P #F

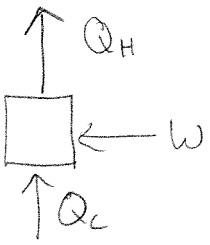
Ch 12 Worksheet

a) $m = 1.75\ kg$
$c = 4186\ J/kg\,K$
$\Delta T = 12\ ^\circ C$

$Q = m \cdot c \cdot \Delta T$
$= (1.75\ kg)(4186\ J/kg\,K)(12\ ^\circ C)$

$\boxed{Q = 87,900\ J}$

b) For a refrigerator, diagram a heat engine in reverse



$W = 1375\ J$
$Q_C = 87,906\ J$ (from a)

$Q_H = W + Q_C$
$= (1375\ J) + (87,906\ J)$

$Q_H = 89,281\ J$

$t = 20\ min \cdot \frac{60\ sec}{1\ min} = 1200\ sec$

$P = \frac{Q_H}{t} = \frac{89,281\ J}{1200\ sec}$

$\boxed{P = 74\ Watt}$