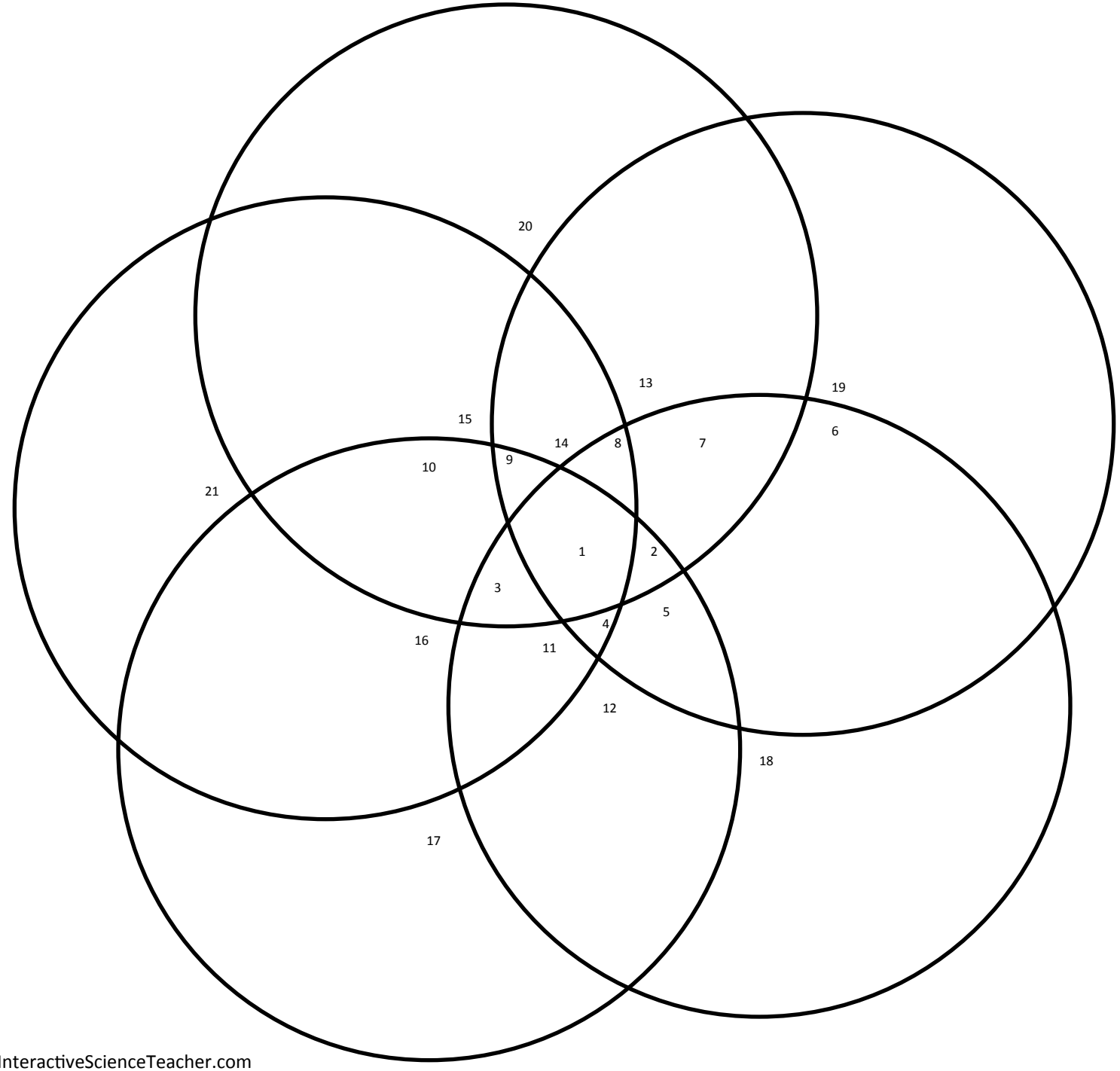

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Teacher notes- called the “QNI Venn”, which stands for “Quite Nearly Impossible”. Challenging? Yes, and it is quite quite-nearly-impossible. But it’s intriguing- something inside you has to try to figure it out.

Begin by having each student fill in these #’s: 17. geosphere, 18. hydrosphere, 19. cryosphere, 20. atmosphere, and 21. biosphere. Once those are set, we’ll at least all be matching where the rings overlap, so when we’re discussing this we’re talking about the same thing. Example: for #4, students must put down something that’s part of the geosphere, hydrosphere, cryosphere, and biosphere.

This might be something you give students, and check back in a day later and let them help each other a bit.

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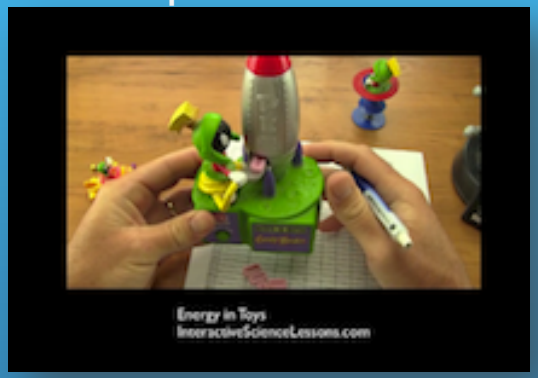
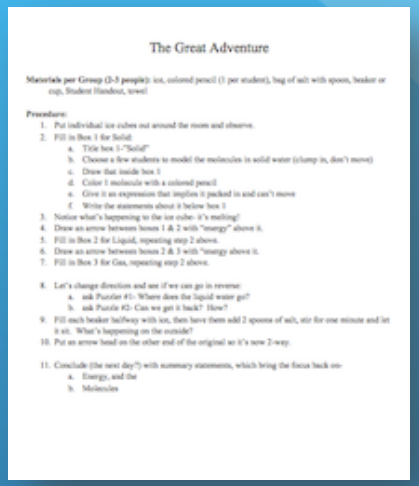


- Teacher Notes


The Great Adventure

Materials per Group (3-5 people): ice, colored pencil (1 per student), bag of salt with spoon, beaker or cup, Student Handout, towel

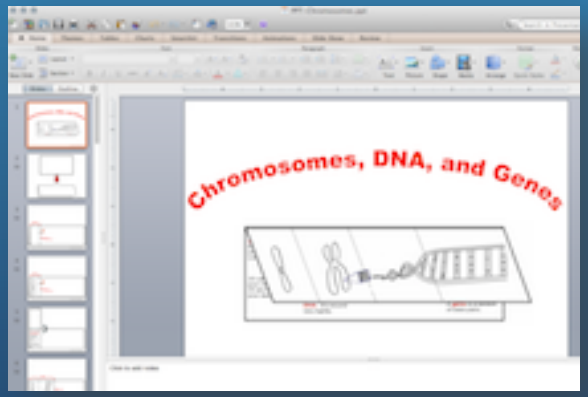
Procedure:

1. Put individual ice cubes out around the room and observe.
2. Fill in Box 1 for Solid:
   a. Title box 1-"Solid"
   b. Choose a few students to model the molecules in solid water (clump in, don't move)
   c. Draw that inside box 1
   d. Color 1 molecule with a colored pencil
   e. Give it an expression that implies it packed in and can't move
   f. Write the statements about it below box 1
3. Notice what's happening to the ice cube- it's melting!
4. Draw an arrow between boxes 1 & 2 with "energy" above it.
5. Fill in Box 2 for Liquid, repeating step 2 above.
6. Draw an arrow between boxes 2 & 3 with "energy above it.
7. Fill in Box 3 for Gas, repeating step 2 above.

8. Let's change direction and see if we can go in reverse:
   a. ask Puzzle #1- Where does the liquid water go?
   b. ask Puzzle #2- Can we get it back? How?
9. Fill each beaker halfway with ice, then have them add 2 spoons of salt, stir for one minute and let it sit. What's happening on the outside?
10. Put an arrow head on the other end of the original so it's now 2-way.

11. Conclude (the next day?) with summary statements, which bring the focus back on-
    a. Energy, and the
    b. Molecules

- PowerPoints



- Student Handouts