An engine absorbs 2000J of heat from a hot reservoir and expels 750J to a cold reservoir during each operating circle. What is the efficiency of the engine and how much work is done during the circle?

The efficiency of engine is defined as ratio of the useful work done to the heat provided:

$$\eta = \frac{work\ done}{heat\ absorbed} = \frac{Q_1 - Q_2}{Q_1}$$

where, Q_1 is the heat absorbed and $Q_1 - Q_2$ is the work done.

So, efficiency of the engine equals:

$$\eta = \frac{Q_1 - Q_2}{Q_1} = \frac{2000 - 750}{2000} = 62.5\ \%$$

And work equals:

$$A = Q_1 - Q_2 = 2000J - 750J = 1250\ J$$

Answer: $\eta = 62.5\ \%$, $A = 1250\ J$