OPHW1-4 Soln)

This is a convex mirror with a radius of curvature is 35 cm, so the focal length is -17.5 cm. The object distance o is +90 cm.

a) Use the lens equaton: $\frac{1}{o} + \frac{1}{i} = \frac{1}{f}$ $\frac{1}{i} = \frac{1}{f} - \frac{1}{o} = \frac{1}{(-17.5)} - \frac{1}{90} \Longrightarrow i = -14.65 \text{ cm}$ So the image is behind the mirrort, as expected. b) The fact that the image distance is negative indicates that the **i**

The fact that the image distance is negaitve indicates that the **image is virtual** (as expected, since it's behind the mirror).

The magnification is given by $M = -i/_{o} = - -14.65/_{90} = +0.16$.

The fact that M is positive indicates that the **image is upright**.

M is also equal to $-h_i/h_o$, so if $h_o = 2$ cm, then $h_i = -Mh_o = -0.16*2 = 0.32$ cm.