S U M M A R I E S

INVESTIGATION 1: Exploring Lenses

In Investigation One, you explored the human eye and its different parts. During this Investigation, you:

1. identified the parts of the human eye and their functions.
2. investigated how the hand lens magnifies the image of an object.
3. compared the human eye and the hand lens.

Through these experiments, you found that:

1. all the different parts of the human eye contribute to allowing you to see.
2. the human eye can detect only a certain amount of detail.
3. the hand lens magnifies an object's image.
4. the hand lens assists the eye to increase resolution.

INVESTIGATION 2: Refraction

In Investigation Two, you explored how different lenses refract or bend light in different ways. During this Investigation, you:

1. investigated the differences in how lenses refract or bend light.
2. demonstrated that certain lenses can magnify and certain lenses can reduce the size of an object's image.

Through these experiments, you found that:

1. lenses differ by the way they are curved and by how much they are curved.
2. lenses refract or bend light so the image appears different from the object.
3. concave lenses reduce the size of an object's image.
4. convex lenses magnify the size of an object's image.
5. transparent material without any curvature can refract light.

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INVESTIGATION 3: Learning About the Microscope

In Investigation Three, you were introduced to the compound microscope. During this Investigation, you:

1. learned the different parts of the compound microscope.
2. viewed a specimen with the compound microscope.

Through these experiments, you found that:

1. using the microscope allows you to see more detail than with the naked eye.
2. the many different parts of the microscope contribute to its function.
3. the different objectives of the microscope have different powers of magnification.
4. there are both similarities and differences between a microscope and a hand lens.

INVESTIGATION 4: Exploring Using the Microscope

In Investigation Four, you viewed two different specimens using the compound microscope. During this Investigation, you:

1. constructed a working model of a convex lens.
2. viewed the letter “e” slide using the three different objectives of the compound microscope.
3. viewed a specimen of cork using the three different objectives of the compound microscope.

Through these experiments, you found that:

1. each objective has a different power of magnification.
2. as the power of magnification of the objectives increases, the resolution increases.
3. as the resolution increases, the field of view decreases.
4. the total magnification of the compound microscope is the product of the power of magnification of the objective and the power of magnification of the eyepiece.

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INVESTIGATION 5: Understanding Microscopy

In Investigation Five, you explored refraction produced by convex lenses. During this Investigation, you:

1. used two convex lenses to investigate refraction.
2. used a compound microscope to investigate refraction.

Through these experiments, you found that:

1. at a short distance from the object, a convex lens refracts light to magnify the image of an object.
2. at a longer distance from the object, a convex lens refracts light to magnify and invert the image of an object.
3. a compound microscope refracts light to magnify the image of an object.
4. the final image seen in a compound microscope results from the combination of the refraction of light by two convex lenses.
5. the image formed by the convex lenses in the model microscope was both magnified and inverted.