



AGES 6+

IQCREW® by **AmScope**™
Science **DISCOVERY** Series

DUAL-ILLUMINATION
STEREO
MICROSCOPE

Two Microscopes in One!

**All-In-One
DELUXE STEREO
MICROSCOPE
Activity Kit**



SE122 - USER GUIDE



SCIENCE • TECHNOLOGY • ENGINEERING • MATH

WARNING - CHOKING HAZARD
Small parts. Not for children under three (3) years. Adult Supervision required.



amscope.com





Safety Information

WARNING - CHOKING HAZARD
Small parts. Not for children under three (3) years. Adult supervision required.



Please read all the warnings and cautions in the instruction manual carefully before using. Keep small children and animals away from experiments. As the microscope kit may have instruments with sharp edges and points, eye protection is strongly recommended.

WARNING- BATTERY SAFETY INFORMATION

- ▶ Battery installation and removal should be performed by an adult.
- ▶ Use only batteries recommended in this instruction manual.
- ▶ Be careful to install the batteries with correct polarity as indicated.
- ▶ Do not mix old and new batteries.
- ▶ Remove all batteries when replacing.
- ▶ Do not mix different types of batteries.
- ▶ Rechargeable batteries are to be removed from the microscope before being charged.

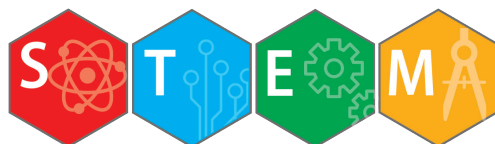
SAFETY INFORMATION

- a) Glass slides and slide covers are very delicate. Please handle with care.
- b) The incorrect use of chemicals can cause injury and damage to one's health. Use only the slide preparations listed in the instructions.
- c) Because children's abilities vary, even within age groups, supervising adults should exercise discretion regarding which specimens and experiments are suitable and safe for children. The instructions should aid adults in assessing slide preparations to discern their suitability for each child.
- d) Supervising adults should discuss the warnings and safety information with the child before commencing the preparation of slides. Pay particular attention to the safe handling of chemicals (if used).
- e) Your slide should be kept clean, clear and away from any food storage areas.

IQCREW SE122 User Guide

1. Introduction

IQCREW's Science Discovery Series is designed to inspire kids to learn more about science. Microscopes are important tools which help children understand science and nature by allowing them to peek into the microscopic world, which is why they are a standard component of STEM curricula. Biology, Chemistry, Geology, and many more fields rely on microscopes to understand how things work.



SCIENCE | TECHNOLOGY | ENGINEERING | MATH

The IQCrew brand offers a range of microscopes and accessories to drive the curiosity of the budding scientist:

- **Compound Microscope:** view specimens under high magnification.
- **Stereo Microscope:** view specimens under low magnification.
- **Inverted Microscope:** view specimens as light is directed from top of specimen while objective is at the bottom.
- **Experiments and Accessories** supplementing the microscopes to continue learning.

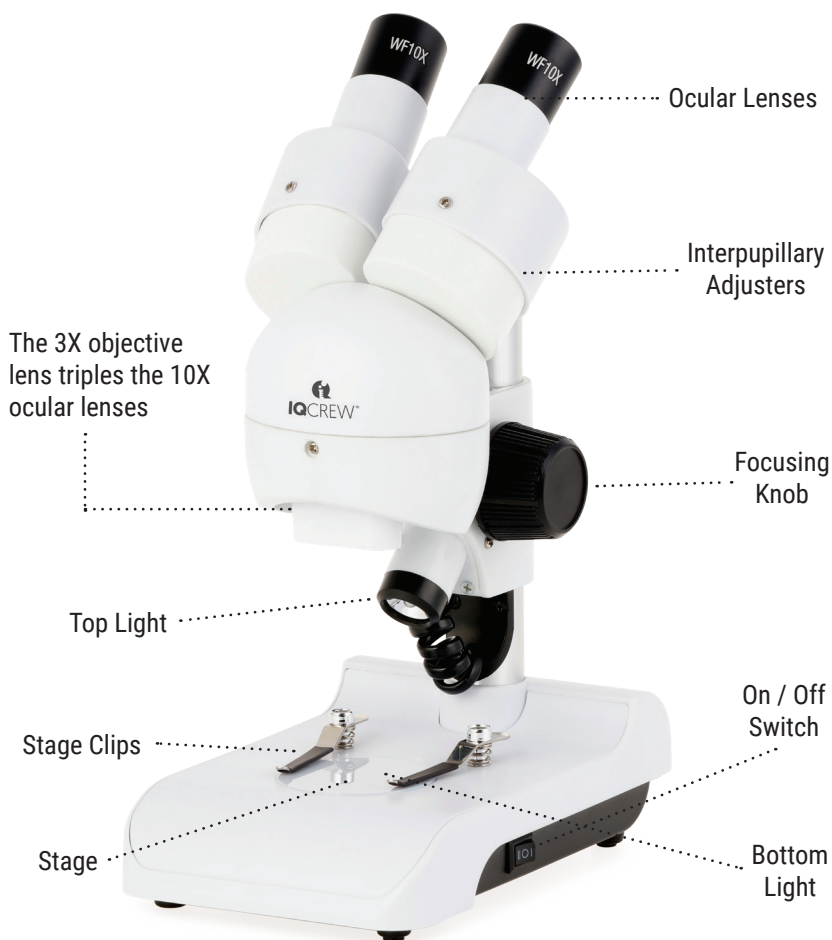


See our full line of products at amscope.com/iqcrew

Let's Begin!

To get things started, this complete kit includes some prepared slides for viewing right out of the box. It also includes materials to prepare your own samples, like a Petri dish and blank slides. There is a graduated cylinder for measuring and a pipette for easily transferring liquid samples. Forceps, a probe, and a stirring rod are also included for preparing and positioning specimens.

Carefully lift the microscope from the box using two hands. Place one hand around the microscope arm and the other under the base. For best results, use the microscope on flat, sturdy surfaces. Install 3 AA batteries as shown on page 4 in this guide. Always be careful with the stage and light source.

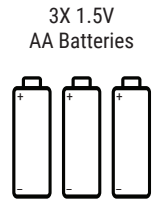


Microscope Features

- **Top Light / Bottom Light:** Use the lower LED light to view translucent vs opaque specimens on slides or switch over to the upper light to examine objects in intricate detail.
- **Focus Knob:** Use the focus knob to raise or lower the microscope until the image you see is clear and sharp.
- **Eyepiece:** Examine specimens at 30x magnification when using 10x eyepiece and then simply slide out the eyepiece and replace them with the 25x eyepiece (not included) for an even closer look.
- **Power Switch:** Switches the top light or bottom light on or off.
- **The Stage:** Where specimens are placed for viewing.
- **Stage Clips:** The two stage clips hold a specimen in place.
- **Interpupillary Adjusters:** Swivel to fit scientists of any size.

Installing Batteries in the Microscope

Remove the battery cover on the bottom of the microscope and install 3 AA batteries (included). Make sure to follow the diagram on the inside of the battery compartment to ensure that batteries are installed in the correct direction. Once installed replace the battery cover on the microscope. When the microscope is not in use for long periods it is suggested to remove the batteries to avoid corrosion.



Battery Cover

Available Magnification Options

Ocular Lenses	3X Objective Lenses
10x	30x
16x (sold separately)	48x
20x (sold separately)	60x
25x (sold separately)	75x

Slide Preparation

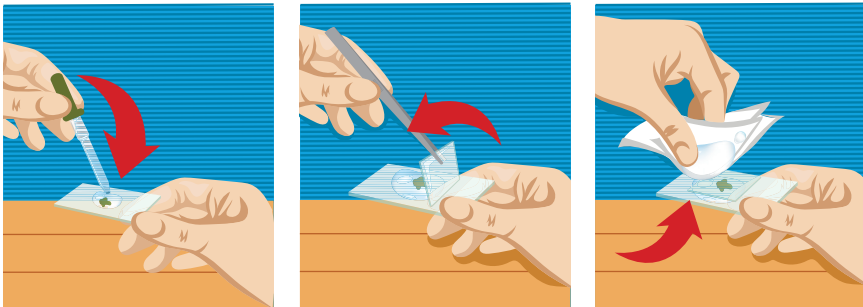
Now that you've studied the features of your microscope, it's time to take it out for a test drive with its accessories. This microscope kit contains specimens that have already been prepared for you and blank slides that you can prepare on your own.

When preparing microscope slides for observation, it is important first to have all necessary materials on hand. This includes slides, cover slips, droppers or pipettes and any chemicals or stains you plan to use.

NOTE: When preparing slides you want to use the thinnest possible sample. Have an adult use a razor blade or sharp knife to cut slices for you to try. **DO NOT CUT SPECIMENS WITHOUT ADULT SUPERVISION.**

Wet Mount Slides

The most common way to prepare a specimen is with a wet mount, and here's how you do it:



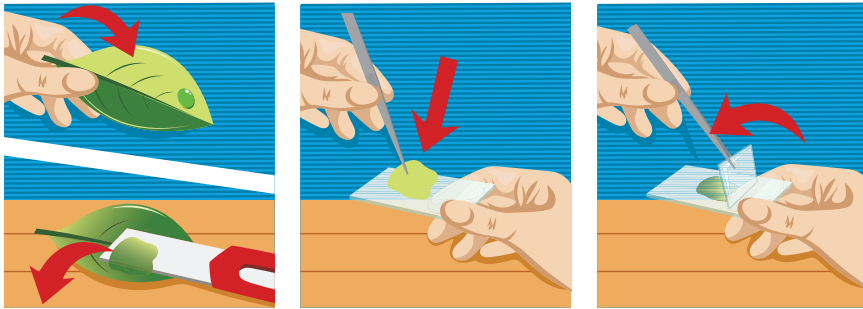
1. Place a specimen on the slide. Using a pipette, place a drop of water on the specimen.
2. Place one edge of the cover slip over the specimen and carefully lower the cover slip into place using a toothpick or tweezers. This method will help prevent air bubbles from being trapped under the cover slip.
3. Your objective is to have sufficient water to fill space between cover slip and slide. If there is too much water, the cover slip will slide around. Take a piece of paper towel and hold it close to one edge of the cover slip. This will draw out some water. If too dry, add a drop of water beside the cover slip. Practice this until you get used to it.

Recommended Specimens to look at with wet mount slides

- Plant material like leaves, onion skin, flower petals
- Mold spores from bread, cheese or fruit
- Fibers like thread or yarn

Dry Mount Slides

The procedure for making dry mount slides is much the same as for wet mounts.



1. Select a clean slide. Make sure it is free of dirt and smudges
2. Inspect the specimen to determine if it needs to be sliced. (Use a translucent or transparent specimen so that light can pass through it)
3. Place the sample specimen on the slide using tweezers or a toothpick. The slice of the specimen should be big enough to completely fit under the cover slip.
4. Carefully place a cover slip over your specimen to flatten it out. There is no need to worry about air bubbles, you can just drop the cover slip onto the specimen.

Recommended Specimens to look at with dry mount slides

- Hair, fur or feathers
- Small insects or insect body parts
- Butterfly or moth wings
- Cloth
- Printed Material



TIP:



Some specimens are easier to see if you dye them!

Try it with a drop of red or blue ink. Let the ink get pulled under the cover slip, wait for a few minutes, and then add clean water and let it get pulled under the cover slip. That's how you stain a specimen.



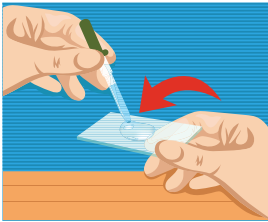
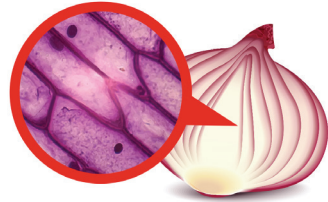
Making Your Own Slides

It's so easy to make slides that the variety of slides you create will be limited only by your own imagination.

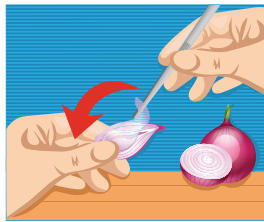
A section of almost any material can be placed on a slide and observed with a microscope. All you need is the proper equipment and a little patience and you'll be making slides in no time. Everything you need for the following experiments can be found in this kit or around your home, make sure to ask a parent first before you borrow any household items for your experiments.

Onion Skin Cell Experiment:

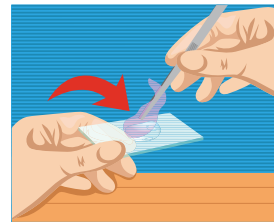
Tissue from an onion is a good first exercise in using the microscope and viewing plant cells. The cells are easily visible under a microscope and the preparation of a thin section is straightforward. An onion is made of layers, each separated by a thin skin or membrane.



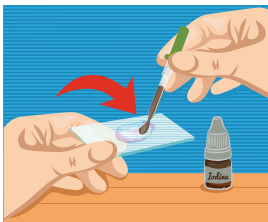
1. First, place a small drop of water on a microscope slide. This is to hold the onion skin in place and to keep it from drying out.



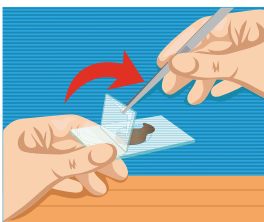
2. Take a small piece of onion and using tweezers, peel off the membrane from the underside (the rough side).



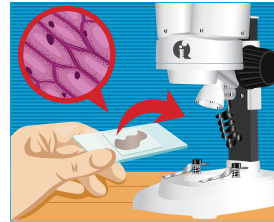
3. Using tweezers, place the onion skin membrane flat onto the drop of water on the slide.



4. Using your dropper, add a drop of iodine on top of the onion on the slide. This will help you see the cell structure better.



5. Place one edge of the cover slip over the onion and dye. Carefully lower it into place using a toothpick or tweezers. This helps prevent air bubbles from getting trapped under the cover slip.



6. Observe the slide under your microscope. What do you see? Can you spot the four parts?

Crystal Growth Experiment:

Grow your own crystals with salt and water. Magnesium Sulfate (MgSO_4) is more commonly known as Epsom Salt. It is one of many types of salt that can be used to grow crystals. It can be easily found at drug stores and markets. It is used to relieve pain or to help with digestive problems. When added in water, it creates a solution.

Ingredient Ratio - $2\frac{1}{2}$ tbsp epsom salt : $\frac{1}{4}$ cup water

What you'll need:

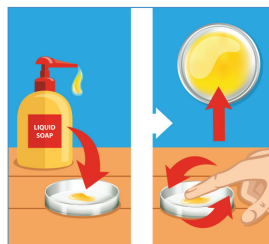
- $2\frac{1}{2}$ tbsp epsom salt
- $\frac{1}{4}$ cup water (distilled preferred, but tap water also works)
- 1 drop of liquid dish soap
- 1 Petri dish (a blank slide can be used, but the growing area will be smaller)
- 1 container for heating the water such as a pot for use on a stove or a Pyrex glass container for use in a microwave
- 1 stirring spoon and 1 dropper or pipette



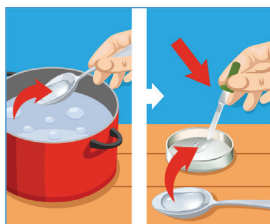
1. Heat water on a stove or in a microwave until it begins to boil. Adult supervision is required. Always be careful when handling hot water.



2. Slowly pour the salt into the water, stirring as you do so. Continue to stir until the salt has completely dissolved. You may continue adding salt until it no longer dissolves. Any salt that does not dissolve should be removed using a spoon.



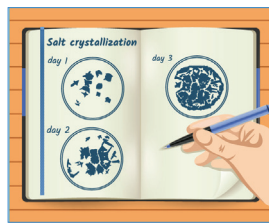
3. While the solution is cooling place one drop of dish soap in the petri dish. Spread it evenly with a finger to create a thin layer.



4. Use a dropper or pipette to transfer the salt solution into the petri dish. Only a thin layer of solution is required. Place the dish in a dry place where it will not be disturbed.



5. Within one hour you should see thin crystals forming on the bottom of the dish. Place the petri dish on the stage and observe the crystal formation using the bottom light.



6. Make a note of the different observations and carry out research like a real scientist!

Troubleshooting

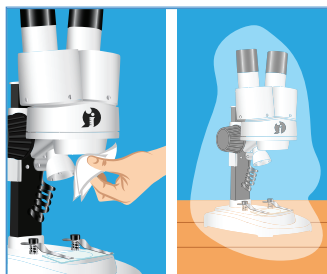
If you are experiencing difficulty with your microscope, try these troubleshooting techniques:

	PROBLEM	CAUSE	SOLUTIONS
1	Light source of microscope is dim	No battery installed or batteries are dead.	Install three AA batteries in the battery compartment
2	The specimen cannot be focused or the entire focus range has been used	The specimen is too thick, or liquid is too high.	Try a thinner specimen sample or less liquid.

Microscope Best Practices

The microscope should be used in a dry environment. Do not use the microscope outside in wet conditions as water can damage the light source or contaminate the optical system. Always turn off the light when the microscope is not being used.

When storing the microscope, remove the batteries to prevent corrosion. Also, always remove slides from the stage before putting the microscope away. Do not use anything except lens cleaning tissue to clean the lenses. Always carry the microscope with two hands - one around its arm and one under the base. Keep the microscope in a cool, dry, dust-free place. Use a dust-cover to prevent dust and humidity from entering the microscope.



Make a Record of Your Experiments



Begin to start thinking like a scientist as you perform your experiments. Observe carefully and make records of your experiments (make sure you date them). Record the types of specimens you observe; their colors, shapes and patterns; how they look through each objective; how you prepare your slides; what tools you use; how different specimens compare with each other; and so forth.



NOTES

Date of slide: _____

Name of sample: _____

Collected from: _____

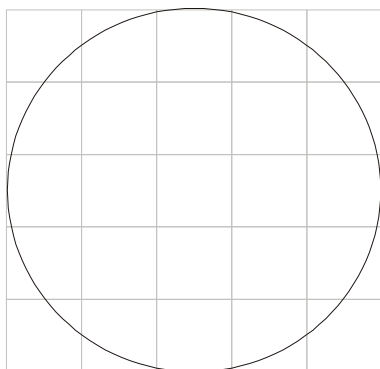
Stain: _____

Mount: _____

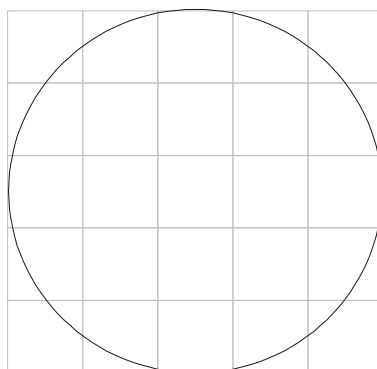
Lighting: _____

Observations

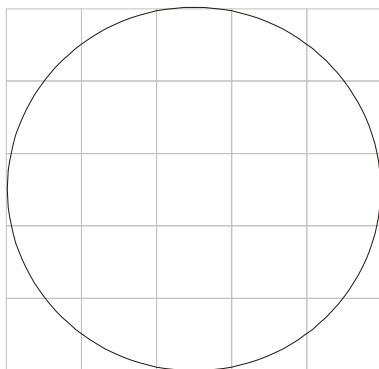
Sketches



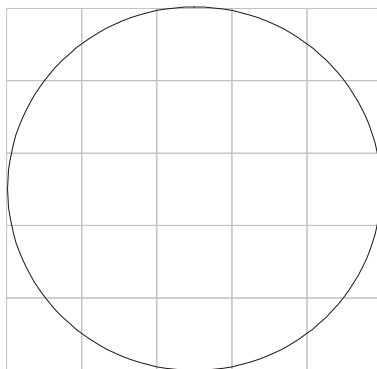
30 x magnification



54 x magnification



75 x magnification



Other: _____



NOTES

Date of slide: _____

Name of sample: _____

Collected from: _____

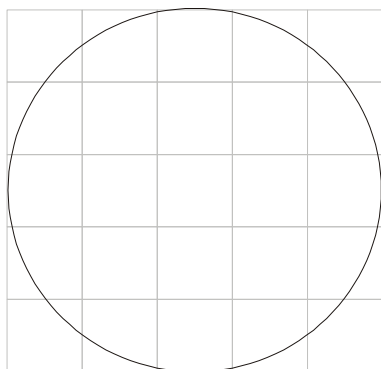
Stain: _____

Mount: _____

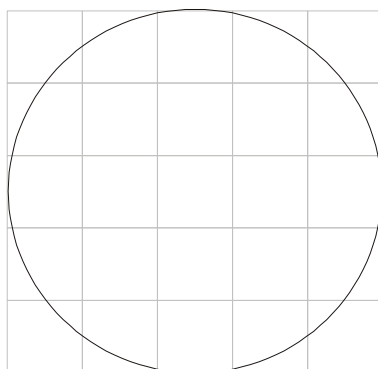
Lighting: _____

Observations

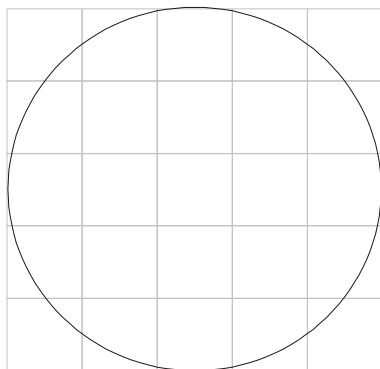
Sketches



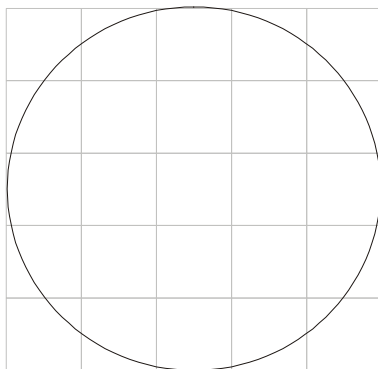
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Other: _____



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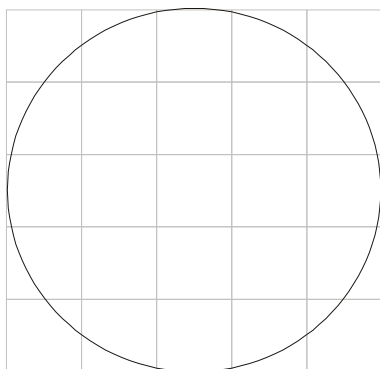
Stain: _____

Mount: _____

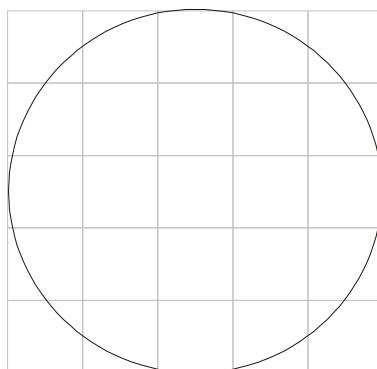
Lighting: _____

Observations

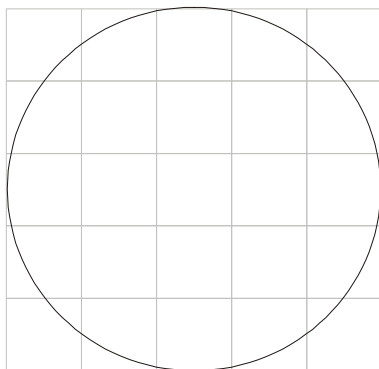
Sketches



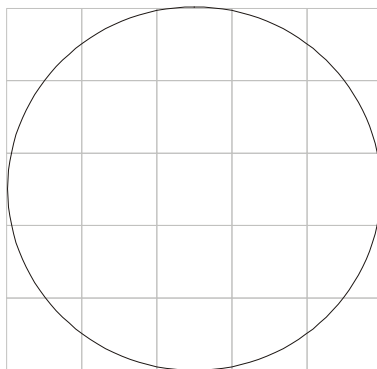
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54 x magnification



75 x magnification



Other: _____



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Name of sample: _____

Collected from: _____

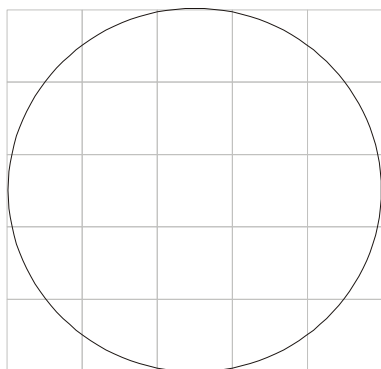
Stain: _____

Mount: _____

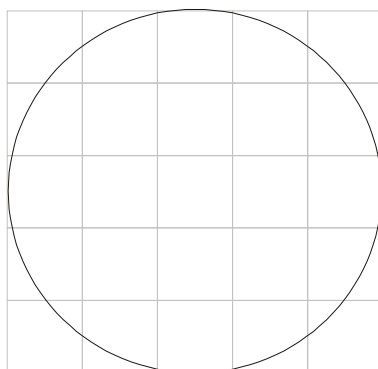
Lighting: _____

Observations

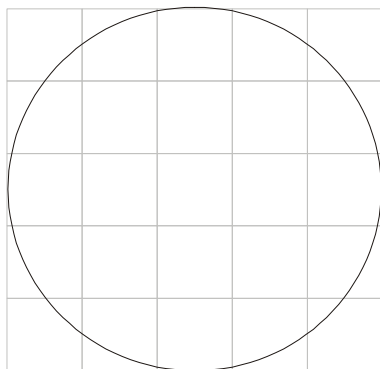
Sketches



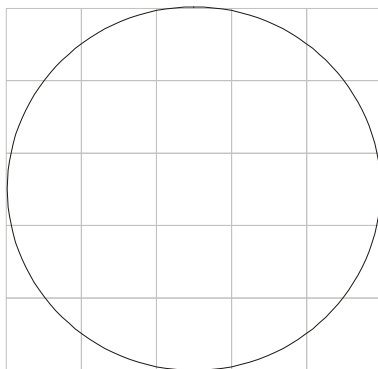
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75 x magnification



Other: _____



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Collected from: _____

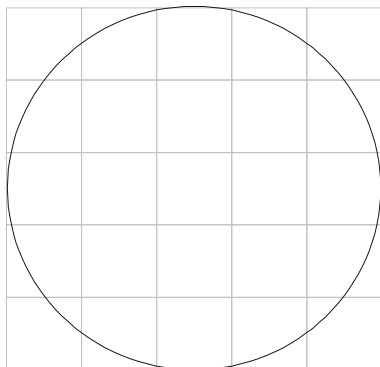
Stain: _____

Mount: _____

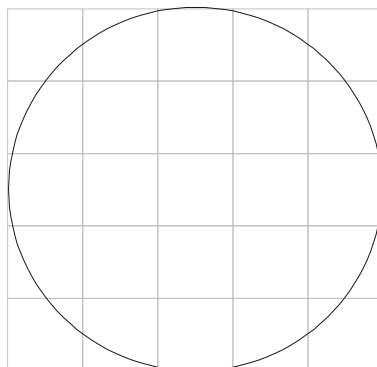
Lighting: _____

Observations

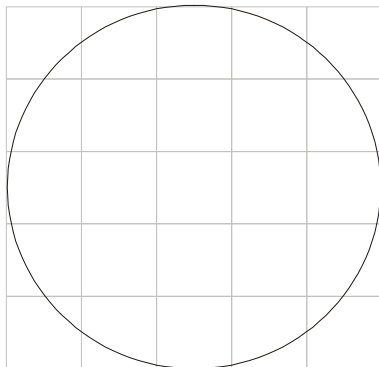
Sketches



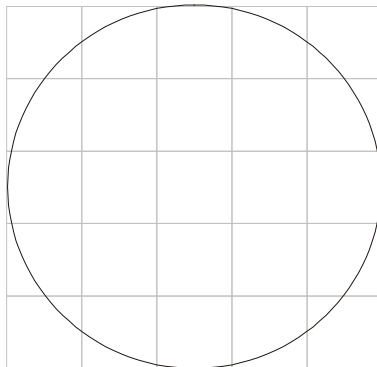
30 x magnification



54 x magnification



75 x magnification



Other: _____

DUAL-ILLUMINATION STEREO MICROSCOPE



Additional Products (can be purchased separately)

- ▶ Add a digital eyepiece for real-time viewing on your computer
- ▶ Use 16x/20x/25x eyepieces to increase magnification up to 75x



Questions? We are here to help!

Visit: amscope.com/iqcrew | or email: info@amscope.com