Broward College - Central Campus
PHY2053
Review Chapter 7

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) A traveler pulls on a suitcase strap at an angle 36° above the horizontal. If 555 J of work are done by the strap while moving the suitcase a horizontal distance of 15 m, what is the tension in the strap? 1) _____

A) 56 N B) 37 N C) 46 N D) 52 N

2) A 30-N box is pulled upward 6.0 m along the surface of a ramp that rises at 37° above the horizontal. How much work does gravity do on the box during this process? 2) _____

A) -1100 J B) -110 J C) 120 J D) -180 J E) -140 J

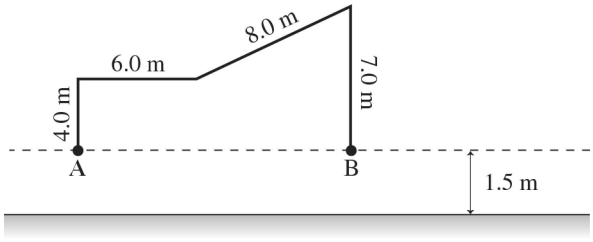
3) Matthew pulls his little sister Sarah along the horizontal ground in a wagon. He exerts a force on the wagon of 60.0 N at an angle of 37.0° above the horizontal. If he pulls her a distance of 12.0 m, how much work does Matthew do? 3) _____

A) 433 J B) 720 J C) 575 J D) 185 J

4) Find the net work done by friction on a box that moves in a complete circle of radius 1.82 m on a uniform horizontal floor. The coefficient of kinetic friction between the floor and the box is 0.25, and the box weighs 65.0 N. 4) _____

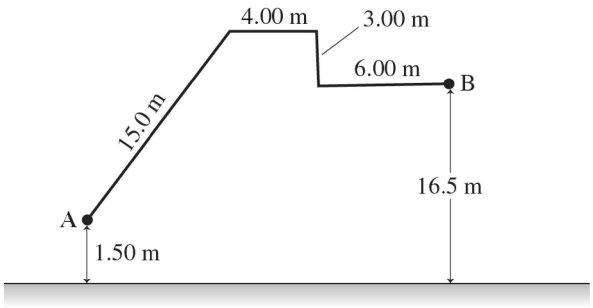
A) 0 J B) 370 J C) 190 J D) 1800 J

5) A person carries a 25.0-N rock through the path shown in the figure, starting at point A and ending at point B. The total time from A to B is 1.50 min. How much work did gravity do on the rock between A and B? 5) _____



A) 75 J B) 275 J C) 0 J D) 20.0 J E) 625 J

6) A person carries a 2.00-N pebble through the path shown in the figure, starting at point A and ending at point B. The total time from A to B is 6.75 min. How much work did gravity do on the rock between A and B? 6) _____



A) -36.0 J B) -56.0 J C) 30.0 J D) -30.0 J E) 56.0 J

7) How much kinetic energy does a 0.30-kg stone have if it is thrown at 44 m/s? 7) _____
A) 510 J B) 290 J C) 440 J D) 580 J

8) A 1000-kg car is moving at 15 km/h. If a 2000-kg truck has 23 times the kinetic energy of the car, how fast is the truck moving? 8) _____
A) 41 km/h B) 61 km/h C) 72 km/h D) 51 km/h

9) What is the minimum energy needed to change the speed of a 1600-kg sport utility vehicle from 15.0 m/s to 40.0 m/s? 9) _____
A) 20.0 kJ B) 40.0 kJ C) 1.10 MJ D) 10.0 kJ E) 0.960 MJ

10) A 1.0-kg object moving in a certain direction has a kinetic energy of 2.0 J. It hits a wall and comes back with half its original speed. What is the kinetic energy of this object at this point? 10) _____
A) 0.50 J B) 1.0 J C) 4.0 J D) 0.25 J E) 2.0 J

11) When a car of mass 1167 kg accelerates from 10.0 m/s to some final speed, 4.00×10^5 J of work are done. Find this final speed. 11) _____
A) 25.2 m/s B) 28.0 m/s C) 30.8 m/s D) 22.4 m/s

12) A stone initially moving at 8.0 m/s on a level surface comes to rest due to friction after it travels 11 m. What is the coefficient of kinetic friction between the stone and the surface? 12) _____
A) 0.80 B) 0.43 C) 0.25 D) 0.13 E) 0.30

13) A driver, traveling at 22 m/s, slows down her 2000 kg truck to stop for a red light. What work is done on the truck by the friction force of the road? 13) _____
A) -9.7×10^5 J B) -4.4×10^4 J C) -2.2×10^4 J D) -4.8×10^5 J

14) In a ballistics test, a 28-g bullet pierces a sand bag that is 30 cm thick. If the initial bullet velocity was 55 m/s and it emerged from the sandbag moving at 18 m/s, what was the magnitude of the friction force (assuming it to be constant) that the bullet experienced while it traveled through the bag? 14) _____

A) 38 N B) 1.3 N C) 13 N D) 130 N

15) A 10-kg mass, hung by an ideal spring, causes the spring to stretch 2.0 cm. What is the spring constant (force constant) for this spring? 15) _____

A) 20 N/m
B) 49 N/cm
C) 5.0 N/cm
D) 0.0020 N/cm
E) 0.20 N/cm

16) A child pulls on a wagon with a force of 75 N. If the wagon moves a total of 42 m in 3.1 min, what is the average power delivered by the child? 16) _____

A) 21 W B) 26 W C) 17 W D) 22 W

1) C
2) B
3) C
4) C
5) C
6) D
7) B
8) D
9) C
10) A
11) B
12) E
13) D
14) D
15) B
16) C