The same amount of heat is supplied to two objects with the same mass, initially at the same temperature, made respectively of glass and copper. The specific heat of glass is higher than that of copper. Therefore we can conclude that:

- A. The object made of copper heats up faster than the object made of glass, but it reaches a lower final temperature
- B. The object made of copper reaches a higher final temperature than the object made of glass
- C. The object made of glass reaches a higher final temperature than the object made of copper
- D. Both objects reach the same final temperature
- E. The object made of copper heats up faster than the object made of glass, but it reaches the same final

The period of small oscillations of a simple pendulum is:

- A. inversely proportional to the square root of the oscillating mass
- B. inversely proportional to the length of the wire
- C. directly proportional to the square root of the gravitational acceleration
- D. directly proportional to the length of the wire
- E. directly proportional to the square root of the length of the wire

A body is moving with constant acceleration on a straight line. It covers 8 meters in 3 seconds starting from rest. What distance does it cover in 6 seconds?

- A. 32 m
- B. 24 m
- C. 12 m
- D. 16 m
- E. 48 m

Consider two vectors $\vec{A}$ and $\vec{B}$ of magnitude 2 and 3 respectively. The sum of these two vector, $\vec{C}$, has a magnitude of:

- A. there is insufficient data to answer
- B. 13
- C. $\sqrt{13}$
- D. 5
- E. 6

The resistance of a metallic wire is:

- A. inversely proportional to the resistivity and to the length of the wire
- B. directly proportional to the resistivity and to the length of the wire
- C. directly proportional to the resistivity and to the cross-sectional area of the wire
- D. inversely proportional to the resistivity and to the cross-sectional area of the wire
- E. directly proportional to the cross-sectional area and to the length of the wire

A passenger on a train feels the bumps of a wheel against the rail joints. If he counts 240 collisions every two minutes, and the distance between two consecutive joints is 15 meters, what is the speed of the train (assuming it is constant)?

- A. 60 m/s
- B. 30 m/s
- C. 80 m/s
- D. 45 m/s
- E. 15 m/s

A common atom of Magnesium contains 12 protons, 12 electrons, and 12 neutrons. Which of the following combinations represents a possible isotope of Magnesium?

- A. 12 protons, 12 electrons, and 13 neutrons.
- B. 12 protons, 13 electrons, and 12 neutrons.
- C. 13 protons, 12 electrons, and 13 neutrons.
- D. 13 protons, 12 electrons, and 12 neutrons.
- E. 13 protons, 13 electrons, and 12 neutrons.

Three moles of H_2O dissociates in an electrolytic cell and the reaction gases are collected in separate containers at constant pressure. The ratio between the volume of the container filled with hydrogen and the volume of the container filled with oxygen is roughly:

- A. 2
- B. 1
- C. 3
- D. 1/2
- E. 1/3

The chemical reaction $CaO + H_2O \rightarrow Ca(OH)_2$ is exothermic. This means that:

- A. the reaction absorbs heat from the environment; as a consequence, the water contained in $Ca(OH)_2$ instantly freezes and $Ca(OH)_2$ becomes solid
- B. the reaction occurs without any change in temperature
- C. the reaction releases heat and $Ca(OH)_2$ gets warmer
- D. the reaction absorbs heat from the environment and $Ca(OH)_2$ gets colder
- E. the reaction releases heat; as a consequence, $Ca(OH)_2$ instantly loses its water content, which evaporates leaving again only CaO

A point source emits light isotropically (i.e. with the same intensity in all directions). Let I be the luminous intensity at a distance d from the source. The intensity at a distance $2d$ is equal to:

- A. $I/16$
- B. $2I$
- C. I
- D. $I/2$
- E. $I/4$