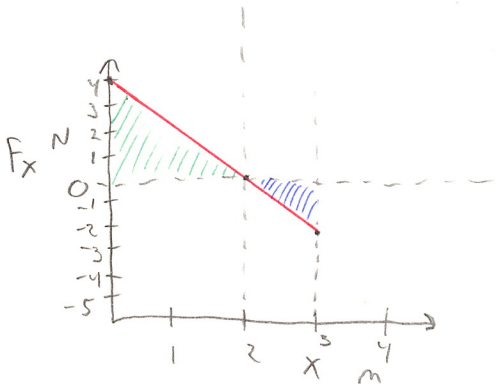
# ENERGY: WORK-KE – FUNDAMENTAL EXAMPLE SOLUTIONS

① $KE_i = 7\,J$

$\Delta x = 3\,m$




$\Delta KE = \Sigma W$ (NOT CONSTANT!)

$KE_f - KE_i = \Sigma F_x \Delta x$ (USE AREA)

$KE_f - KE_i = A_1 - A_2$ (AREA$_2$ IS BELOW ZERO (FORCE CHANGED DIRECTION))

$A_1 = \frac{1}{2}(2)(4) = 4\,Nm$

$A_2 = \frac{1}{2}(1)(2) = 1\,Nm$

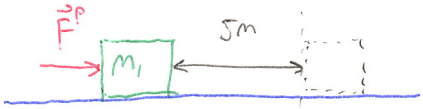
$KE_f - 7 = 4 - 1$

$KE_f = 10\,J$

② $m_1 = 4kg$

$|\vec{F}^p| = 3N$

$\Delta x = 5\,m$



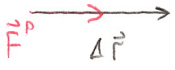

$\Delta KE = \Sigma W$

$\Delta KE = W^p$

$W^p = \vec{F}^p \cdot \Delta\vec{r}$

$W^p = |\vec{F}^p||\Delta\vec{r}|\cos\theta$

VECTOR OP...




$\theta = 0$

$W^p = |\vec{F}^p||\Delta\vec{r}|\cos(0)$

$W^p = (3)(5)(1) = 15\,J$

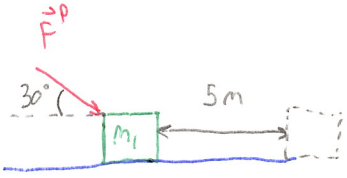
$\Delta KE = 15\,J$

③ $m_1 = 4kg$

$|\vec{F}^p| = 3N$

$\Delta x = 5m$

$\theta = 30°$



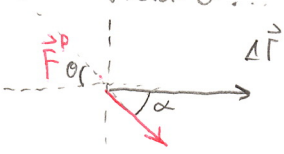

$\Delta KE = \Sigma W$

$\Delta KE = W^p$

$W^p = \vec{F}^p \cdot \Delta\vec{r}$

$W^p = |\vec{F}^p||\Delta\vec{r}|\cos(\alpha)$

VECTOR OP...




So $\alpha = \theta = 30°$

$W^p = |\vec{F}^p||\Delta\vec{r}|\cos(30°)$

$W^p = (3)(5)\left(\frac{\sqrt{3}}{2}\right)$

$W^p \approx 13\,J$

$\Delta KE \approx 13\,J$