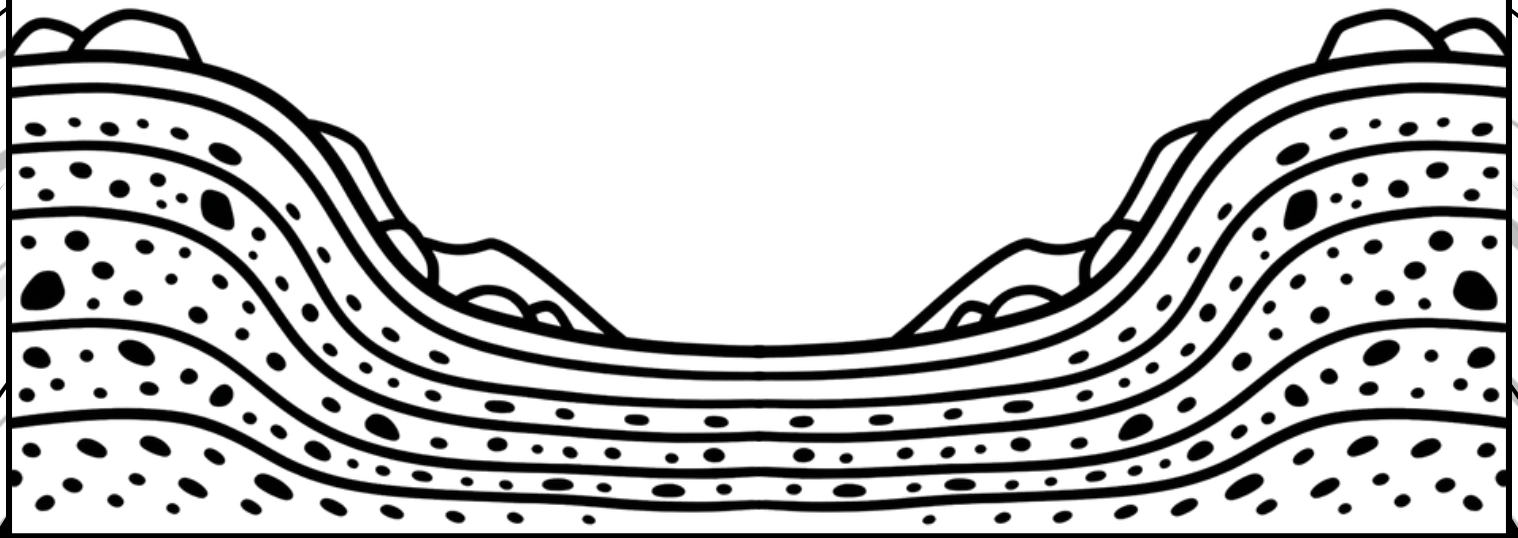
CAN YOU SORT THE DIFFERENCES?

DIRECTIONS: READ EACH CLUE BELOW. DRAW A LINE TO CONNECT THE CLUE TO EITHER THE DIRT OR SOIL!

- I AM STUCK TO YOUR CLEAN WHITE SOCKS.
- I AM FULL OF WIGGLING EARTHWORMS.
- I AM A LIVING HOME FOR PLANT ROOTS.
- YOU SWEEP ME UP INTO A DUSTPAN.

DIRT

SOIL



ACTIVITY #2

WHAT IS SOIL?

SOIL IS ALIVE! IT IS FULL OF MINERALS AND NUTRIENTS AND IS A HOME FOR INSECTS AND PLANTS.

DID YOU KNOW THAT THERE ARE THREE DIFFERENT BASE TYPES OF SOIL? AND IF YOU MIX THEM YOU GET EVEN MORE TYPES!

- SAND IS A LOOSE, GRITTY MATERIAL MADE OF TINY, BROKEN-DOWN PIECES OF ROCK AND MINERALS. YOU CAN EASILY FIND IT COVERING BEACHES AND DESERTS. IT IS THE LARGEST SOIL TYPE.

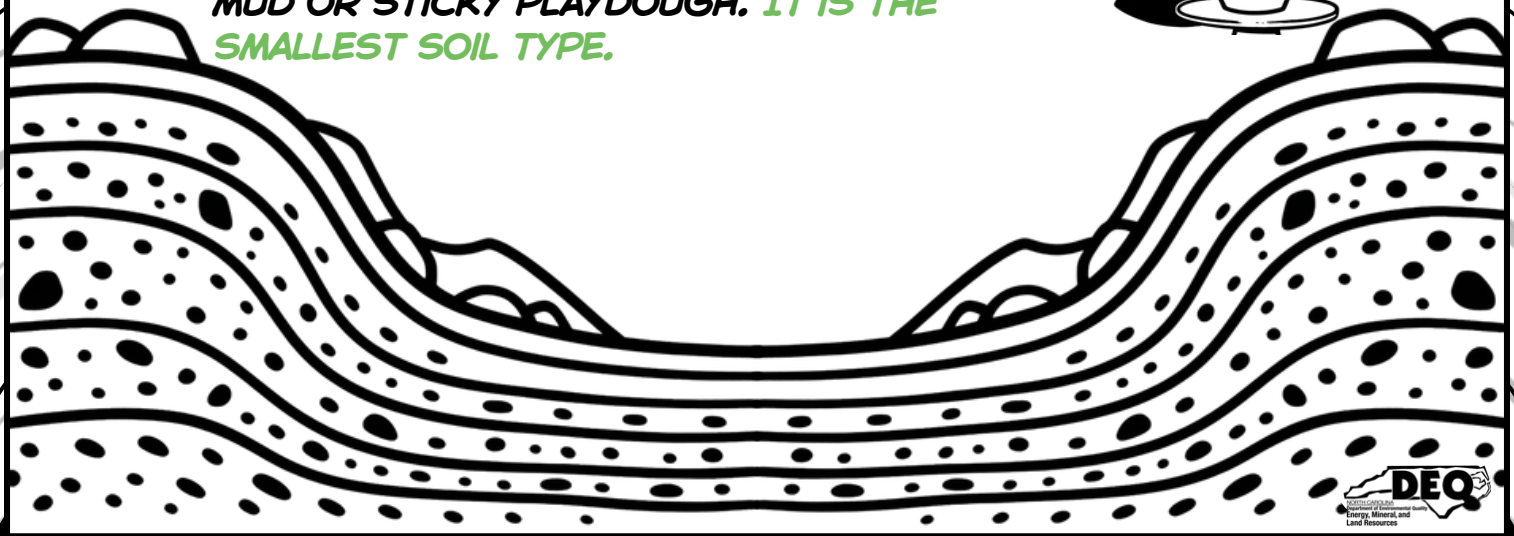




- SILT IS A FINE, DUST-LIKE SOIL MADE OF TINY PIECES OF ROCK AND MINERALS. WHEN IT IS COMPLETELY DRY, SILT FEELS SMOOTH AND POWDERY LIKE FLOUR. WHEN IT GETS WET, IT TURNS INTO A SLIPPERY, SOAPY MUD

- CLAY IS A SOFT, STICKY TYPE OF EARTH MADE OF MICROSCOPIC, FLAT PIECES OF WORN-DOWN ROCK AND MINERALS. UNLIKE SAND, WHICH FEELS ROUGH AND SCRATCHY, WET CLAY FEELS SMOOTH AND GLUEY LIKE THICK MUD OR STICKY PLAYDOUGH. IT IS THE SMALLEST SOIL TYPE.





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Energy, Mineral, and Land Resources

ACTIVITY #2

THE GREAT SOIL MYSTERY

NOW THAT YOU KNOW THE THREE SOIL TYPES, IT'S TIME TO PUT YOUR FINGERS TO THE TEST! YOUR TEACHER HAS GIVEN YOU THREE MYSTERY SAMPLES: A, B, AND C. USE YOUR HANDS TO FIGURE OUT WHO IS WHO!

SAMPLE A

DRAW IT

IS IT GRITTY, SMOOTH, OR STICKY?:

WHAT COLOR IS IT?:

WHAT SOIL TYPE I THINK IT IS:

SAMPLE B

DRAW IT

IS IT GRITTY, SMOOTH, OR STICKY?:

WHAT COLOR IS IT?:

WHAT SOIL TYPE I THINK IT IS:

SAMPLE C

DRAW IT

IS IT GRITTY, SMOOTH, OR STICKY?:

WHAT COLOR IS IT?:

WHAT SOIL TYPE I THINK IT IS:

ACTIVITY #3

WHAT'S THE RIGHT WAY TO PLOW YOUR GARDEN?

HAVE YOU EVER WONDERED HOW FARMERS KEEP SOIL FROM SLIDING DOWN BIG HILLS? INSTEAD OF PLANTING STRAIGHT UP AND DOWN, THEY PLANT ALONG THE NATURAL CURVES OF THE LAND!

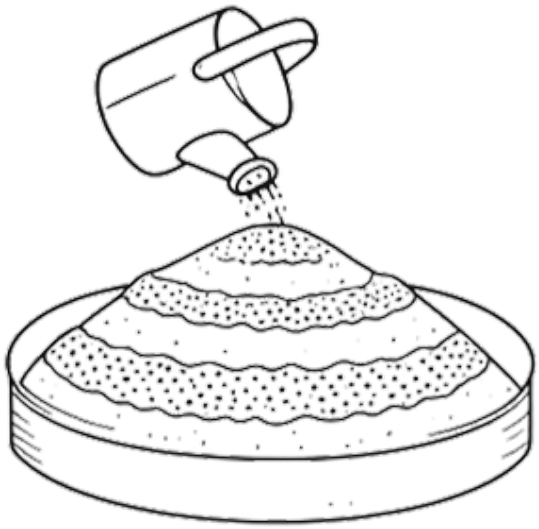
THIS HELPS TRAP RAINWATER AND KEEPS THE SOIL FROM ERODING.

READY TO TEST IT OUT? HERE IS WHAT YOU WILL NEED FOR THE EXPERIMENT:

- 2X 9IN PIE PANS
- ENOUGH SOIL TO FILL THEM EQUALLY
- A SPRAY BOTTLE OR WATERING CAN



GROVES UP AND DOWN



GROVES IN A CIRCLE

ACTIVITY #3

WHAT'S THE RIGHT WAY TO PLOW YOUR GARDEN?

INSTRUCTIONS:

1. PUT **EQUAL** AMOUNTS OF SOIL IN THE PIE PANS, AND FORM A HILL.
2. USING A **PENCIL** OR YOUR **FINGER** MAKE GROOVES, OR PLOW, **UP AND DOWN** IN ONE PAN, AND IN **CIRCLES** IN THE OTHER ONE.
3. SPRINKLE OR SPRAY ABOUT **HALF** OF THE WATER FROM YOUR WATERING CAN OR SPRAY BOTTLE OVER THE PAN WITH THE **UP AND DOWN** GROOVES.

WHAT HAPPENS TO THE SOIL?

ACTIVITY #3

WHAT'S THE RIGHT WAY TO PLOW YOUR GARDEN?

WATER LIKES TO FALL WITH GRAVITY, AND WILL WASH SOIL AWAY WITH IT. THIS IS CALLED EROSION.

PLANTS HELP STOP EROSION. THEIR ROOTS HELP HOLD THE SOIL IN PLACE SO WIND AND RAIN DON'T WASH OR BLOW THEM AWAY!

WHEN YOU DID YOUR EXPERIMENT, WHICH WAY STOPPED THE WATER FROM ERODING OR WASHING AWAY MORE SOIL?

GROVES UP AND DOWN OR GROVES IN A CIRCLE

WHY DO YOU THINK THAT IS?

ACTIVITY #4

WHERE WILL MY SEED GROW?

NOW THAT WE KNOW WHAT PLANTS NEED, AND THE DIFFERENT TYPES OF SOIL LETS DO AN EXPERIMENT!

YOU WILL NEED:

- SEEDS
- SOIL
- CUP (OPTIONAL)
- SEED LOCATION MARKER (POPSICLE STICKS)
- TROWEL
- WATER

THINK OF 3 DIFFERENT PLACES YOU COULD PLANT A SEED.

EACH PLACE SHOULD BE DIFFERENT. HERE ARE SOME EXAMPLES:

- DIFFERENT TYPES OF SOIL (SAND, SILT, CLAY)
- ERODED VERSUS NON-ERODED SOIL
- NATURAL TOPSOIL VERSUS POTTING SOIL

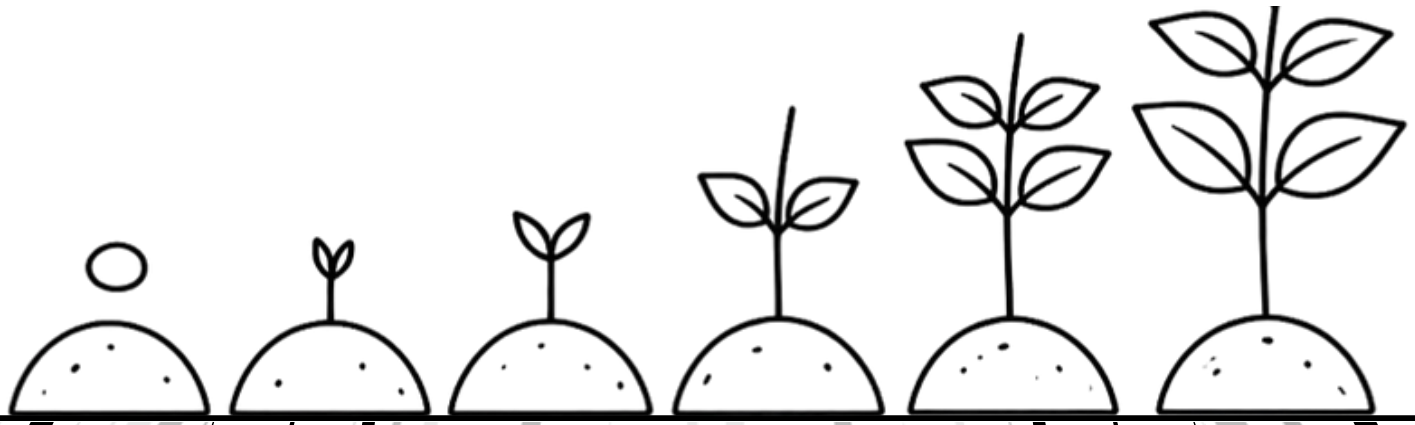
ACTIVITY #4

WHERE WILL MY SEED GROW?

PLANT YOUR SEEDS INSIDE IN A CUP OR OUTSIDE IN THE GROUND OR IN A GARDEN

- **TO PLANT YOUR SEEDS IN A CUP:**
  - PUT 2 INCHES OF SOIL IN THE BOTTOM OF YOUR CUP.
  - PLACE YOUR SEED IN THE CUP.
  - PUT 1 MORE INCH OF SOIL ON TOP OF THE SEED.
  - KEEP SOIL LIGHTLY MOISTENED AND IN THE SUNLIGHT.

- **TO PLANT YOUR SEEDS OUTSIDE:**
  - DIG A 1 TO 2 INCH DEEP HOLE IN THE SOIL.
  - PLACE 1 SEED IN THE MIDDLE OF THE HOLE.
  - LIGHTLY COVER THE SEED WITH SOIL.
  - USE A LOCATION MARKER TO MARK THE SPOT.
  - WATER YOUR PLANTED SEED.



ACTIVITY #4

WHERE WILL MY SEED GROW?

STEP 1: MAP YOUR LOCATIONS

WRITE DOWN WHERE YOU ARE PUTTING YOUR THREE SEEDS!

LOCATION 1: _____

LOCATION 2: _____

LOCATION 3: _____

STEP 2: WHAT DO YOU THINK WILL HAPPEN?

WHICH LOCATION DO YOU THINK YOUR SEED WILL GROW THE BEST? WHY?

_____

_____

WHICH LOCATION DO YOU THINK YOUR SEED WILL GROW THE WORST? WHY?

_____

_____

ACTIVITY #4

WHERE WILL MY SEED GROW?

STEP 3: TRACK YOUR SEEDS

OVER THE NEXT 4 WEEKS, CHECK YOUR SEEDS AND ANSWER THE QUESTIONS BELOW

	LOCATION 1	LOCATION 2	LOCATION 3
WEEK 1	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?
WEEK 2	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?
WEEK 3	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?
WEEK 4	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?	HEIGHT: ____CM ☐ IS IT SPROUTING? ☐ DOES IT HAVE LEAVES?

ACTIVITY #4

WHERE WILL MY SEED GROW?

WRAPPING UP:

DID YOU DO ANYTHING TO HELP YOUR SEEDS GROW? WHAT DID YOU DO?

DRAW A PICTURE OF EACH OF YOUR PLANTS, WHAT DO THEY LOOK LIKE?

LOCATION 1	LOCATION 2	LOCATION 3

BE AN EROSION PATROL SCOUT!

HOW CAN YOU HELP?

YOU CAN HELP PROTECT THE EARTH BY:

- **STICKING TO THE TRAIL:** ALWAYS STAY ON DESIGNATED PATHS. WALKING OFF-TRAIL CRUSHES PLANTS AND LOOSENS THE SOIL.
- **LEAVE NATURE'S SHIELD:** KEEP PLANTS, GRASS, AND ROCKS WHERE THEY ARE. THEY ACT LIKE A BLANKET THAT PROTECTS THE SOIL UNDERNEATH.
- **PLANT FOR THE FUTURE:** HELP PUT NATIVE PLANTS IN THE GROUND. THEIR DEEP ROOTS WORK LIKE FINGERS TO HOLD SOIL IN PLACE!

REPORTING FOR DUTY:

KEEP YOUR EYES OPEN FOR LOOSE MUD OR WASHED-AWAY SOIL! IF YOU SEE SEVERE EROSION NEAR A CONSTRUCTION SITE, ASK AN ADULT TO REPORT IT IMMEDIATELY TO THE NORTH CAROLINA EROSION PATROL HOTLINE AT: **1-866-STOP-MUD**

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