

The table below lists the density for different metals.

Metal	Density (g/cm³)
Platinum	21.4
Gold	19.3
Silver	10.5
Copper	8.9
Zinc	7.1
Aluminum	2.7

- A. Look at the density you computed for the block of metal. What was the block of metal most likely made of?

Answer: _____

Explain your answer.

- B. The density of the crown was found to be 12.0 g/cm^3 . What would you report to the king about what metal or mixture of metals the jeweler used to make the crown?

End of Metal Crown section. ●

B: Codes for Reporting Composition of Crown

Note: To receive credit, responses must indicate that the crown is composed of a mixture of metals (alloy) AND identify the metals that might be included based on the density (crown density between the densities of the pure metals). Responses that indicate that the crown is made of a mixture (alloy) or is not pure gold with no further information about what other metals are included are scored as incorrect (Code 70). If responses indicate that the crown is made of Palladium (not in the table but with a density of 12 g/cm³), they should be given a Code 19.

Code	Response	Item: S032713B
	Correct Response	
10	Reports that the crown is made of a mixture (alloy) AND names specific metal(s) that might be included (reasonable composition based on density). <i>Examples: The jeweler used some silver as well as gold.</i> <i>It might have had some copper mixed in because that would lower the density and the cost.</i> <i>The jeweler most likely used all silver except for a thin coat of gold to make it look pure gold even though it wasn't.</i>	
19	Other correct	
	Incorrect Response	
70	Reports only that the crown is made of a mixture or is NOT pure gold (or similar); NO specific metals are named. <i>Examples: The jeweler didn't use the block of metal that the king gave him.</i> <i>The jeweler used four more metals to make the crown.</i>	
71	Reports SILVER (density closest to 12 g/cm ³). <i>Examples: The metal used is silver.</i>	
72	Reports an incorrect mixture of metals based on additive densities. <i>Examples: It's silver and aluminum (10.5 + 2.7)</i> <i>Mixture of silver and aluminum as their density adds up to 12.0 approximately.</i> <i>Copper and aluminum.</i>	
79	Other incorrect (including crossed out/erased, stray marks, illegible or off task)	
	Nonresponse	
99	Blank	