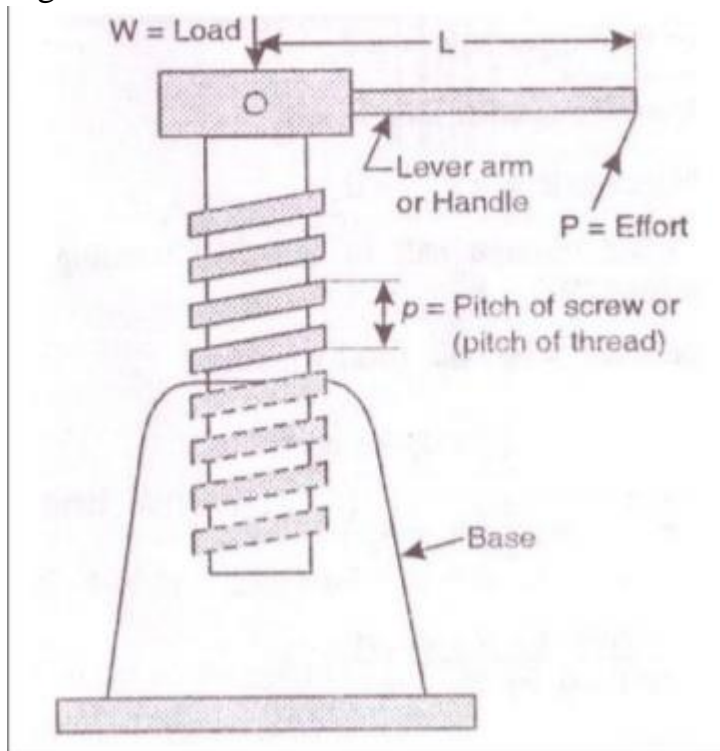


A screw has 5 thread to the centimeter The effort arm is 10 meter long and the efficiency of the screw is 80 percent. What load is an effort of 250 Newton overcome when using the machine. What is the wasted work. ( $\pi \approx 3.14$ )

<p>Given</p> $p = \frac{0,01}{5} \text{ (cm)}$ $\eta = 80 \%$ $l = 10 \text{ (m)}$ $P = 250 \text{ (N)}$	<p>To find</p> $W - \text{load};$ $A - \text{wasted work per 1 cm of screw move.}$
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**Solution**

1) Figure



2) Efficiency:

$$\eta = \frac{Wy}{Px} 100\%$$

a. The distance that has passed by effort arm

$$x = 2\pi l$$

b. The distance that has passed by screw

$$y = \frac{0.01}{5}$$

3) Load

$$W = \frac{\eta Px}{100 * y}$$

4) Wasted work – energy spent on friction force

5) Wasted work per 1 cm

$$A = Px - Wy$$

6) Calculation

$$W = \frac{0.8 * 250 * 2 * \pi * 10 * 5}{0.01} = 2000000\pi \text{ (N)}$$
$$A = 250 * 2 * \pi * 10 - 2000000 * \pi * 0,002 = 1000 \text{ (J)}$$

**Answer**

Load force is  $2000000\pi$  (N)

Wasted work per 1 cm is 1000 (J)

Answer provided by <https://www.AssignmentExpert.com>