Outcomes: CCS3.1 Explains the significance of particular people, places, groups, actions and events in the past in developing Australian identities and heritage.

Instructions: Read the following and then answer the questions.

Archimedes

Archimedes was an ancient Greek mathematician and scientist. During his life Archimedes made many discoveries and created many inventions. One well known story is about how he discovered the principle of buoyancy, a world-wide accepted mathematical and scientific principle.

One day the King of Syracuse, King Hieron, received a new crown. The king was afraid his new crown was a product of alchemy. He asked Archimedes to find out whether the crown was made of solid gold, or if it had actually been made with a cheaper metal that looked like gold. At first, Archimedes could not figure out how to solve this problem without damaging the crown. Then, one day while taking a bath, he noticed that the water level rose when he got in. Archimedes realised he could use this method to test the volume of the crown.

Archimedes weighed the crown and then found a piece of solid gold that weighed the same amount. He placed each of these into a tub of water and measured how much water was displaced each time. This gave him the volume of the object. He then used the weight and the volume of each piece to determine the density. Archimedes knew that gold is a very dense metal and that if the crown was not solid gold it would be less dense than the bar of solid gold.
1. Vocabulary. Circle the best meaning for each vocabulary word.

Alchemy
   a. the density of gold  b. a comparison of weight  c. metal made to look like real gold

Buoyancy
   a. taking a bath  b. whether something floats in water  c. measurements

Density
   a. weight for a certain volume  b. ability to float  c. cheap metal

2. Who wanted his crown tested to see if it was real solid gold?
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3. What did Archimedes use to compare the crown to?
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4. When did Archimedes realise how he would test the crown to see if it was made of real gold?
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5. Explain how Archimedes would know if the crown was solid gold or made of a cheaper metal.
   (Hint: Think about the comparison of density)
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6. What important mathematic and scientific principle did Archimedes discover?
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7. Explain how this discovery is important to the world.
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