

15) $m = 68 \text{ kg}$
 $v_0 = 0$
 $v_f = 75 \text{ m/s}$

$W = \Delta KE$

$W = \frac{1}{2} m v_f^2 - \frac{1}{2} m v_0^2$

$W = \frac{1}{2} (68 \text{ kg} \cdot (75 \text{ m/s})^2)$

$W = 1912.5 \text{ J}$

18) $m = 14 \text{ kg}$
 $d = 16 \text{ m}$
 $v = 13 \text{ m/s}$

$W = \Delta KE$

$F \cdot d = \frac{1}{2} m v_f^2 - \frac{1}{2} m v_0^2$

$m g d = \frac{1}{2} m v_f^2$

$\int \frac{2 m g d}{m} = v_f = \sqrt{2 \cdot 9.81 \cdot 16 \text{ m}}$

$v_f = 17.7 \text{ m/s}$

b) Negative
 opposite direction $F \cdot d$

19) v_{should} Vector

17.7 m/s $13 \text{ m/s} = 47 \text{ m/s}$

$21.935 - 11.83 \text{ J}$
 10 J

$W_{\text{air}} = \frac{1}{2} m v_f^2 - \frac{1}{2} m v_0^2$
 $\frac{1}{2} \cdot 14 \cdot 17.7^2 - \frac{1}{2} \cdot 14 \cdot 13^2$

$W_{\text{air}} = F \cdot d$

$10 \text{ J} = F \cdot 16 \text{ m}$

$F = 625 \text{ N}$

22) $m = 1300 \text{ kg}$
 $v = 18 \text{ m/s}$
 $x = 300 \text{ m}$
 $v_f = 15 \text{ m/s}$

a) negative does work

$W = \Delta KE$

$F \cdot d = \frac{1}{2} m v_f^2 - \frac{1}{2} m v_0^2$

$F = \frac{1}{2} m v_f^2 - \frac{1}{2} m v_0^2 / d = (-2145 \text{ N})$

$146250 \text{ J} / 300 \text{ m}$

$210600 \text{ J} - 146250 \text{ J}$

-2145 N

7.1 - 1, 2, 8, 9

7.2 - 15, 18, 19 + 22

HW Key 7.1 - 7.2

1.) $m = 23 \text{ kg}$

$$d = 34 \text{ m}$$

$$W = \frac{F \cdot d}{A_p}$$

$$F_{\text{push}} = 86 \text{ N}$$

$$W = 86 \text{ N} \cdot 34 \text{ m}$$

$$W = ?$$

$$W_{\text{push}} = 2924 \text{ J}$$

2.) $d = 4.70 \text{ m}$

$$W = F \cdot d \rightarrow W_g = m \cdot g \cdot d$$

$$W = 201 \text{ J}$$

$$\frac{201 \text{ J}}{(4.7 \text{ m} \cdot 9.81 \frac{\text{m}}{\text{s}^2})} = \frac{W_g}{m}$$

$$m = ?$$

$$\boxed{4.41 \text{ kg}}$$

8.) $F_{\text{pull}} = 16 \text{ N}$

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

$$W = F \cdot d \cdot \cos \theta$$

$$\theta = 25^\circ$$

$$\boxed{145 \text{ J}} = 16 \text{ N} \cdot 10 \text{ m} \cdot \cos 25^\circ$$

9.) $m = 55 \text{ kg}$

$$\theta = 40^\circ$$

$$W = F_{\text{net}} \cdot d \cdot \cos \theta$$

$$T = 135 \text{ N}$$

$$479 \text{ J} = 135 \text{ N} \cdot 5 \text{ m} \cdot \cos 40^\circ$$

$$W = ?$$

$$\boxed{480 \text{ J}} = 480 \text{ kg}$$

$$d = 5 \text{ m}$$