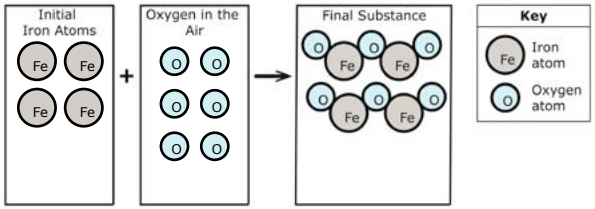
Key for M-STEP Grade 8 Science
Online Tools Training (OTT) Sample Items

Grade 8 Sample Item Cluster: How Do Hand Warmers Work?

Topic Bundle: Chemical Reactions*

Item #	NGSS Alignment	Key (screenshot for interaction type)	Assessment Claim
How Do Handwarmers Work? (Part 1)			
1	**MS.PS1.B** **SEP 4-**Analyzing and Interpreting Data	**Part A:** occurred, did **Part B:** a	The student uses the data table to determine if a chemical reaction occurred and provides the evidence that indicates a chemical reaction occurred.
2	**MS.PS1.B** **SEP 4-**Analyzing and Interpreting Data **CCC 5-**Energy and Matter	more than, iron atoms are combining with matter in	The student uses the data table to compare the initial and final mass of the material and then support the answer with reasoning about how the mass of the material increased overnight.
3	**MS.PS1.B** **SEP 2-**Developing and Using Models **CCC 5-**Energy and Matter	**Part A:**  **Part B:** b	The student completes a model to show conservation of matter during a chemical reaction. The student then identifies a limitation of the model.

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Item #	NGSS Alignment	Key (screenshot for interaction type)	Assessment Claim
How Do Handwarmers Work? (Part 2)			
4	**MS.PS1.B** **SEP 4-**Analyzing and Interpreting Data **CCC 1-**Patterns	**Similarities** The temperature increases in both systems. The temperature decreases in both systems. The temperature remains constant in both systems. **Differences** The temperature of System 1 increases more quickly than the temperature of System 2. The temperature of System 2 increases more quickly than the temperature of System 1. System 1 reaches a greater maximum temperature than System 2 reaches. System 2 reaches a greater maximum temperature than System 1 reaches.	The student compares the data for two systems.
5	**MS.PS1.B** **SEP 6-**Constructing Explanations and Designing Solutions **CCC 5-**Energy and Matter	**Claim**: Energy is transferred from each system to the thermometers. **Evidence**: The temperature was higher at 50 minutes than at 0 minutes. **Reasoning**: Energy was released when the iron reacted with the oxygen in the air.	The student constructs a scientific explanation about energy transfer in the system.
6	**MS.ETS1.B** **SEP 6**-Constructing Explanations and Designing Solutions **CCC 5**-Energy and Matter	C	The student evaluates a design solution and determines if the design would or would not solve the problem.

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7	**MS.ETS1.C** **SEP 6**-Constructing Explanations and Designing Solutions	d	The student evaluates a design solution and determines trade-offs of the design solution.

*** NGSS Topic Bundle Link:** MS.Chemical Reactions | Next Generation Science Standards