Name: _____ Class: _____

Assessing the Learning Tracking Tool for Systems and Scale

Driving Question: __What happens when ethanol burns? _____

Activity Chunk Write the activity and your role in each circle.	**What did we do?** Summarize key information and activities with a description and/or picture.	**What Did We Figure Out?** Summarize what we figured out about the phenomena that helps us answer the driving question.	**What Are We Asking Now?** What additional information do you need to answer the driving question?
Expressing Ideas and Questions Questioner	Take a pretest and share initial ideas on the Expressing Ideas and Questions Tool about what happens when ethanol burns.	Ethanol burns and water does not. We have many initial ideas and questions.	What is ethanol?
Zooming Into Air	"Zoom into" air and explore how the world can be studied at multiple scales, including the atomic-molecular scale.	We can learn about the world at different scales. Three facts about atoms are: 1) Atoms last forever, 2) Atoms make up the mass of all materials, 3) Atoms are bonded to other atoms in molecules.	How can we use atoms and molecules to explain ethanol burning?
Investigating Soda Water Investigator	Conduct an investigation to explore what happens when soda water fizzes and use the Predictions and Planning Tool and the Evidence-Based Arguments Tool.	Soda water fizzing lost mass and made the BTB change from blue to yellow.	What happens to the molecules in soda water as it fizzes?
Explaining Soda Water Fizzing Explainer	Model the chemical change that occurs as soda water fizzes using molecular model kits and use the Explanations Tool to explain what happens when soda water fizzes.	The carbonic acid in soda water decomposes into carbon dioxide and water as it fizzes. No atoms are created or destroyed during the chemical change.	What happens to ethanol when it burns?

Activity Chunk Write the activity and your role in each circle.	**What did we do?** Summarize key information and activities with a description and/or picture.	**What Did We Figure Out?** Summarize what we figured out about the phenomena that helps us answer the driving question.	**What Are We Asking Now?** What additional information do you need to answer the driving question?
Investigating Ethanol Burning Investigator	Conduct an investigation to explore what happens when ethanol burns and use the Predictions and Planning Tool and the Evidence-Based Arguments Tool.	Ethanol burning lost mass and made the BTB change from blue to yellow. There was evidence of heat and light energy at the end of the chemical change.	What happens to the molecules of ethanol as it burns?
Explaining Ethanol Burning Explainer	Model the chemical change that occurs as ethanol burns using molecular model kits and use the Explanations Tool to explain what happens when ethanol burns.	In a flame the atoms in ethanol and oxygen rearrange to form carbon dioxide and water. Chemical energy is changed to heat and light energy when the high-energy C-C and C-H bonds of ethanol are changed to low-energy O-H and C=O bonds.	Why does ethanol burn and not water?
Organic vs. Inorganic Explainer	"Zoom in" to ethanol, wood, and water to distinguish between organic materials (materials with high-energy C-C and C-H bonds) and inorganic materials (materials with other chemical bonds).	Ethanol and other organic materials have high energy C-C and C-H bonds. Water and other inorganic materials do not have C-C or C-H bonds.	What happens when other materials burn?
Explaining Other Examples Explainer	Apply what was figured out about ethanol burning to explain other examples of organic materials burning.	The chemical change of combustion is similar for all organic materials. The organic material combines with oxygen to produce carbon dioxide and water. The chemical energy in the organic material is transformed into heat and light energy.	Why is combustion of organic materials important in the world?