

**SCIENTIFIC EXPLANATION: SUBSTANCE AND PROPERTIES**

Component	Level		
	0	1	2
<p><b>Claim –</b> A conclusion that answers the original question.</p>	<p>Does not make a claim, or makes an inaccurate claim.</p> <p>-----</p> <p>States none of the liquids are the same or specifies the wrong solids.</p>	<p>Makes an accurate but incomplete claim.</p> <p>-----</p> <p>Vague statement, like “some of the liquids are the same.”</p>	<p>Makes an accurate and complete claim.</p> <p>-----</p> <p>Explicitly states “Liquids 1 and 4 are the same substance.”</p>
<p><b>Evidence –</b> Scientific data that supports the claim. The data needs to be appropriate and sufficient to support the claim.</p>	<p>Does not provide evidence, or only provides inappropriate evidence (Evidence that does not support claim).</p> <p>-----</p> <p>Provides inappropriate data, like “the mass is the same” or provides vague evidence, like “the data table is my evidence.”</p>	<p>Provides appropriate, but insufficient evidence to support claim. May include some inappropriate evidence.</p> <p>-----</p> <p>Provides 1 or 2 of the following pieces of evidence: density, melting point, and color of liquids 1 and 4 are the same. May also include inappropriate evidence, like mass.</p>	<p>Provides appropriate and sufficient evidence to support claim.</p> <p>-----</p> <p>Provides all 3 of the following pieces of evidence: density, melting point, and color of liquids 1 and 4 are the same</p>
<p><b>Reasoning –</b> A justification that links the claim and evidence. It shows why the data counts as evidence by using appropriate and sufficient scientific principles.</p>	<p>Does not provide reasoning, or only provides reasoning that does not link evidence to claim.</p> <p>-----</p> <p>Provides an inappropriate reasoning statement like “they are like the fat and soap we used in class” or does not provide any reasoning.</p>	<p>Repeats evidence and links it to the claim. May include some scientific principles, but not sufficient.</p> <p>-----</p> <p>Repeats the density, melting point, and color are the same and states that this shows they are the same substance. Or provides an incomplete generalization about properties, like “mass is not a property so it does not count.”</p>	<p>Provides accurate and complete reasoning that links evidence to claim. Includes appropriate and sufficient scientific principles.</p> <p>-----</p> <p>Includes a complete generalization that density, melting point, and color are all properties. Same substances have the same properties. Since liquids 1 and 4 have the same properties, they are the same substance.</p>