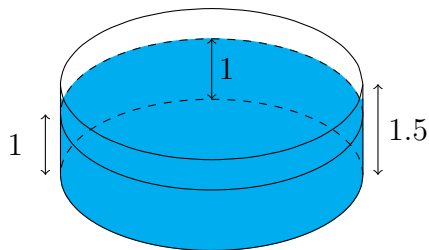


# Work

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**Solutions should show all of your work, not just a single final answer.**

1. A cable that weighs 4 lb/ft is used to lift a 300 lb lump of coal up from the bottom of a mineshaft that is 1000 ft deep. Determine the work needed to bring the coal to the top of the mineshaft using the cable. (Hint: Compute the work done in lifting the cable and the coal separately.)
2. A circular swimming pool with diameter of 8 m. and height of 1.5 m. contains water to a depth of 1 m. Compute the amount of work required to pump all the water out of the pool over the side, giving your final answer in joules to the nearest integer. Consider the density of water to be  $1000 \text{ kg/m}^3$ .



3. T/F (with justification): The work required to stretch a spring having spring constant  $k$  a distance  $x$  from its equilibrium (rest) position is  $kx$ .