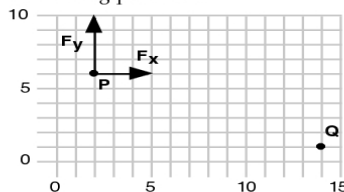


AP Physics Test - Work, Energy, and Conservation of Energy

Part I. Multiple Choice (5 points each)

Choose the one best answer to each of the following problems.



1 (AP).

The constant force F with components $F_x = 3$ Newtons and $F_y = 4$ Newtons, shown above, acts on a body while that body moves from point P ($x=2$ meters, $y = 6$ meters) to the point Q ($x = 14$ m, $y = 1$ m). How much work does the force do on the body during this process?

- a) 16 J b) 30 J c) 46 J d) 56 J e) 65 J

2 (AP). An object of mass m is lifted at constant velocity a vertical distance H in time T . The power supplied by the lifting force is:

- a) $mgHT$ b) mgH/T c) mg/HT d) mgT/H e) zero

3 (AP). A ball is thrown upward. At a height of 10 meters above the ground, the ball has a potential energy of 50 joules (with the potential energy equal to zero at ground level) and is moving upward with a kinetic energy of 50 joules. Air friction is negligible. The maximum height reached by the ball is most nearly:

- a) 10 m b) 20 m c) 30 m d) 40 m e) 50 m

4 (AP). From the top of a 70 m high building, a 1-kg ball is thrown directly downward with an initial speed of 10 m/s. If the ball reaches the ground with a speed of 30 m/s, the energy lost to friction is most nearly:

- a) 0 J b) 100 J c) 300 J d) 400 J e) 700 J

5. Two vectors \mathbf{A} and \mathbf{B} are given by $\mathbf{A} = 5\mathbf{i} + 6\mathbf{j} + 7\mathbf{k}$ and $\mathbf{B} = 3\mathbf{i} - 8\mathbf{j} + 2\mathbf{k}$. If these two vectors are drawn starting at the same point, what is the angle between them?

- a) 106° b) 102° c) 110° d) 113° e) 97°