

Equation to find focal length for a thin lense
Use "real-is-positive" for signs

$$
\frac{1}{f}=(n-1)\left(\frac{1}{R_{1}}-\frac{1}{R_{2}}\right)
$$


f , the focal length is negative also.
$q$, when object is far, is found from $q=f$, so it is negative also.

$M$ is positive

$M$ is negative

$$
\frac{1}{p}+\frac{1}{q}=\frac{1}{f}
$$


$\frac{n_{1}}{p}+\frac{n_{2}}{q}=\frac{n_{2}-n_{1}}{R}$
fish glass bowl)


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## Magnification formula

$$
M=\frac{h^{\prime}}{h}=-\frac{q}{p}
$$

