

Augmented Reality (AR) in the Science Classroom



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Learning Intentions/Success Criteria

- Define augmented reality.
- Identify uses for augmented reality in the classroom setting.

<http://elements4d.dagri.com/#immersive>

HOME

LESSON PLANS

TEACHER TESTIMONIALS



HOW IT WORKS

DEMO

GET BLOCKS



ELEMENTS 4D

Part toy. Part chemistry experiment.
A whole new way of learning.

Bring this set of six beautifully designed wooden blocks to life
through augmented reality with the Elements 4D app.



A little review...

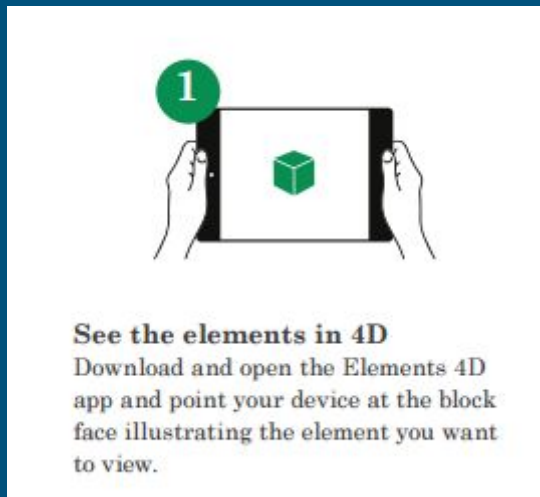
An **element** is a pure substance.

An **atom** is the smallest part of an element that still has the properties of that element.

<http://www.strangematterexhibit.com/>



Well, what is augmented reality anyway?



What Could the Matter Be?

- Choose a block and scan each side.
- Record the name of the element and observations you make about each element on Activity Sheet 1
- Now, use scissors to cut the activity sheet into six parts.
- Use the paper plates at your table to sort the six elements into categories

What Could the Matter Be? Name: _____

Activity Sheet 1 Date: _____

Observations	
Element	

3

Name: _____

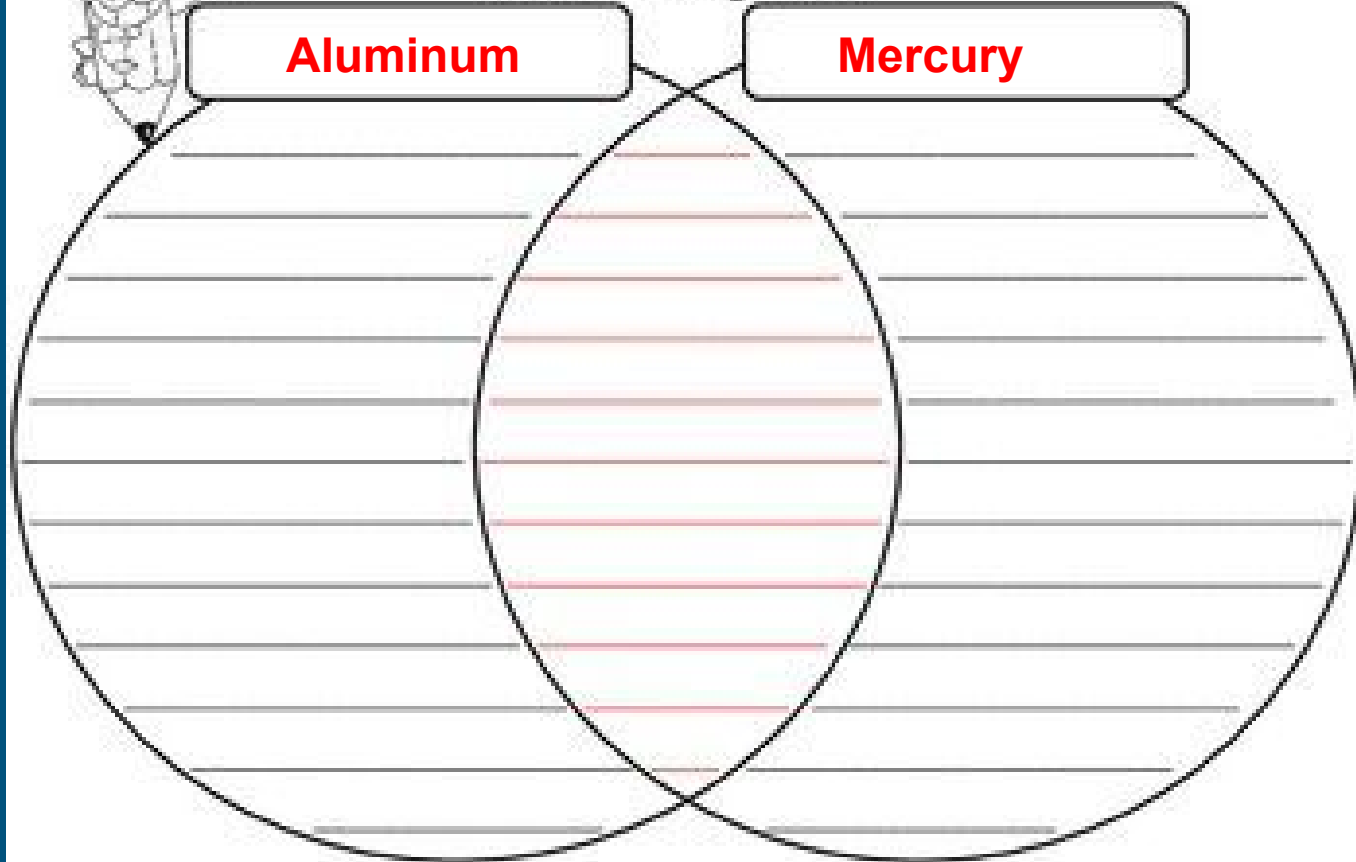
Date: _____



Venn Diagram

Aluminum

Mercury



Name: _____

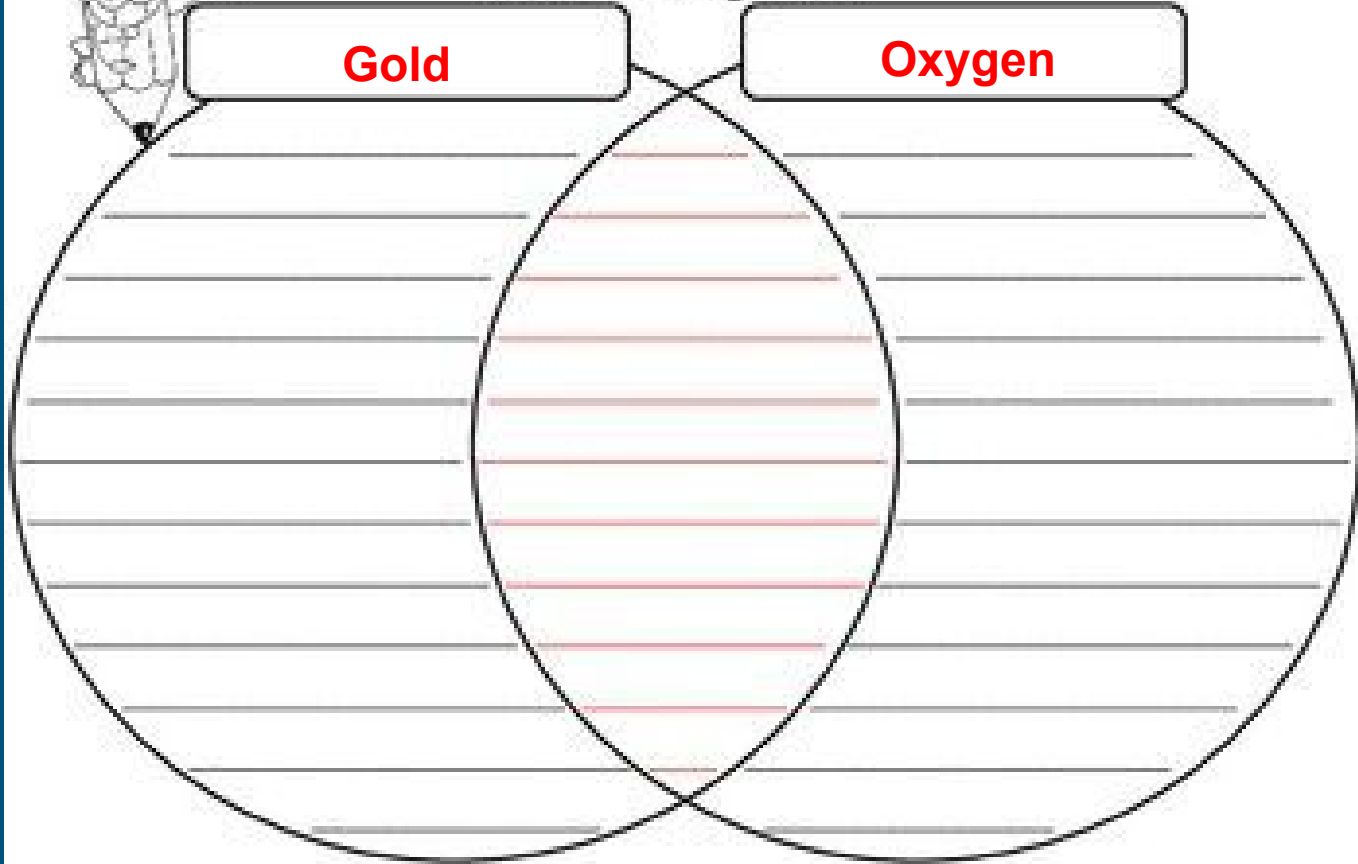
Date: _____



Venn Diagram

Gold

Oxygen



Solids, Liquids and Gases

- <http://www.mheducation.ca/school/applets/bcscience7/particle/>
- <http://studyjams.scholastic.com/studyjams/jams/science/matter/solids-liquids-gases.htm>

Win a set of cubes!

Oh Dear, What Can the

Name: _____

Matter be? Activity Sheet 6

Date: _____

Roll your block. Identify the element that is on top. Write the name of the element in a space on the bingo board that describes one of its properties. (For solid, liquid, or gas, assume that the element is at room temperature.) If you roll an element more than once, you may put its name in other spaces, as long as it fits those properties. The first group to get five spaces filled across, down, or diagonally wins the game!

Gas	Solid	Liquid	Metal	Silver
Colorless	Black	Metal	Solid	White
White	Metal	Non-Metal	Gas	Colorless
Silver	Gas	Colorless	Black	Liquid
Non-Metal	Liquid	Silver	Gas	Solid

Metals, Nonmetals, and Metalloids

H																	He
Li	Be											B	C	N	O	F	Ne
Na	Mg											Al	Si	P	S	Cl	Ar
K	Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr
Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe
Cs	Ba	La	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn
Fr	Ra	Ac	Rf	Db	Sg	Bh	Hs	Mt	Ds	Rg	Uub	—	Uuq	—	—	—	—

metals

metalloids

nonmetals

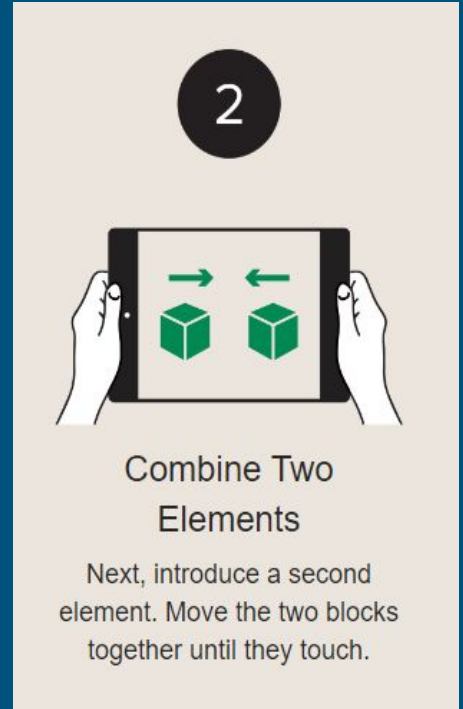
Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu
Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr

SC Science Standards

- 2.P.3A.1 Analyze and interpret data from observations and measurements to describe the properties used to classify matter as a solid or a liquid.
- 3.P.2A.2 Construct explanations using observations and measurements to describe how matter can be classified as a solid, liquid or gas.
- 5.P.2A.1 Analyze and interpret data from observations and measurements of the physical properties of matter (including volume, shape, movement, and spacing of particles) to explain why matter can be classified as a solid, liquid or gas.

So, what happens if we combine two elements.

- Try **Hydrogen** and **Oxygen**
- <http://studyjams.scholastic.com/studyjams/jams/science/matter/elements-and-compounds.htm>
- Now try **Sodium** (Na) and **Chlorine** (Cl)



How many compounds can you find using the element cubes?

- How many elements combine with hydrogen? List them.
- How many elements combine with oxygen? List them.
- Chlorine combines with several other elements in addition to sodium. Can you find them?

An addition to our standards list

- 5.P.2B.1 Obtain and communicate information to describe what happens to the properties of substances when two or more substances are mixed together.
 - Also extended knowledge (Law of Conservation of Mass)
- 7.P.2.A All substances are composed of one or more elements. Elements are pure substances which contain only one kind of atom. The periodic table organizes these elements based on similar properties. Compounds are substances composed of two or more elements. Chemical formulas can be used to describe compounds.

Aurasma app from iTunes or Android

- Select a trigger image (take a photo)
- Add the overlay (video/image) that will launch with trigger image
- Position your overlay





<http://www.karenbalbier.com/augmented-reality-in-the-e-science-classroom--minicast.html>



Did we accomplish what we set out to do?

- Can you explain augmented reality to someone?
- Have you Identified uses for augmented reality in your classroom?