



ISSUE
#1

KNOWLEDGE
IS
PRICELESS\$



SCIENCE COMICS



JAN 2018



SAFETY FIRST



OOPS!



FOR MORE INFORMATION SEE <http://bit.ly/2mbpkEy>

EXPERIMENT #1

BAKING SODA

VOLCANO

OH, NO!
HOW DO I KEEP GETTING
INTO THESE MESSES?



THE FIZZING IS DUE TO CARBON DIOXIDE BEING RELEASED WHEN THE VINEGAR (ACID) AND BAKING SODA (BASE) REACT AND NEUTRALIZE EACH OTHER. CARBON DIOXIDE IS WHAT MAKES SODA FIZZY, TOO!



INGREDIENTS:

1 QT VINEGAR
4 TABLESPOONS BAKING SODA
(IT MIGHT SEEM LIKE A LOT BUT IT IS USED LATER)

STEP 1:

POUR THE VINEGAR INTO A LARGE PAN & PLACE THE PAN INTO SOMETHING WHICH WILL CATCH ANY OVERFLOW

STEP 2:

SLOWLY ADD THE BAKING SODA TO THE VINEGAR.
IF YOU DON'T DO IT CAREFULLY, IT WILL OVERFLOW

STEP 3:

KEEP THE RESULTS, THEY'LL BE USED IN A LATER EXPERIMENT. (HOT SNOW)

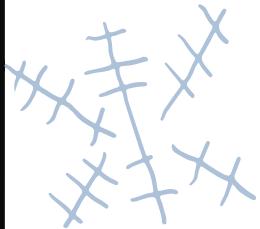
TIP:

TRY USING DIFFERENT AMOUNTS OF VINEGAR AND BAKING SODA. WHICH MAKES THE BIGGEST REACTION?

EXPERIMENT #2

HOT

"SNOW"





EXOTHERMIC
REACTIONS
GIVE OFF
HEAT.

PRECIPITATES
"FALL"
OUT OF A
SOLUTION

SETUP:
TAKE THE RESULTS FROM
THE BAKING SODA VOLCANO
AND PLACE IN A PAN.

STEP #1:
CAREFULLY HEAT UNTIL ONLY
10% IS LEFT OR YOU BEGIN
TO SEE CRYSTALS FORMING
AROUND THE EDGE OF THE
PAN.

STEP #2:
COOL IN A PLACE WHERE IT
WON'T BE JOSTLED OR
DISTURBED. IF IT IS, YOU CAN
REHEAT IT UNTIL THE
CRYSTALS DISSOLVE.

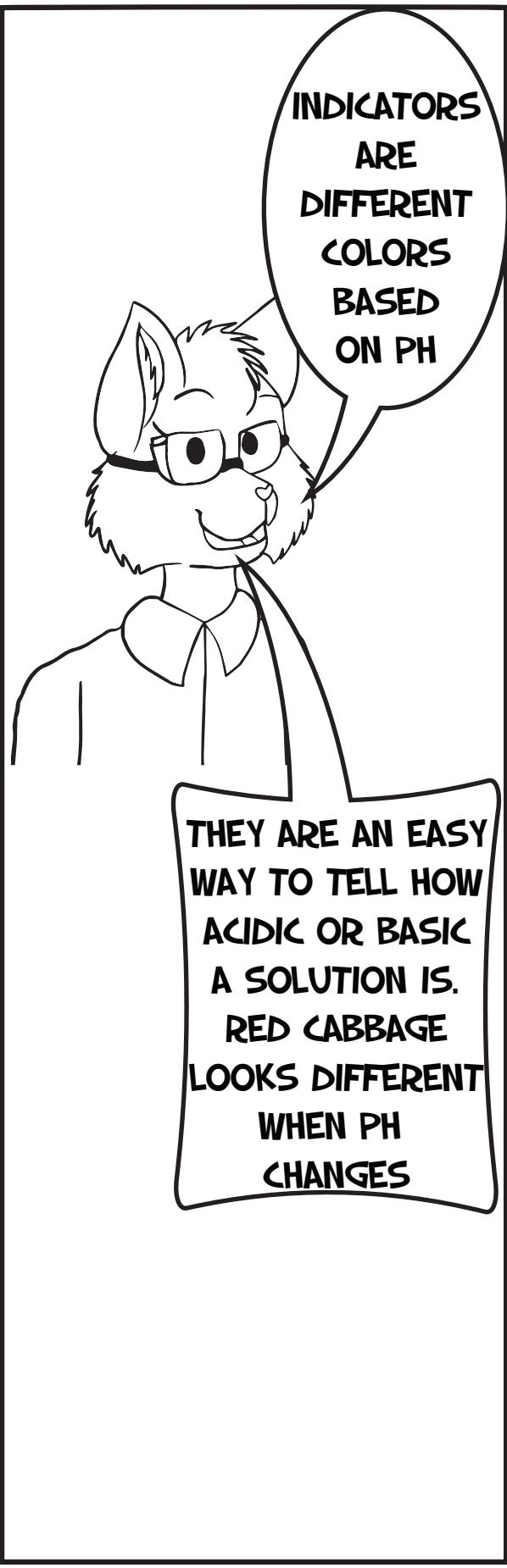
STEP #3:
CAREFULLY POUR ONTO A
PLATE. YOU SHOULD SEE IT
START TO CRYSTALIZE.
WARNING: THEY ARE HOT!!!

NOTE:
YOU CAN REHEAT THE
SOLUTION TO DISSOLVE
THE CRYSTALS SO YOU
CAN DO IT AGAIN!

EXPERIMENT #3

COLOR CHANGING CABBAGE





INGREDIENTS:

3 CABBAGE LEAVES
VINEGAR
BAKING SODA

STEP 1:

BOIL THE CABBAGE LEAVES UNTIL SOFT. REMOVE THE LEAVES AND RESERVE THE LIQUID.

STEP 2:

ADD VINEGAR TO ONE LEAF AND BAKING SODA TO ANOTHER. IS THERE A DIFFERENCE?

STEP 3:

TO THE REMAINING LEAF, FIRST ADD VINEGAR AND THEN BAKING SODA. WHAT DO YOU NOTICE ABOUT THE COLOR?

STEP 4:

ADD VINEGAR TO THE LIQUID. DOES IT CHANGE COLOR? ADD BAKING SODA. WHAT HAPPENS? IS THE COLOR AS BRIGHT AS THE LEAVES?

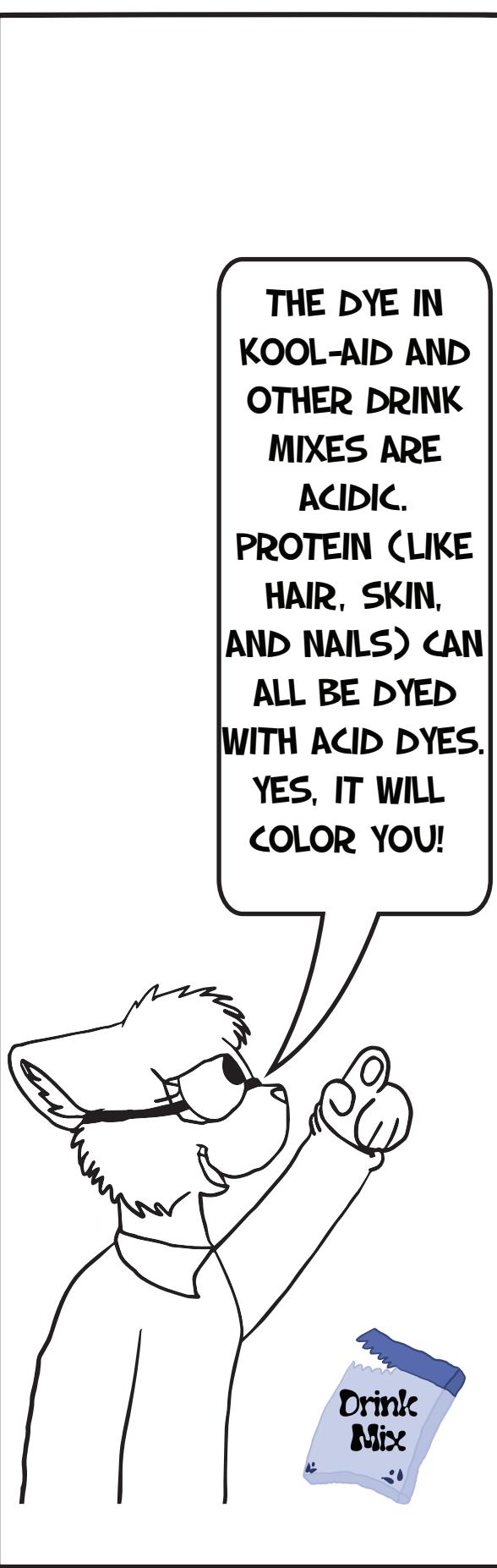
EXPERIMENT #4

KOOL-AID

DYEING

**I HOPE
IT WASHES
OUT!!!!**





INGREDIENTS:

3 OZ WHITE WOOL
3 PACKETS (UNSWEETENED)
OF DRINK MIX
3 JARS (MASON JARS) OR
MICROWAVE SAFE BOWLS

STEP 1:
CAREFULLY MIX THE PACKETS WITH WATER INTO THE CONTAINERS.

STEP 2:
SEPARATE THE WOOL INTO THIRDS. PLACE ONE IN EACH CONTAINER. MAKE SURE THAT THE WOOL IS SOAKED AND FULLY IMMERSSED.

STEP 3:
MICROWAVE FOR 2 MINUTES, REST FOR ONE MINUTE. REPEAT UNTIL THE WATER IS CLEAR AND THE COLOR IS IN THE WOOL.

ACID DYES ALSO COLOR NYLON. YOU CAN GET NEAT EFFECTS IF YOU USE A YARN WHICH IS A BLEND WITH ACRYLIC OR COTTON.



EXPERIMENT #5

EXTRACT DNA

FROM

STRAWBERRIES



**EQUIPMENT:**

- * ZIPLOCK BAG
- * FUNNEL
- * CHEESECLOTH
- * 2 SMALL JARS OR BEAKERS
- * EYE DROPPER OR PIPETTE
- * TOOTHPICK OR SKEWER

INGREDIENTS:

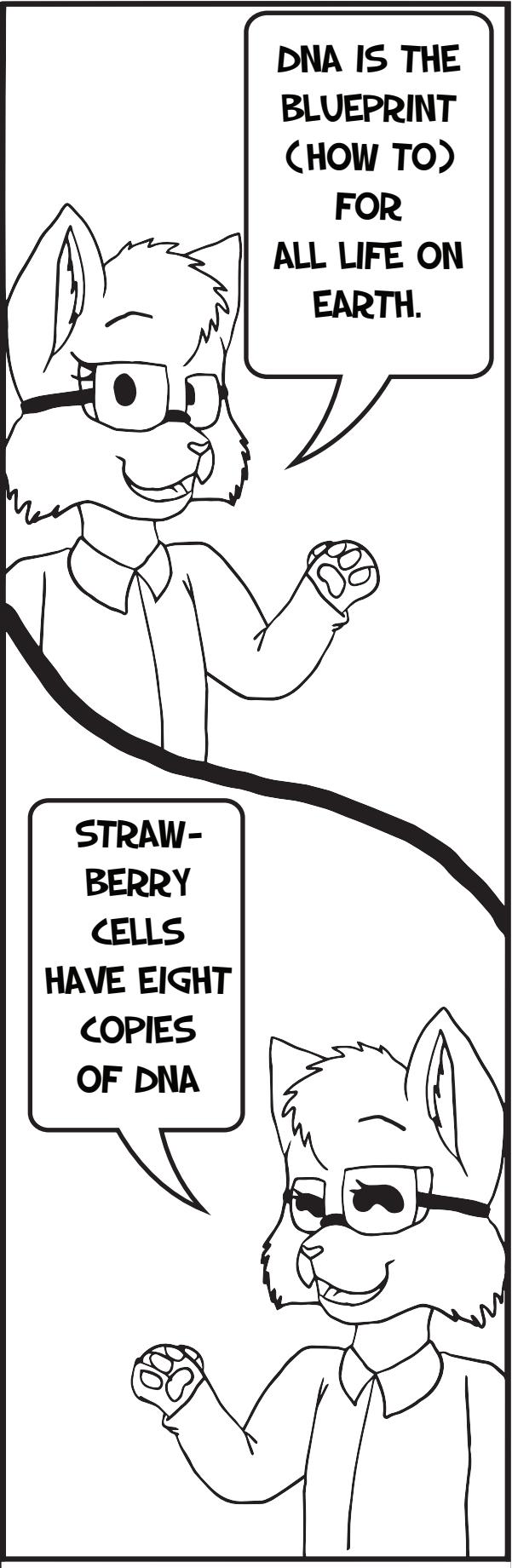
- * 3 STRAWBERRIES
- * 1 TBS DISH SOAP
- * 1/2 TSP SALT
- * 1/3 CUP WATER
- * RUBBING ALCOHOL
PLACED IN FREEZER

STEP 1:

REMOVE STEMS FROM STRAWBERRIES AND PLACE IN THE ZIPLOCK BAG. CLOSE THE BAG AND SQUEEZE FOR TWO MINUTES.

STEP 2:

IN A JAR ADD THE SALT AND DISH SOAP TO THE WATER AND MIX IT WELL.



STEP 3:
LINE THE FUNNEL WITH
CHEESECLOTH AND PLACE IT
IN THE BEAKER.

STEP 4:
CAREFULLY POUR THE
STRAWBERRY MIXTURE INTO
THE FUNNEL AND LET IT
DRAIN COMPLETELY.

STEP 5:
PLACE THE STRAWBERRY
LIQUID INTO A SHORT JAR.

STEP 6:
SLOWLY ADD THE ALCOHOL TO
THE JAR SO IT FORMS A
1 INCH LAYER ON TOP. **DO NOT**
MIX THE LIQUIDS.

STEP 7:
THE DNA SHOULD APPEAR
BETWEEN THE TWO LAYERS
AND LOOK LIKE A GOOEY
WHITE/CLOUDY STRINGY
STUFF.

DOUBLE, DOUBLE, TOIL, AND TROUBLE

**BYE EVERYONE!
REMEMBER TO HAVE SAFE
FUN WITH SCIENCE!**



ALTHEA SEILHAN

ILLUSTRATION

ALTHEA LIVES IN COLUMBUS, OH, WITH HER PARENTS AND 5 CATS. SHE HAS BEEN MAKING ART ALL HER LIFE. SHE IS A FIRST DEGREE BLACK BELT IN TANG SOO DO. SHE IS ALSO A BEGINNING COSTUME MAKER. IN 2016, SHE WON A S.P.A.C.E. AWARD FOR HER FIRST COMIC, "STARCATCHER'S QUEST".



Althea's Cat.

MATT WILLIAMS

WRITING & LAYOUT

MATT LIVES IN COLUMBUS, OH, IN A HOUSE FILLED WITH CATS AND YARN. IN HIS SPARE TIME HE ENJOYS DESIGNING TABLETOP GAMES, READING, WEAVING, COFFEE, AND SPENDING TIME WITH ALTHEA. HE WANTED TO BE A RENAISSANCE PERSON WHEN HE WAS YOUNG MAYBE SOMEDAY HE'LL ACHIEVE THIS GOAL!

CREDITS & NOTICES

THERE ARE RESOURCES AVAILABLE FOR PARENTS, TEACHERS, AND STUDENTS WHICH ACCOMPANY THIS BOOK:

- * PDF - <http://bit.ly/2COrNit>
- * PRINTABLE BOOKLET - <http://bit.ly/2CESfYh>
- * PRESENTATION - <http://bit.ly/2CO9cTL>
- * WIKI - <http://bit.ly/2Fgb323>
- * LOOK AT BOTTOM OF EXPERIMENTS FOR MORE INFO.

FONTS:

- * SF SLAPSTICK COMIC
- * MINSTREL POSTER TWO NF
- * Skia

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