



# Scalar Handheld Microscopes



**ProScope/Scalar Lesson 1**  
Use with Science Lesson 2

The ProScope will be used in the handheld mode. Various water sources will be viewed through containers to keep the ProScope dry.

Various organisms will be photographed and if possible identified.

Record the number of different organisms identified.

Materials	ProScope/Scalar Scope Petri Dishes/Jar Slides Pond Water Tap Water Puddle Water
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- Have students bring in small samples of water from a variety of sources - tap water, pond water, bottled water, water from puddles, etc. Examine each at 200x (you will want to set the microscope on its stage and put the samples on slides). Compare the types and varieties of micro-animals seen.
- Get a sample of pond water. Examine it (using the stage/slide setup) at various powers and have students describe what they see, and write it down. Capture several still images as well.

Divide the sample up into several smaller samples, and place them in different environments for a day or two: bright sunlight, no light, cold, hot, etc. Also take some samples and add a little of various substances such as bleach, salt, soap, etc.

Then re-observe the samples and determine how the different environmental factors influenced the micro-animals, diversity, quantity and activity.



**ProScope/Scalar Lesson 2**  
Use with Science Lesson 3

Collect a variety of crickets, living or nonliving, and examine them at various powers of magnification, including 1X (use only low powers on live insects). In each case, discuss, or have students individually observe and note, the characteristics of the specimen. The object of the activity is to identify characteristics that all crickets have in common, and to be able to name their parts.

Materials	ProScope/Scalar Scope, 50X lens, 100x lens, 1X lens Crickets
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Identify the various parts of the cricket. Use the ProScope/Scalar Scope to document parts of the cricket through photographs. Capture various images of the cricket

1. top down
2. side shot
3. back end
4. legs
5. feet
6. head
7. thorax
8. abdomen
9. etc.

Describe these various parts of the cricket and why these various parts are helpful for the cricket to survive.



**ProScope/Scalar Lesson 3**  
Use with Math Lesson 6

Students are recording the number of chirps a cricket makes based upon temperature.

The ProScope/Scalar Scope will be set to record in 1x to give the largest area. The ProScope will be mounted on the tripod.

The ProScope will be set to record in 50x for more detail. The ProScope will be mounted on the tripod.

The ProScope will be set to record in 100x for more detail. The ProScope will be mounted on the tripod. This will give a clearer picture than being handheld.

Students will record the chirping of a cricket various times and will then explain how a cricket makes this sound.

Materials	ProScope/Scalar Scope: 50X Lens, 100X Lens 1X Lens ProScope/Scalar Scope Tripod
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Students will capture a cricket while chirping. This will require positioning the ProScope/Scalar Scope in a position to capture the actual chirping.

The cricket has to be confined so the ProScope/Scalar Scope can capture the cricket chirping. The video can then be reviewed to observe the movements of the cricket to detect any motion by the cricket when making the chirping sound.

This chirping video is to be added to the report created for Math Lesson 6.

Cricket chirping audio:

<http://www.junglewalk.com/popuptop.asp?type=a&AnimalAudioID=5462>



**ProScope/Scalar Lesson 4**  
Use with Math Lesson 7

Students are recording the jumps of a cricket.

Students are recording student jumps.

The ProScope will be mounted, to record the various jumps of the cricket and students. These videos will be added to the final report.

The ProScope will be set to record in 1x to give the largest area.

Materials	ProScope/Scalar Scope: 1X Lens ProScope/Scalar Scope Tripod
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Students will set up a “stage” to record the jumping cricket. This video can be added to the report created for Math Lesson 7.

Student jumps are also to be recorded, showing the distance a student can jump from a standstill. This video is also to be added to the report created for Math Lesson 7.