Unit: 1

Standard: 5.5A
classify matter based on measurable, testable, and observable physical properties, including mass, magnetism, physical state (solid, liquid, and gas), relative density (sinking and floating using water as a reference point), solubility in water, and the ability to conduct or insulate thermal energy or electric energy

Content (nouns):
What students need to know?

- Matter
- Physical state
- Physical property
- Mass
- Magnetism
- Density
- Solubility
- Conductors
- Insulators
- Thermal energy
- Electric energy

Skills (verb):
What students need to be able to do?

- classify

Student Learning Targets: (I can... Statements. These become daily lessons.)

- I can classify matter.
- I can classify matter based on physical state (solid, liquid, and gas).
- I can classify matter based on the mass of an object.
- I can classify matter based on an object's magnetic ability.
- I can classify matter based on an object's density (to sink or float).
- I can classify matter based on an object's ability to dissolve in water (solubility).
- I can classify matter based on an object's ability to conduct energy.
- I can classify matter based on an object's ability to insulate energy.
- I can classify matter based on thermal energy.
- I can classify matter based on electric energy.

DOK: 2

Learning Target Misconceptions:

- Students may think the physical property of an object changes with increased or decreased amounts of matter.
- Students may think mass and volume, which both describe an "amount of matter", are the same property.

- Students may think gasses are not matter because most are invisible, rather than gases filling a space.
- Students may think all metal objects are attracted to a magnet, rather than to iron, nickel, and cobalt.
- Students may think a larger object has more mass (is heavier) than a smaller object, rather than some substances having more matter packed into a smaller space.
- Students may think large objects always sink and small objects always float, rather than objects with a density less than water floating, and greater than water sinking.
- Students may think a solid added to water disappears into the water, rather than understanding the solid dissolves in the water (is incorporated into the liquid).
- Students may think mixtures and solutions are the same, rather than that solutions are a type of mixture.
- Students may think that solutions are harder to separate than other mixtures, rather than the ease of separation of mixtures depends on the physical properties of the mixture and the tools available.
- Students may think all solutions are composed of liquids, rather than a type of mixture in which the particles of one or more substances are uniformly dispersed, or spread out, throughout another substance.
- Students may think when a substance dissolves into a liquid, it disappears or becomes a permanent part of the liquid.

4	**Exceeding** (Student understanding and application extends beyond the intent of the standard.)	Able to apply to real world examples. Able to distinguish between more and less dense. Able to explain vocabulary and concepts. Able to construct and analyze data tables.
3	**Ready** (If there is a mistake in student evidence, the student requires no additional instruction to correct his or her thinking.)	Students can classify and define matter and its physical states. Students can classify, measure, and test the physical properties of mass. …magnetism (magnetic or non-magnetic) ---can classify, measure, and observe an object's density in water. Students can determine if an object will dissolve in water. …solubility (object's ability to dissolve in water) …ability to conduct. (object's ability to conduct electric energy.) (object's ability to conduct thermal energy.) …ability to insulate. (object's ability to insulate electric energy) (object's ability to insulate thermal energy)

		Thermal energy - Electrical energy Able to analyze data tables.
2	**Close** (The student requires intervention for part of the standard, but he or she clearly understands another part of the standard.)	Magnetism- can not remember which metals are magnetic but they do know that some metals are magnetic. Density- Students understand that items sink or float but do not understand that items are more or less dense relative to water. Mass- confuse mass with weight but they do understand that mass is measured using a triple beam balance. Know that a TBS is used but are unable to read the sliders. Conductors and Insulators- understand the concept but unable to identify which materials are insulators or conductors of thermal energy. Hard to understand in relation to thermal energy but able to understand in regards to electricity. Solubility- do not know soluble means to dissolve- Can quickly identify some materials are soluble but unable to identify all- ie honey etc. State of matter- know that there are 3 states but some properties confuse them.
1	**In Need of Support** (The student needs remediation or intervention.)	Can not identify the physical properties. Can identify, but not explain or observe but unable to describe. Rely heavily on teacher guidance.