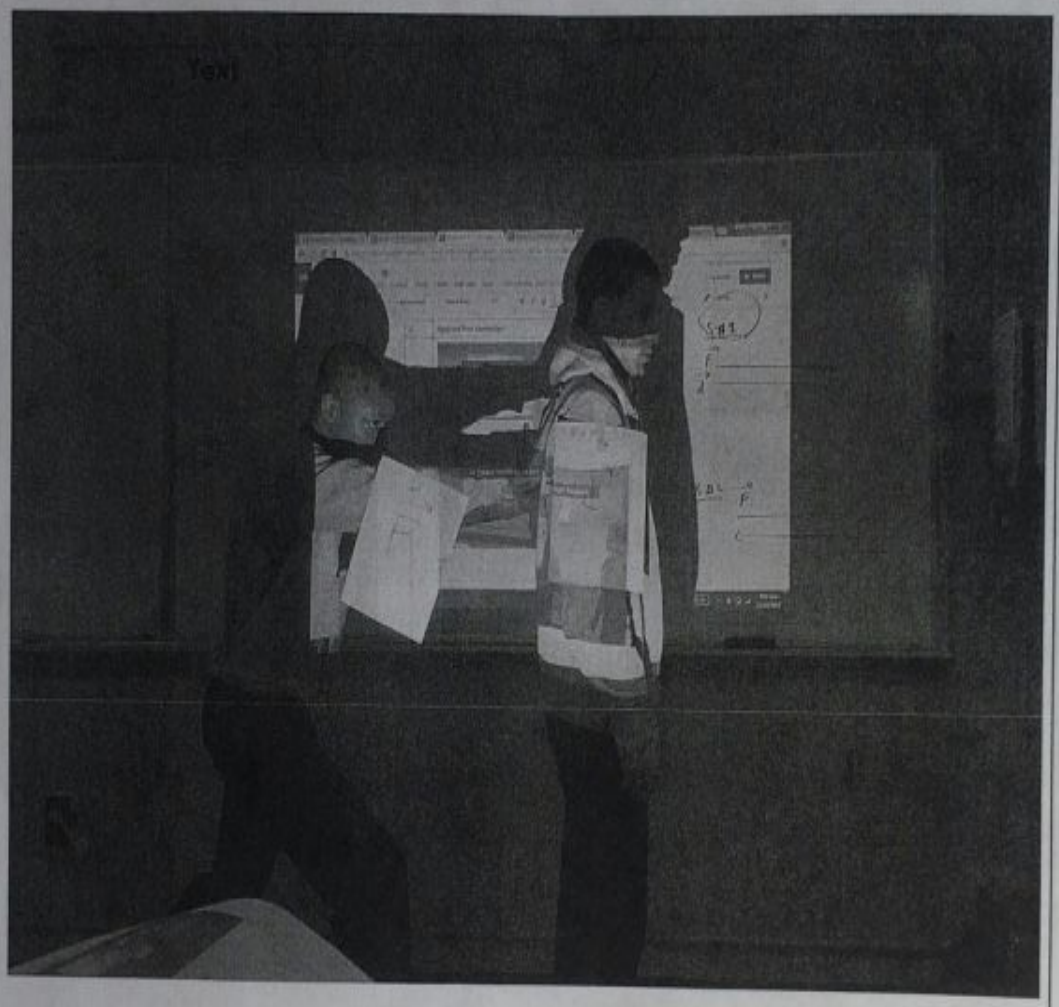
Booklet # 44

Unit: Work || Topic: Work 2D

Date: Dec 11, 2015 || Name: Answer Key

2	Scenario # 1: Steven has applied 10 N of force on Kenneth for 10 meter. Calculate how much work has Steven done on Kenneth? Explain your answer.



$W = Fd \cos\theta$

$= (10N)(10m) \cos 0^\circ$

$= 100j \quad (1)$

$= 100j$

© Isaac drop the .1 Kg apple from 2 meter high. Calculate the work done on the apple by the gravity!

$W = Fd\cos\theta$

$= mad\cos\theta$

$= (.1\ kg)(10\ m/s^2)(2\ m)\cos 0^\circ$

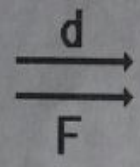
$= 1\ kg\ m^2/s^2\ (1)$

$= 1$ Joule

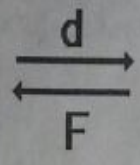
(d) The Math equation for work.

$W = Fd\cos\theta$

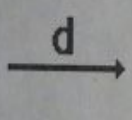
The most difficult aspect of the above equation is the Angle." The angle measure is defined as the angle between the F and the d. To get an idea of it's meaning, consider the following three scenarios.



$\theta = 0$ degrees

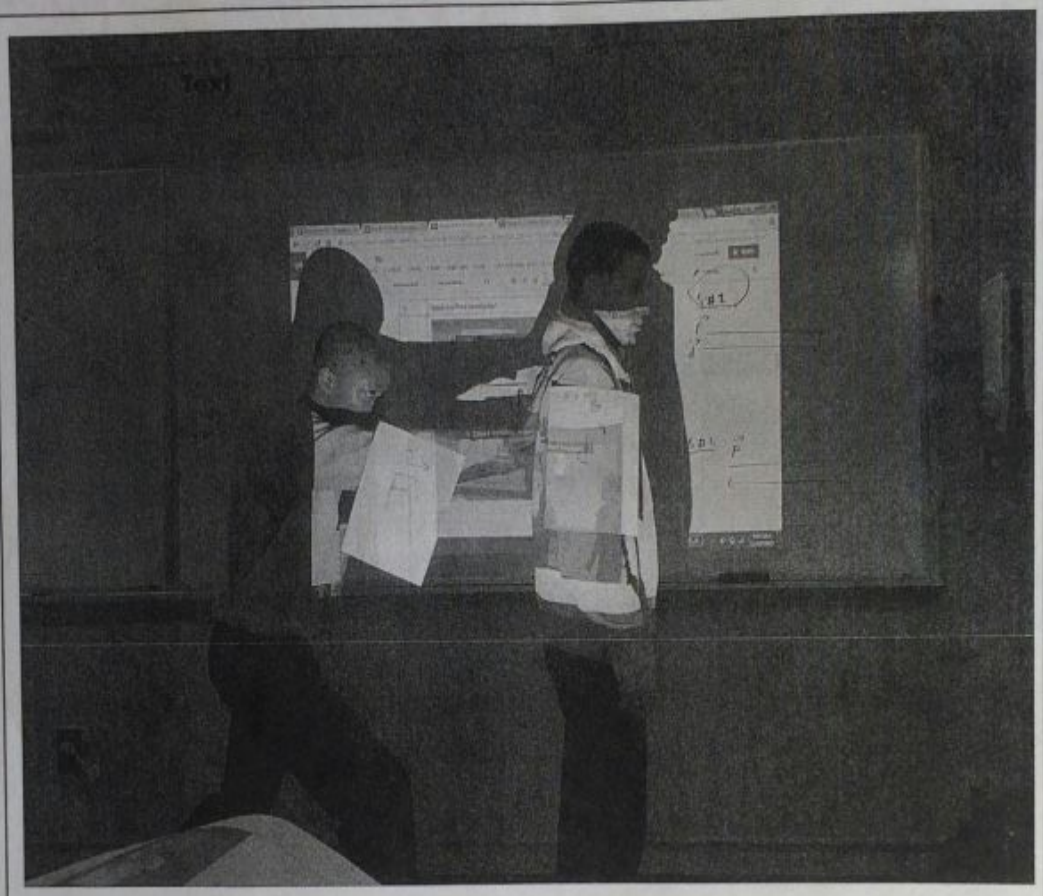


$\theta = 180$ degrees



$\theta = 90$ degrees

2	Scenario # 1: Steven has applied 10 N of force on Kenneth for 10 meter. Calculate how much work has Steven done on Kenneth? Explain your answer.



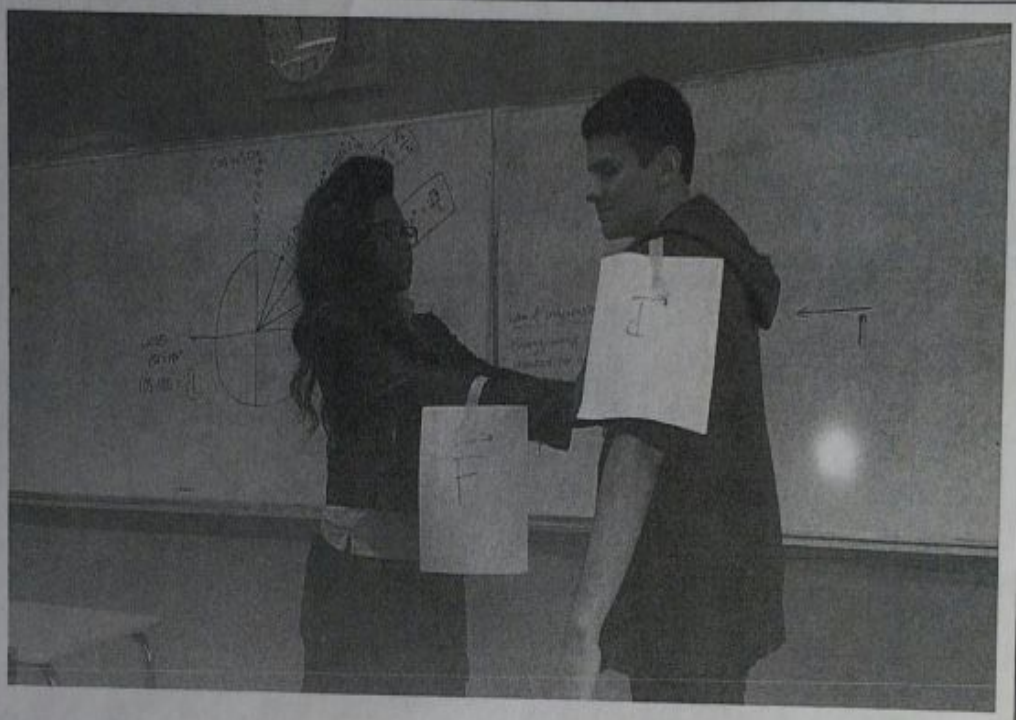
$W = Fd \cos\theta$

$= (10N)(10m) \cos 0^\circ$

$= 100j \quad (1)$

$= 100j$

3	Scenario # 2: Irene has applied 10 N of force on Jared for 10 meter. Calculate how much work has Irene done of Jared? Explain your answer.



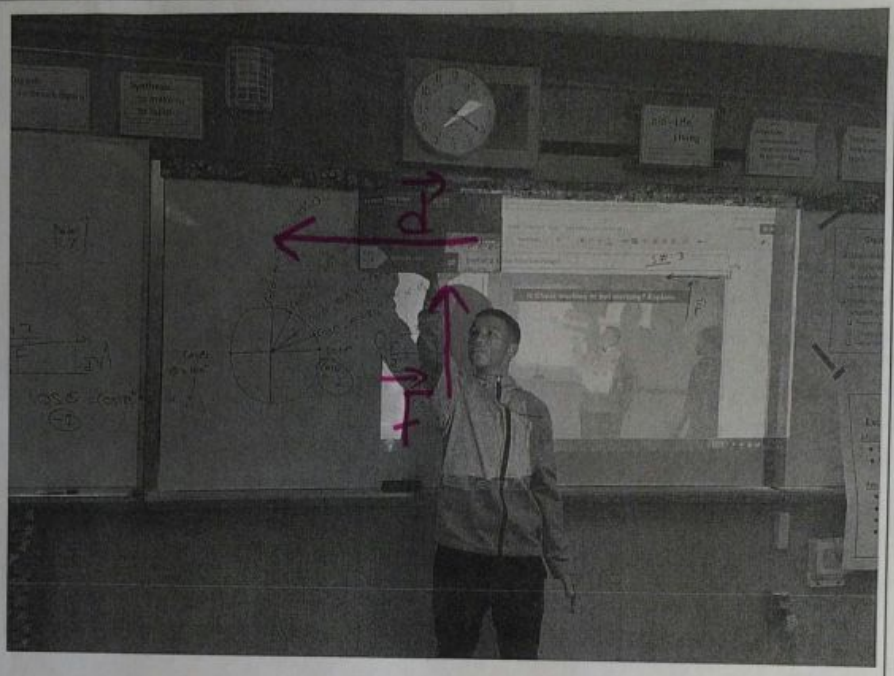
$W = Fd \cos\theta$.

$= (10N)(10m)(\cos 180^0)$

$= 100j \ (-1)$

$= -100j$

4	Scenario # 3: Carlos has applied 10 N of force on the box and has walked 5 meters to the west. Calculate how much work he has done (Be careful)? Explain your answer.



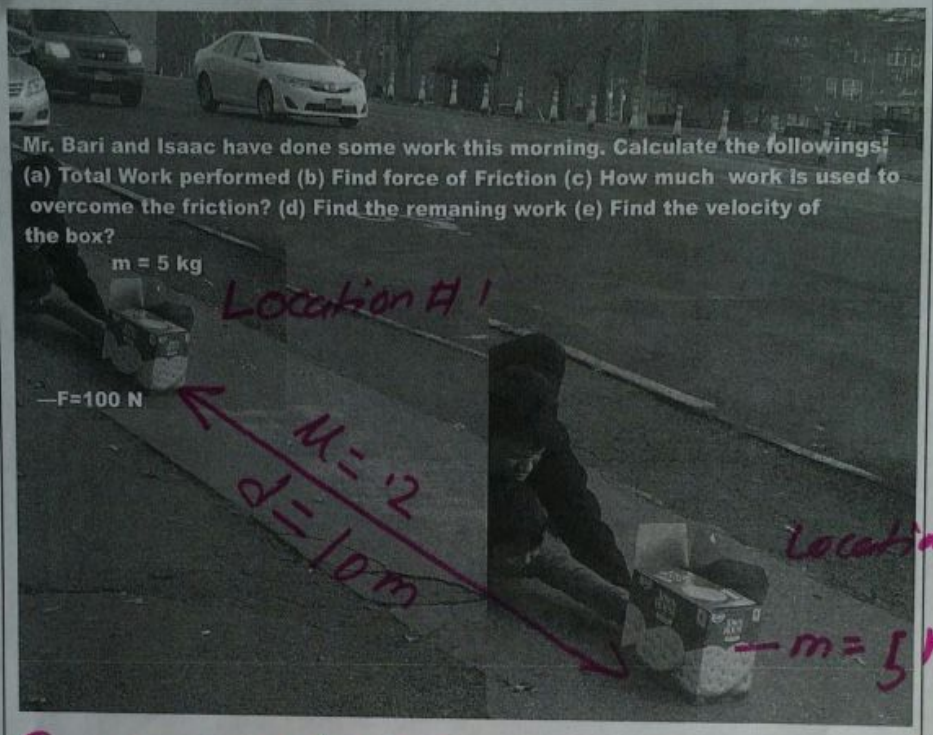
$W = Fd\cos\theta$

$= (0N)(5m)\cos 90^{0}$

$= 50j\ (0)$

$= 0j$

5 Solve the problem below:



① $W_T = Fd\cos\theta$

$(100\,N)(10\,m)\cos 0°$

$1000j\ (1) \Rightarrow 1000j$

② $F_F = m\,ag.(\mu)\sin 90°$

$(5\,kg)(10\,m/s^2)(.2)\ (1)$

③ $= 10N$

$W_{overcome} = Fd\cos\theta$

$(10N)(10m)(1) = 100j$

④ $W_R = W_T - W_O \Rightarrow 1000j - 100j$

$= 900j$

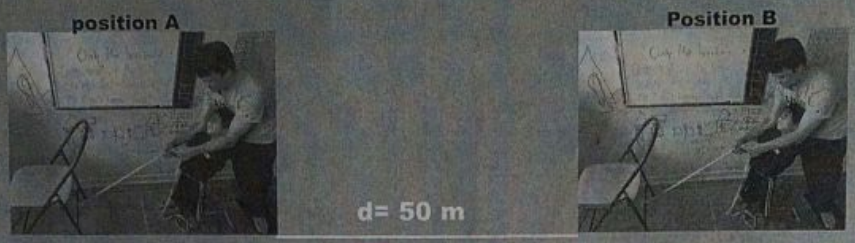
⑤ $KE = W_R \Rightarrow 900j = \frac{1}{2}mv^2$ (2)

$\frac{5v^2}{2} = \frac{1800j}{2}$

$m = 5$

6	Similar problem, however there is no friction, but only angle

How much work performed on Mr. Bari's chair? Find chair energy at position B.



$F = 100N$

$W = Fd \cos\theta$

$= (100N)(50N) \cos 45°$

$= 5000j \ (.70)$

$= 3500j$
