Work

$W = F \cdot \Delta x$ Work = Force X (Linear Displacement) ← What you already know

$W = \tau \cdot \Delta \theta$ Work = Torque X (Angular Displacement)

Sample Problem:

Q. A hose facet requires a torque of 20 N-m to turn. How much work is required to turn it by 15 degrees?

A. $W = \tau \Delta\theta = (20Nm)(15\deg) = (20Nm)(15\frac{\pi}{180} rad)$

= 5.23 Nm = 5.23 Joules

Power

$P = \frac{W}{\Delta t}$ Power = (Work done) / (time in which it is done) ← What you already know

Sample Problem

Q. If the hose facet of the previous problem was turned 15 degrees in 3 seconds, how much power was required to do this?

A. Power = Work / Time = (5.23 J) / (3 s) = 1.74 J/s = 1.74 Watts