

Light – Just Right!

Name: _____

4th Grade – Design Task Assessment

Date: _____

Directions: For each of the questions below, choose the BEST answer.

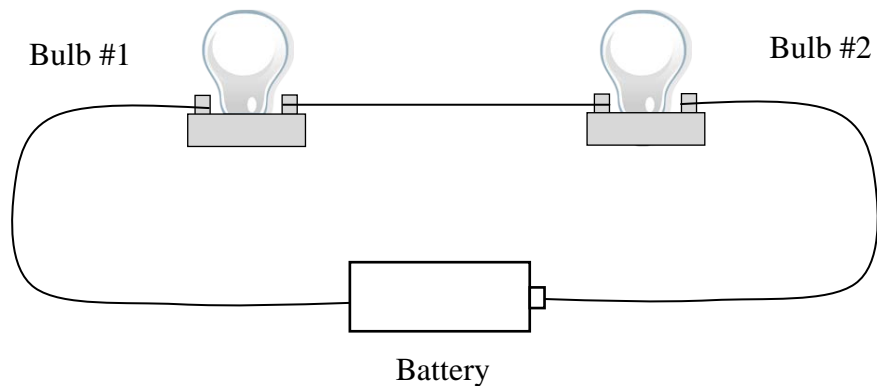
- 1) Which material is the best **conductor** of electricity?
 - A. Plastic
 - B. Stone
 - C. Wood
 - D. Metal

- 2) Which of the following questions would an engineer solve?
 - A. Why does a mirror reflect light?
 - B. Why does ice melt above a certain temperature?
 - C. How can a device be built that will measure speed?
 - D. How does gravity affect objects on Earth?

- 3) When Sue turns a flashlight on, the bulb lights up because the circuit is:
 - A. closed.
 - B. open.
 - C. blocked.
 - D. broken.

Note: Question 1 from: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 2009 Science Assessment.

4) What will happen in the circuit shown below?

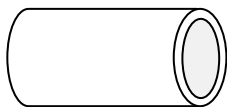


- A. Only Bulb #1 will light.
- B. Only Bulb #2 will light.
- C. Both bulbs will light.
- D. Neither bulb will light.

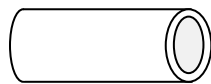
5) Which of the following is a material used as a **conductor**?

- A. rubber
- B. copper
- C. glass
- D. plastic

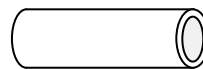
6) Assuming the material and length of the wires are the same, which piece of wire will be the best conductor?



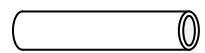
A.



B.

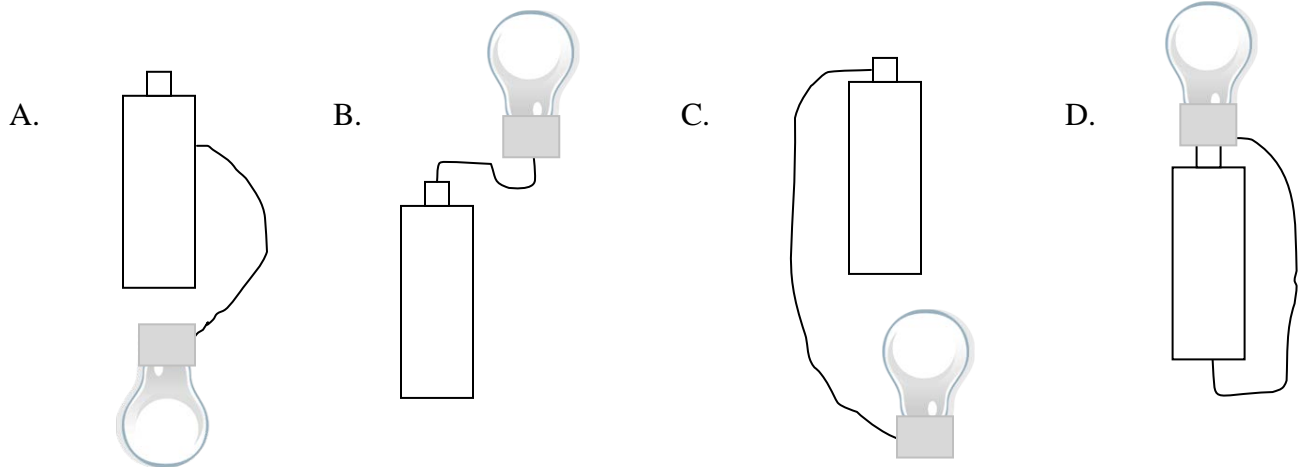


C.



D.

7) Which illustration will light the bulb?



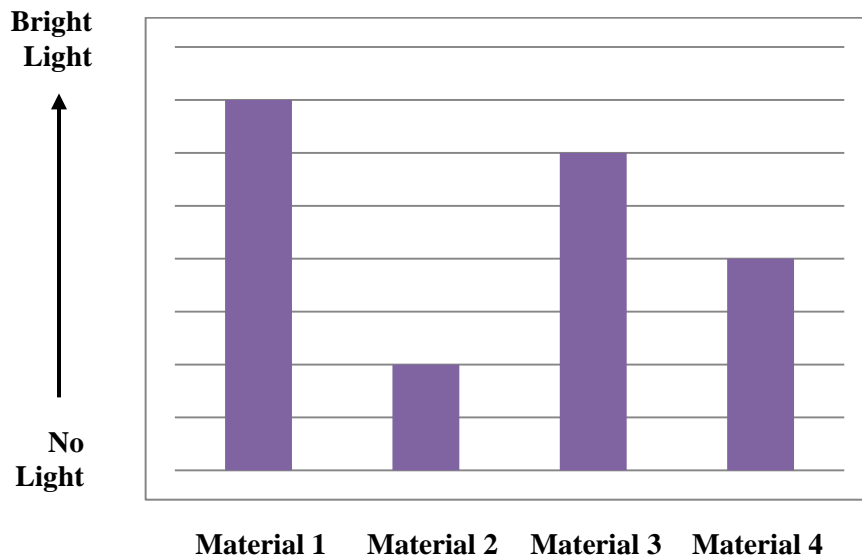
8) A material that allows electricity to flow through it easily is called a(n) _____.

- A. current
- B. insulator
- C. conductor
- D. none of the above

9) Tina and John are building a stand to hold their small flashlight so they can read a book at night, but the stand keeps falling over. Which part of the engineering design process should they work on next?

- A. plan
- B. create
- C. test
- D. redesign

- 10) A circuit with a light bulb is tested using different materials. Based on the results shown in the chart, which material is the *worst* conductor?

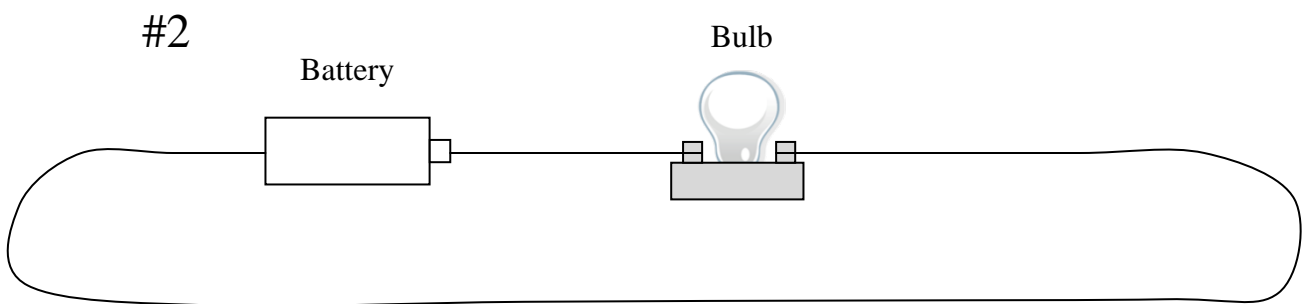
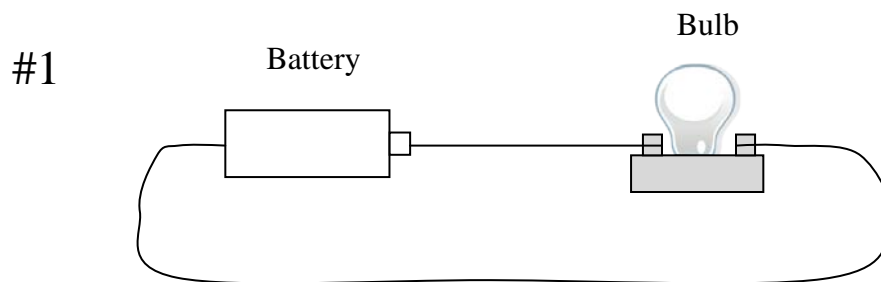


- A. Material 1
B. Material 2
C. Material 3
D. Material 4
- 11) Bob and James have been assigned to a new project to design a computer part for a client company. Which of the following is best for Bob and James to do first?
- A. Start brainstorming ideas for the design.
B. Identify the design criteria.
C. Find materials to build a prototype.
D. Make a prediction of how well the design works.

12) Electricity can flow through a(n) _____.

- A. open switch
- B. closed circuit
- C. diagram
- D. none of the above

13) Assuming the thickness and material of the wire is the same throughout, which circuit will have the brighter bulb?



- A. #1
- B. #2
- C. They are the same.
- D. Neither bulb will light.