

LAMC Physical Science 1 Homework #4 Solution

This homework is due 10/13

Ch 4

Matching

a.4

b. 10

c.2

d. 12

j. 11

k.9

Multiple Choice

1. a

3. d

4. c

7. c

8. a

11. a

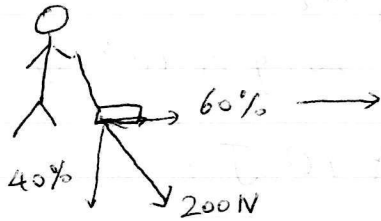
Fill in the blank

4. work

6. square

## Exercises

5.

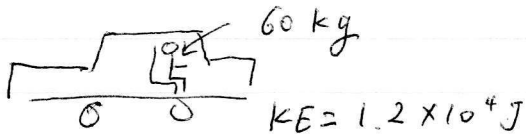


Since 40% of this force is directed downward, only 60% of force is in the horizontal direction.

$$\begin{aligned} W &= ?? \\ F &= 0.6 \times 200 \text{ N} \\ d &= 6 \text{ m} \end{aligned}$$

$$\begin{aligned} W &= F \times d \\ &= 120 \text{ N} \times 6 \text{ m} \\ &= \boxed{720 \text{ J}} \end{aligned}$$

10.



$$\begin{aligned} KE &= 1.2 \times 10^4 \text{ J} \\ m &= 60 \text{ kg} \\ v &= ?? \end{aligned}$$

$$\begin{aligned} \Rightarrow v &= \sqrt{\frac{2KE}{m}} \\ &= \sqrt{\frac{2 \times 1.2 \times 10^4 \text{ J}}{60 \text{ kg}}} \\ &= \sqrt{400 \text{ m}^2/\text{s}^2} \\ &= \boxed{20 \text{ m/s}} \end{aligned}$$

11.

$$m = 20 \text{ kg}$$

$$v = 9.0 \text{ m/s}$$

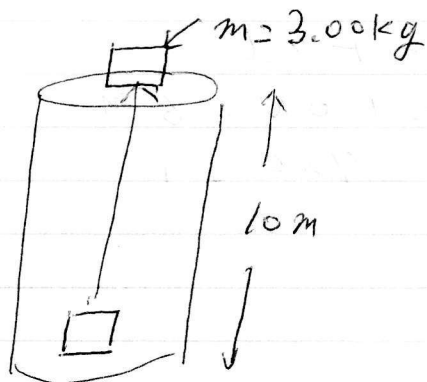
$$KE = ??$$

$$KE = \frac{1}{2} m v^2$$

$$= \frac{1}{2} 20 \text{ kg} \times (9.0 \text{ m/s})^2$$

$$= 810 \text{ J}$$

16.



In this case, force applied is equal to the weight of the object

$$m = 3.00 \text{ kg}$$

$$F = mg$$

$$= 3.00 \text{ kg} \times 10 \text{ m/s}^2$$

$$= 30 \text{ N}$$

$$d = 10 \text{ m}$$

$$W = ??$$

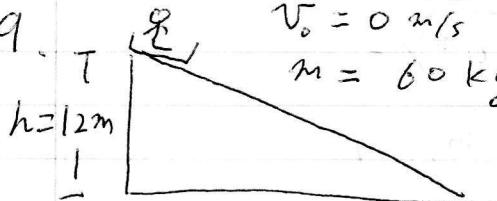
$$W = F \cdot d$$

$$= mgd \leftarrow \text{This is the equation of potential Energy!!}$$

$$= 3.00 \text{ kg} \times 10 \text{ m/s}^2 \times 10 \text{ m}$$

$$= 300 \text{ J}$$

19.



$v_0 = 0 \text{ m/s}$  since the rider is at rest initially  
 $m = 60 \text{ kg}$

(a)

$$m = 60 \text{ kg}$$

$$h = 12 \text{ m}$$

$$v_0 = 0 \text{ m/s}$$

$$KE = ?$$

$$PE = ??$$

$$E = ??$$

$$\text{Total } E = PE + KE$$

$$= mgh + \frac{1}{2} m v_0^2 \text{ since } v_0 = 0$$

$$= 60 \text{ kg} \times 10 \text{ m/s}^2 \times 12 \text{ m}$$

$$= 7200 \text{ J}$$

(b) since the Total Energy is conserved,  
the total Energy is the same.