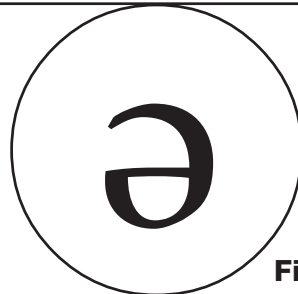# MICROSCOPE IMAGES

1. Draw the letter e.

- Set the objective lens to 4x.

- Place the dry-mount slide of the letter e on the stage of the microscope.

- Center the image and draw *exactly* what you see.

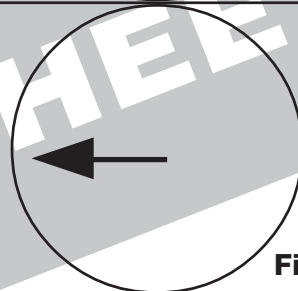**Field of view**

2. Move the slide away from you.

- Move the slide away from you.

- What direction did the image move? __toward me__

- Draw an arrow in the circle to indicate the direction the image moved.
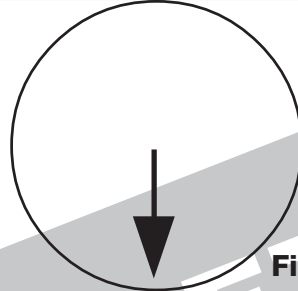
Field of view

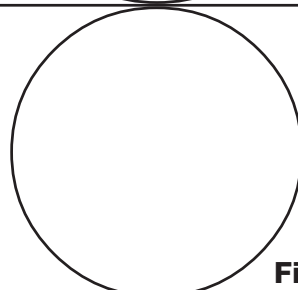**3. Move the slide to the right.**

- Move the slide to your right.

- What direction did the image move? ___left___

- Draw an arrow in the circle to indicate the direction the image moved.

Field of view

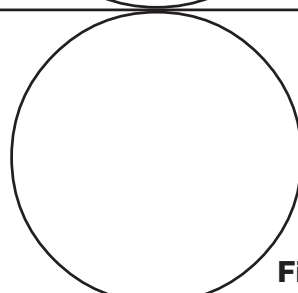**4. Observe the color photograph.**

- Make a dry mount of a piece of colored photo.

- Draw and color what you see.

- Compare the colors you see with and without the microscope.

Field of view

5. Observe the feather.

- Prepare a dry mount of the feather. Use a second slide as a coverslip.

- View the feather tip using the 10x objective.

- Draw what you observe.

Field of view

6. Answer these questions (on page 8 or on a blank sheet of paper.)

- Is the image seen through the microscope oriented the same way as the object on the stage of the microscope? Explain. **No; image is reversed and inverted.**

- If you want to move the image to the right, which way should you move the slide? **left**

- If you want to move the image up, which way should you move the slide? **down**

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Investigation 2: Introduction to the Microscope
Student Sheet

FIELD OF VIEW AND MAGNIFICATION

The width of one square in the nylon netting material (measured with the millimeter ruler) is _____~1 mm_____.
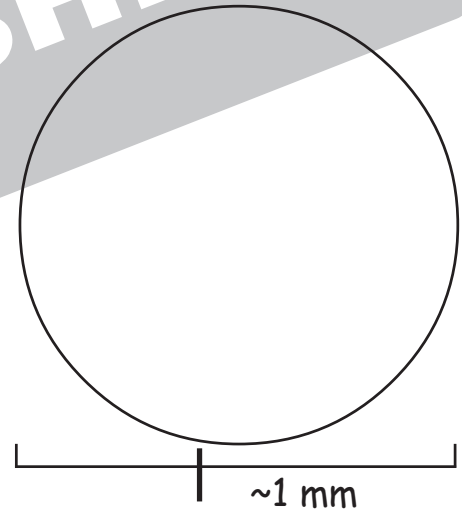
Field of view

Part 1: The 4x objective

1. Place the netting and mm ruler slide on the stage of the microscope. Select the 4x objective.

2. Draw exactly what you see in the field of view.

• What is the width of the field of view? ~4 mm

• What is the width of one mesh square? ~1 mm

• What is the total magnification with this objective lens? _____40 times_____

• Mark 1 mm on the scale below the field of view.

~1 mm
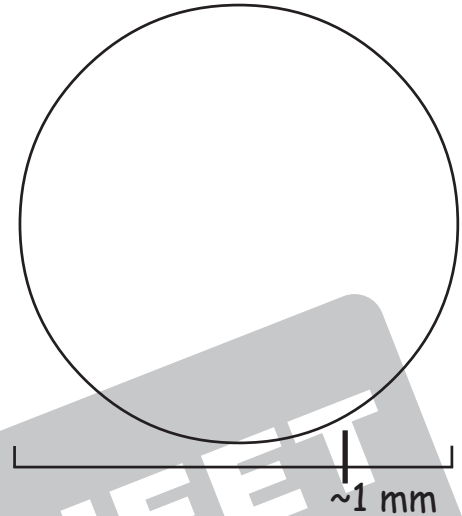
Part 2: The 10x objective

1. Select the 10x objective.

2. Draw exactly what you see in the field of view.

• What is the width of the field of view?_____~1.8 mm_____

• Estimate the width of one mesh square to the nearest 0.1 mm._____~0.9 mm_____

• What is the total magnification with this objective lens? _____100 times_____

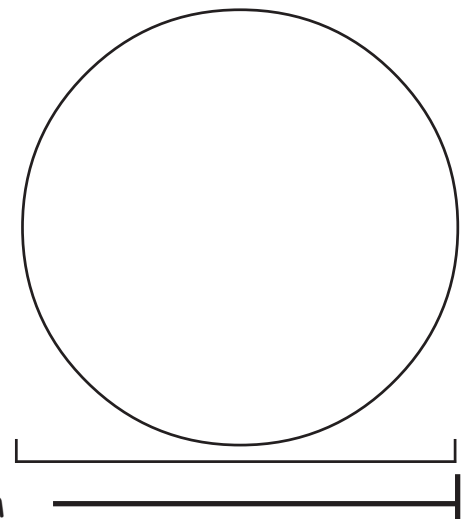• Mark 1 mm on the scale below the field of view.

~1 mm

Part 3: The 40x objective

1. Select the 40x objective.

2. Draw exactly what you see in the field of view.

• What is the width of the field of view?_____~0.4 mm_____

• Estimate the width of one mesh square to the nearest 0.1 mm._____~0.9 mm_____

• What is the total magnification with this objective lens? _____400 times_____

• Mark 1 mm on the scale below the field of view.

~1 mm

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Investigation 2: Introduction to the Microscope
Student Sheet

FOCAL PLANE
● ●

Part 1: Focus on layers of ribbon

1. Make a wet mount of three layers of ribbon.

2. Set the objective lens for 100x magnification.

3. Focus on the top layer of ribbon. Then use the fine focus to focus down through the layers.

• How many layers can you get into focus at one time? __only one__

• Which direction do you turn the right-hand fine focus to focus *down* through the layers? __Answers will vary.__

• Use colored pencils to draw *exactly* what you see when the *middle* layer is in focus.

Field of view
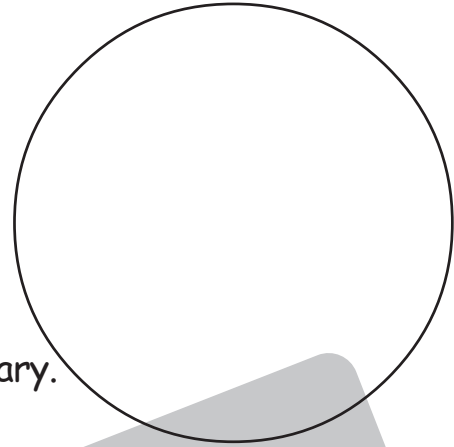
Part 2: Mystery ribbons

Our slide

Top	
2	
3	

1. Make a wet mount of *three* layers of ribbon. Keep the order a secret. Record the order of ribbons, top to bottom, on the lines to the left under the heading "Our slide."

2. Trade mystery-ribbon slides with another team.

3. Use your microscope to determine the order of the colored ribbons used to make the mystery-ribbon slide. Record the colors and the order to the right under the heading "Mystery slide."

Mystery slide

Top	
2	
3	

ANSWER SHEET

Questions

1. How did you figure out which ribbon was on the bottom?
   It was the last one to come into focus as the distance between the lens and slide got smaller.

2. Why can't you get all three layers of ribbon in focus at the same time?
   The focal plane is very thin.

3. What is "focal plane"?
   The focal plane is the horizontal plane that is in focus. The focal plane stays at a fixed distance from the objective lens.

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