

Worksheet: Work Problems

(Frameworks Code)

$$W = FD$$

Solve the following problems. Use correct problem set-up. Label all number with the correct units.

1. A force of 25 N is needed to push a wheelbarrow along a horizontal walk. If the wheelbarrow is pushed 50 m along this walk, how much work is done?

Given:

$$F = 25\text{N}$$

$$D = 50\text{m}$$

$$W = ?$$

Soln:

$$W = FD$$

$$= (25\text{N})(50\text{m})$$

$$W = 1,250\text{J}$$

2. How much work is done when a 550 N boy climbs a 5 m vertical rope?

Given:

$$W = ?$$

$$F = 550\text{N}$$

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

Soln:

$$W = F \cdot D$$

$$= (550\text{N})(5\text{m})$$

$$W = 2750\text{J}$$

3. An object has a weight of 1200 N. If a force of 50 N is needed to move it across a table 1.5 m long, how much work is done?

Given:

$$F = 50\text{N}$$

$$D = 1.5\text{m}$$

$$W = ?$$

Soln:

$$W = FD$$

$$= (50\text{N})(1.5\text{m})$$

$$W = 75\text{J}$$

4. 1500 joules of work move an object 300 m. What force was exerted on the object?

Given:

$$W = 1500\text{J}$$

$$D = 300\text{m}$$

$$F = ?$$

Soln:

$$W = FD$$

$$F = W/D$$

$$F = \frac{1500\text{J}}{300\text{m}}$$

$$F = 5\text{N}$$

5. A pail of water has a weight of 100 N. 3000 joules of work will lift the pail how many meters?

Given:

$$F = 100\text{N}$$

$$W = 3000\text{J}$$

$$D = ?$$

Soln:

$$W = FD$$

$$D = \frac{W}{F}$$

$$D = \frac{3000\text{J}}{100\text{N}}$$

$$D = 30\text{m}$$

6. A force of 25 N is required to drag a loaded box weighing 115 N a distance of 25 m along a roadway.

- a. How much work is done while dragging the box?

Given:

$$F = 25\text{N}$$

$$D = 25\text{m}$$

$$W = ?$$

Soln:

$$W = FD$$

$$= (25\text{N})(25\text{m})$$

$$W = 625\text{J}$$

- b. If the box were lifted vertically by a crane, find the work done.

Given:

$$W = ?$$

$$F = 115\text{N}$$

$$D = 25\text{m}$$

Soln:

$$W = FD$$

$$= (115\text{N})(25\text{m})$$

$$W = 2875\text{J}$$