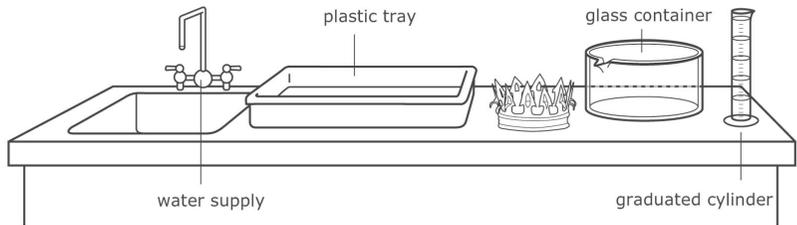


The scientists then needed to find the volume of the crown in order to determine its density. The following equipment and materials were available for them to use.



Describe a procedure that the scientists could use to find the volume of the crown using some or all of the equipment and materials shown above. You may use diagrams to help explain your procedure.



**Note:** For full credit, responses must describe or diagram a procedure based on displacement and clearly identify how the volume of the crown is determined. Partial credit is given for procedures or diagrams that demonstrate knowledge of displacement without a complete description of the steps/measurements to be made. Responses may also implicitly refer to other materials not indicated in the diagram (e.g., ruler, marker, etc.). Because it is not totally clear from the diagram what the relative size of the crown, beaker, and tray are, credit is given for procedures that use any of these materials for displacement even if the actual procedure might not be completely successful.

Code	Response	Item: S032711
	<b>Correct Response</b>	
20	Describes or diagrams a procedure based on displacement of water using measured water level differences: i) Adding water to the beaker (sink or tray) and marking the water level. ii) Placing the crown in the beaker (sink or tray) and marking the new water level. iii) Measuring the volume difference before/after adding the crown using the graduated cylinder	
21	Describes or diagrams a procedure based on displacement of water using measured overflow: i) Filling the beaker (or tray) with water. ii) Placing the crown in the beaker (or tray) and collecting the overflow. iii) Measuring the volume of the overflow using the graduated cylinder	
29	Other fully correct	
	<b>Partial Response</b>	
10	Describes or diagrams a partial procedure that includes displacement of water but with inadequate or no description of the steps/measurements to determine the volume. <i>Examples: Put some water in the beaker and add the crown. Measure how much the level of water went up.</i> <i>Add the crown to the beaker filled with water. See how much overflowed.</i>	
19	Other partially correct	
	<b>Incorrect Response</b>	
70	Mentions putting the crown in the beaker (sink or tray) of water with no explicit mention that the water level will rise/overflow and no or incorrect procedure given for measuring the volume. <i>Examples: Fill the beaker to the top with water and add the crown. You can get the volume that way.</i>	
79	Other incorrect (including crossed out/erased, stray marks, illegible or off task)	
	<b>Nonresponse</b>	
99	Blank	