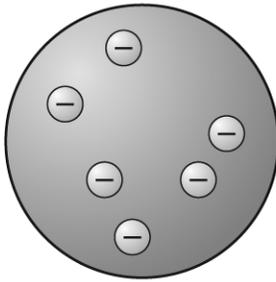


# Introduction to Science and Technology

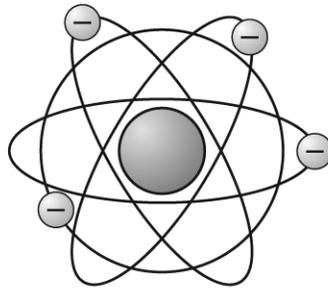
End-of-Module Test

Choose the letter of the best answer.

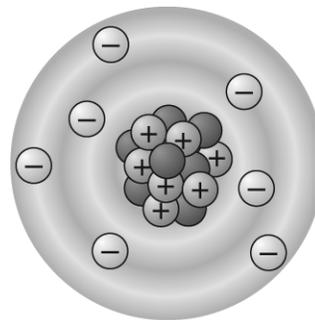
1. During several trials, a group of scientists tests the reaction of a new medicine on a strain of bacteria. Which step is essential for proving the validity of the results?
  - A. Make the process public so the results can be replicated.
  - B. Change the procedure to check whether the same results take place.
  - C. Have another scientist check to make sure the medicine was properly produced.
  - D. Have each group member use a different medicine and see what happens when they test it on the bacteria.
2. The figure below shows three atomic models developed over time.



Thomson's model of atom



Rutherford's model of atom



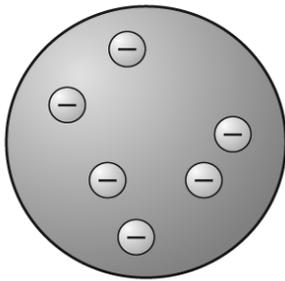
Current model of atom

Which of these statements about atomic models is **most likely** correct?

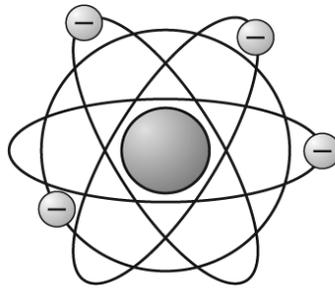
- A. The atomic model has not changed over time.
  - B. As scientists learned more, they modified the atomic model.
  - C. Scientists are still debating which of the three theories is right.
  - D. Scientists think real atoms look like a combination of the three different models.
3. In 2008, Evan B. Forde received a congressional commendation as “one of the nation’s leading African-American scientists and explorers.” He received the award in Jacksonville, Florida, where he works to help increase students’ interest in mathematics, oceanography, and earth science. In what area has Forde’s work had an impact on society?
    - A. education
    - B. astronomy
    - C. engineering
    - D. energy resources

Name \_\_\_\_\_ Date \_\_\_\_\_

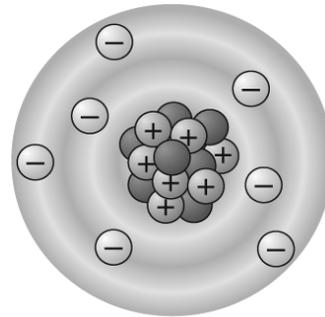
4. Which of the following would best be represented by a conceptual model?
- a train
  - a building
  - the water cycle
  - the formula for salt
5. A company has designed a couch using materials intended to be recycled quickly into the environment once the couch is thrown away. What type of analysis did the company most likely do on this couch?
- a life-cycle analysis
  - a trade-off analysis
  - a risk-benefit analysis
  - a technological analysis
6. The figures below show how the model of the atom has changed over time.



Thomson's model of atom



Rutherford's model of atom



Current model of atom

Which of the following statements best explains why these changes happened?

- Scientists realized atoms were bigger than previously thought.
- Scientists realized atoms contain only one kind of particle at their centers.
- Scientists once thought positively charged particles orbit a negatively charged center, and later they reversed the picture.
- Scientists realized that all positive charge was located at the center of the atom and negatively charged particles, called *electrons*, moved about the center.

Name \_\_\_\_\_ Date \_\_\_\_\_

7. People work in many fields, such as the person shown in the following illustration.



How is the person shown in this illustration acting like a scientist?

- A. The person is working hard.
  - B. The person is trying to solve a problem.
  - C. The person is thinking about what to do next.
  - D. The person is using a tool to help him make observations.
8. Which personal trait do scientists mainly depend upon when they design an experiment?
- A. creativity
  - B. skepticism
  - C. objectivity
  - D. determination

## Motion, Forces, and Energy



**Choose the letter of the best answer.**

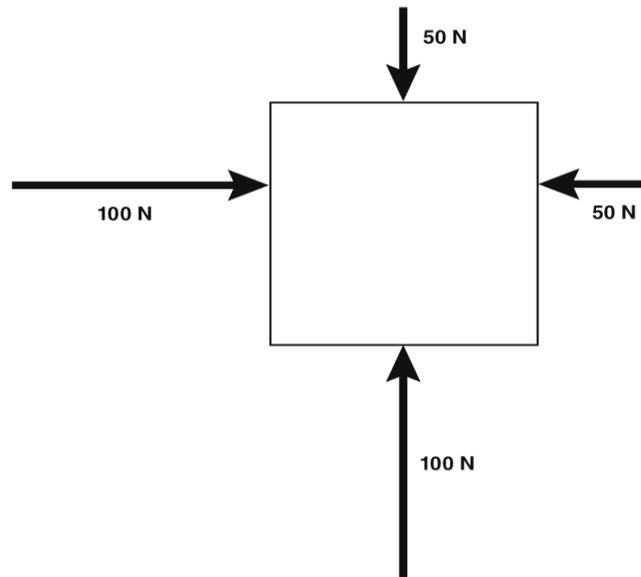
9. Screw 1 and screw 2 are identical in every way but the distance between their spiral treads. The treads are closer together on screw 1 and farther apart on screw 2. Which screw provides the greater mechanical advantage?
- A. screw 1, because the treads are closer together
  - B. screw 2, because the treads are farther apart
  - C. Because both screws have spiral treads, they both have the same mechanical advantage.
  - D. Because both screws are the same length, they both have the same mechanical advantage.

Name \_\_\_\_\_ Date \_\_\_\_\_

10. Which statement about the universality of gravity is untrue?
- A. The gravitational force between two objects depends only on their masses.
  - B. The gravitational force between two objects increases if the mass of one object increases.
  - C. The gravitational force between two objects increases if the distance between the objects decreases.
  - D. Any two objects that have mass also have a force of gravity acting between them, no matter how far apart they are?
11. Imagine a box floating in space. The following picture shows all the forces acting on this box.

What is the vertical force on this box?

- A. 50 N upward
- B. 100 N upward
- C. 50 N downward
- D. 100 N downward



12. What is kinetic energy?
- A. energy of motion
  - B. the sum of mechanical energy and potential energy
  - C. stored energy due to position
  - D. stored energy due to chemical composition