## Fluids, Work, and Power SPH4C

Fluids may be used to do $\qquad$ .

The movement of fluid is a system is often given in terms of the $\qquad$ :

Example: A water jet cutter needs a flow rate of $3.3 \mathrm{~L} / \mathrm{min}$ and a time of 18 s to cut a certain metal component. What is the volume of water required?


To convert litres to cubic metres, use the conversion factor:

Example:

The speed of the fluid may be determined by:

If the volume is a cylinder, the area is: $\qquad$

Example: If the radius of the water jet cutter is 0.34 mm , what is the speed of the water?

The equations for pressure, work, and power are, as before:

$$
\begin{aligned}
& \mathrm{p}= \\
& \mathrm{W}= \\
& \mathrm{P}=
\end{aligned}
$$

Example: If the water jet cutter exerts a force of 120 N , what is (a) the pressure and (b) the power of the water jet?

More Practice: Liquid in a cylinder exerts a pressure of 10000 kPa on a piston of radius 8.0 cm . The piston moves 34 cm in 6.8 s . Calculate the:
(a) force on the piston
(b) work done on the piston
(c) power of the system

