

**Powerful Classroom Assessment: Bubble Gum
Sample Student Responses for Planning an Investigation**

SR1

Question: How does the chewing time affect the mass lost by chewing gum?
Prediction: The longer a person chews a piece of gum the lower the mass will become
Materials: a sizeable peice of gum (5 grams) A stop watch, a scale
Procedure:
1. Weigh gum- (5 grams)
2. Chew 5 min.
3. Weigh & record
4. repeat 2 & 3, 3-5 times

Investigation Attributes	Value Pts.
Prediction	
Prediction Reason	
Materials	
Variable Kept the Same (controlled)	
Changed (manipulated) Variable	
Measured (responding) Variable	
Record Measurements	
Trials are Repeated	
Logical Steps	
Total Value and Score Points	



Powerful Classroom Assessment: Bubble Gum
Sample Student Responses for Planning an Investigation (continued)

SR2

Question: How does the chewing time affect the mass lost by chewing gum?																				
Prediction: That you take sugar a lot in the first few minutes and then you take it out little by little																				
Materials: Stopwatch 3 three gram pieces of Chewing gum																				
<p style="margin: 0;"><i>Grams lost in Gum</i></p> <table border="1" style="margin: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="padding: 5px;">pieces</th> <th style="padding: 5px;">before</th> <th style="padding: 5px;">after</th> <th style="padding: 5px;">loss</th> <th style="padding: 5px;">time</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">1</td> <td style="padding: 5px;">3.0</td> <td style="padding: 5px;">2.5</td> <td style="padding: 5px;">.5</td> <td style="padding: 5px;">15 sec</td> </tr> <tr> <td style="padding: 5px;">2</td> <td style="padding: 5px;">3.0</td> <td style="padding: 5px;">2.0</td> <td style="padding: 5px;">1.0</td> <td style="padding: 5px;">30 sec</td> </tr> <tr> <td style="padding: 5px;">3</td> <td style="padding: 5px;">3.0</td> <td style="padding: 5px;">1.5</td> <td style="padding: 5px;">1.5</td> <td style="padding: 5px;">45 sec</td> </tr> </tbody> </table>	pieces	before	after	loss	time	1	3.0	2.5	.5	15 sec	2	3.0	2.0	1.0	30 sec	3	3.0	1.5	1.5	45 sec
pieces	before	after	loss	time																
1	3.0	2.5	.5	15 sec																
2	3.0	2.0	1.0	30 sec																
3	3.0	1.5	1.5	45 sec																
Procedure: The first step you could take is measureing the mass of the piece of gum before its chewed. Then you would chew one piece by about 15 seconds, another by 30 seconds, and another by 45 seconds. A controlled variable in this would be how much gum weighed before it was chewed. A variable that is manipulated is the lossage. A responding variable is the time or how long it was chewed. Measurements were taken every 15 seconds until it reached 45 seconds.																				

Investigation Attributes	Value Pts.
Prediction	
Prediction Reason	
Materials	
Variable Kept the Same (controlled)	
Changed (manipulated) Variable	
Measured (responding) Variable	
Record Measurements	
Trials are Repeated	
Logical Steps	
Total Value and Score Points	



Powerful Classroom Assessment: Bubble Gum
Sample Student Responses for Planning an Investigation (continued)

SR3

Question: How does the chewing time affect the mass lost by chewing gum?
Prediction: If thing the longer you chew the more suger goes away.
Materials: 2 cup suger
4 peices of gum.
1 timer and a pencil.
(pice of paper)
Procedure: Chew 4 pices of gum (separately). Set them out on a piece of paper. (as shown in box #1.) and then sprinkle suger on them untell each pice of gum is all covered in suger (shown in #2) then chew one pice for 15 sec one for 20 sec one for 25 sec one for 30 sec lay them out and see witch one has less suger on it and record.

Investigation Attributes	Value Pts.
Prediction	
Prediction Reason	
Materials	
Variable Kept the Same (controlled)	
Changed (manipulated) Variable	
Measured (responding) Variable	
Record Measurements	
Trials are Repeated	
Logical Steps	
Total Value and Score Points	

Powerful Classroom Assessment: Bubble Gum
Sample Student Responses for Planning an Investigation (continued)

SR4

Question: How does the chewing time affect the mass lost by chewing gum?
Prediction: The longer the gum is chewed the more sugar mass it losses.
Materials:
2 picies of the same brand gum (chewing)
1 stopwatch
1 person to chew
1 person to time
1 scale to messure mass
Procedure:
Messure gum mass before chewing. Chew 1 piece for 15 seconds. Messure mass of
chewed gum. Repeat with other pieces, this time
Chewing for 20 seconds. Compare masses.

Investigation Attributes	Value Pts.
Prediction	
Prediction Reason	
Materials	
Variable Kept the Same (controlled)	
Changed (manipulated) Variable	
Measured (responding) Variable	
Record Measurements	
Trials are Repeated	
Logical Steps	
Total Value and Score Points	



Powerful Classroom Assessment: Bubble Gum
Sample Student Responses for Planning an Investigation (continued)

SR5

Question: How does the chewing time affect the mass lost by chewing gum?
Prediction: I think the more you chew the more sugar you loose.
Materials:
2 pieces of chewing gum
balance to measure
timer
Procedure:
chew one piece for 15 seconds.
measure and record
chew another piece for 30 seconds
measure and record

Investigation Attributes	Value Pts.
Prediction	
Prediction Reason	
Materials	
Variable Kept the Same (controlled)	
Changed (manipulated) Variable	
Measured (responding) Variable	
Record Measurements	
Trials are Repeated	
Logical Steps	
Total Value and Score Points	



Powerful Classroom Assessment: Bubble Gum
Sample Student Responses for Planning an Investigation (continued)

SR6

Question: How does the chewing time affect the mass lost by chewing gum?
Prediction: My prediction is that chewing gum will have more sugar than bubble gum.
Materials: 3 pieces of 3 gram chewing gum same brand, 3 pieces of 3 gram bubble gum same brand, stopwatch (timer), and Balance (to measure)
Procedure:
1. Chew kind of gum measure and record
2. repeat with other kind of gum.
3. repeat 1 & 2 two more times.

Investigation Attributes	Value Pts.		
Prediction			
Prediction Reason			
Materials			
Variable Kept the Same (controlled)			
Changed (manipulated) Variable			
Measured (responding) Variable			
Record Measurements			
Trials are Repeated			
Logical Steps			
Total Value and Score Points	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"></td> <td style="width: 50%;"></td> </tr> </table>		



Powerful Classroom Assessment: Bubble Gum
Sample Student Responses for Planning an Investigation (continued)

SR7

Question: How does the chewing time affect the mass lost by chewing gum?
Prediction: I think that the longer you chew the gum, the more sugar comes out of it.
Materials:
<ul style="list-style-type: none"> • gum • timer • balance (to weigh the gum)
Procedure:
1) chew a peice of gum for 1:00
2) chew a different piece of gum for 20 seconds
3) weigh them both and find the difference
4) repeat steps 1-3 for validation

Investigation Attributes	Value Pts.
Prediction	
Prediction Reason	
Materials	
Variable Kept the Same (controlled)	
Changed (manipulated) Variable	
Measured (responding) Variable	
Record Measurements	
Trials are Repeated	
Logical Steps	
Total Value and Score Points	

Powerful Classroom Assessment: Bubble Gum



Sample Student Responses for Planning an Investigation (continued)

SR8

Question: How does the chewing time affect the mass lost by chewing gum?
Prediction: Time would affect the sugar lost because the longer the gum is chew the more sugare and flavor is lost.
Materials: You would need gum a stope watch and a ruler to messure the length after it is chewed.
Procedure: Chew the gum for a certain amount of time. Then time how long it takes to loses the sugar. Next messure the mass of the gum.

Investigation Attributes	Value Pts.
Prediction	
Prediction Reason	
Materials	
Variable Kept the Same (controlled)	
Changed (manipulated) Variable	
Measured (responding) Variable	
Record Measurements	
Trials are Repeated	
Logical Steps	
Total Value and Score Points	

Powerful Classroom Assessment: Bubble Gum



Sample Student Responses for Planning an Investigation (continued)

SR9

Question: How does the chewing time affect the mass lost by chewing gum?
Prediction: The more time the gum is chewed, the more mass it is going to lose.
Materials: *3 pieces of the same brand gum. *stopwatch * balance to measure weight from mass loss.
Procedure:
1. Chew gum piece #1 for 15 seconds.
2. Chew gum piece #2 for 45 seconds.
3. Chew gum piece #3 for 1 min 15 seconds.
4. record your data and the amount of weight lost is the amount of sugar lost.

Investigation Attributes	Value Pts.
Prediction	
Prediction Reason	
Materials	
Variable Kept the Same (controlled)	
Changed (manipulated) Variable	
Measured (responding) Variable	
Record Measurements	
Trials are Repeated	
Logical Steps	
Total Value and Score Points	



Powerful Classroom Assessment: Bubble Gum
Sample Student Responses for Planning an Investigation (continued)

SR10

Question: How does the chewing time affect the mass lost by chewing gum?																
Prediction: The more one chews, the more sugar is lost, and the less mass there is																
Materials: The following materials are needed:																
<ul style="list-style-type: none"> • stopwatch • 3 pieces of the same chewing gum with the same mass • balance to measure mass 																
<table border="1" style="margin: auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">chewing Gum Pieces</th> <th style="padding: 5px;">Times to chew</th> <th style="padding: 5px;">Mass Before</th> <th style="padding: 5px;">Mass Afterwards</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px; text-align: center;">1</td> <td style="padding: 5px; text-align: center;">25 sec.</td> <td style="padding: 5px; text-align: center;">same</td> <td style="padding: 5px; text-align: center;">?</td> </tr> <tr> <td style="padding: 5px; text-align: center;">2</td> <td style="padding: 5px; text-align: center;">46 sec.</td> <td style="padding: 5px; text-align: center;">same</td> <td style="padding: 5px; text-align: center;">?</td> </tr> <tr> <td style="padding: 5px; text-align: center;">3</td> <td style="padding: 5px; text-align: center;">75 sec.</td> <td style="padding: 5px; text-align: center;">same</td> <td style="padding: 5px; text-align: center;">?</td> </tr> </tbody> </table>	chewing Gum Pieces	Times to chew	Mass Before	Mass Afterwards	1	25 sec.	same	?	2	46 sec.	same	?	3	75 sec.	same	?
chewing Gum Pieces	Times to chew	Mass Before	Mass Afterwards													
1	25 sec.	same	?													
2	46 sec.	same	?													
3	75 sec.	same	?													
Procedure: First, I am going to decide that for every different piece of gum, I will chew for a different amount of time. So for the times, I will chew 25 seconds, 75 seconds, and 46 seconds. Then, I would time the time I chewed for one piece of gum, and measure the mass afterwards. I would repeat this step for the other two pieces of gum, and record my results.																

Investigation Attributes	Value Pts.
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