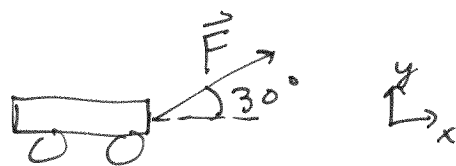


Chapter 7Problem 28

$$\vec{d} = 30.0\text{m } \hat{i}$$

$$\vec{F} = 50\text{N } \angle 30^\circ$$



How much work is done by the boy pulling the wagon.

$$\begin{aligned}\vec{F} &= F \cos \theta \hat{i} + F \sin \theta \hat{j} \\ &= (50\text{N}) \cos(30^\circ) \hat{i} + (50\text{N}) \sin(30^\circ) \hat{j} \\ &= \{43.3 \hat{i} + 25 \hat{j}\} \text{N}\end{aligned}$$

To find work

$$\begin{aligned}W &= \vec{F} \cdot \vec{d} = (43.3 \hat{i} + 25 \hat{j}) \cdot (30.0 \hat{i}) \\ &= 1299 + 0 = \boxed{1300 \text{ J}}\end{aligned}$$

Notice that work is a scalar.

The force component in the vertical direction does no work.