

## Engineering Design Process Pre-Test/Post-Test **Answer Key**

- When following the engineering design process, in which order do the steps occur?
  - clockwise** 
  - counter-clockwise 
  - in any order
  - both clockwise and counter-clockwise
- Rob and his team have been chosen to build a wind turbine at a local mountain. The turbine needs to generate electrical energy and withstand the harsh winter alpine environment. Rob and his team have done their research on the problem. What would be the next step?
  - create a prototype of the wind turbine
  - develop possible solution(s) for the turbine**
  - test the wind turbine on the mountain
  - redesign a new solution for the turbine
- The engineering design process is \_\_\_\_\_.
  - an iterative process**
  - a process that creates one prototype
  - a quick process
  - a process with a beginning and an end
- Below are the steps of the engineering design process, but they are not in the correct order. Number them, 1 through 8, in the usual order they are conducted.
  - 6** test and evaluate the solution
  - 3** develop possible solution(s)
  - 1** identify the need or problem
  - 2** research the need or problem
  - 5** construct a prototype
  - 8** redesign
  - 7** communicate the solution
  - 4** select the best possible solution(s)

5. John needs to create a boat from a 20-gram ball of clay. His boat must float and hold 10 marbles. He will follow the EDP steps to help him do this. Match each EDP step (A-G) to John’s activities.
- A. test and evaluate the solution
  - B. develop possible solution(s)
  - C. identify the need or problem
  - D. research the need or problem
  - E. construct a prototype
  - F. redesign
  - G. communicate the solution
  - H. select the best possible solution(s)

<b>G</b>	John should report and discuss his findings about the clay boat.
<b>F</b>	John should make changes to his design based on the results of testing and feedback.
<b>D</b>	John should find out how boats are made, characteristics of boats and clay, and what makes something buoyant.
<b>B</b>	John should create multiple plans for his boat.
<b>E</b>	John should work with the clay to form it into a shape that will hold 10 marbles and maintain buoyancy.
<b>H</b>	John should decide, based on his research, what boat design will hold all 10 marbles and float.
<b>C</b>	Using a 20-gram ball of clay, John must make a boat that will float and hold 10 marbles.
<b>A</b>	John should try to float the boat with 10 marbles in it and note how well it works and any issues that come up.

6. Students have a box of ice pops to take to their ball game to sell on a hot day. They know they need a device to keep the ice pops from melting for 3 hours. They have a \$15 budget. Which step of the engineering design process does this show?
- A. identify a problem**
  - B. test and evaluate
  - C. redesign
  - D. develop possible solutions
7. Which of the following is part of the testing and evaluation stage of designing a cell phone?
- A. writing an advertisement for the cell phone
  - B. defining the specifications for the cell phone
  - C. finding a new material for the cell phone case
  - D. trying to see if cell phone is waterproof**