

Use Multiplication

The magnifying power of a lens is expressed by a number and a multiplication symbol (\times). For example, a lens that makes an object look ten times larger has a power of $10\times$. To determine a microscope's magnification, multiply the power of the ocular lens by the power of the objective lens.

Find the total magnification of an object viewed under a microscope with a $10\times$ ocular lens and a $10\times$ objective lens.

Step 1 Identify the magnification power of each lens.

Ocular lens: $10\times$

Objective lens: $10\times$

Step 2 Multiply the power of the ocular lens by the power of the objective lens.

$$10 \times 10 = 100\times$$

Practice

1. If the ocular lens of a microscope has $10\times$ magnification and the objective lens has $40\times$ magnification, what is the total magnification?
2. A microscope has an ocular lens with a power of $5\times$ and an objective lens with a power of $20\times$. What is the total magnification of the microscope?
3. A student observes a sample of pond water under a microscope. The ocular lens has a $2\times$ magnification, and the objective lens has a $40\times$ magnification. How much larger do the pond water organisms appear under the microscope?
4. A student observes a sample of onion root cells under a microscope with a $10\times$ ocular lens and a $50\times$ objective lens. How much larger do the cells appear under the microscope?
5. One microscope has a $5\times$ ocular lens and a $50\times$ objective lens. Another microscope has a $10\times$ ocular lens and a $40\times$ objective lens. Which microscope has the greater magnification power? Explain.