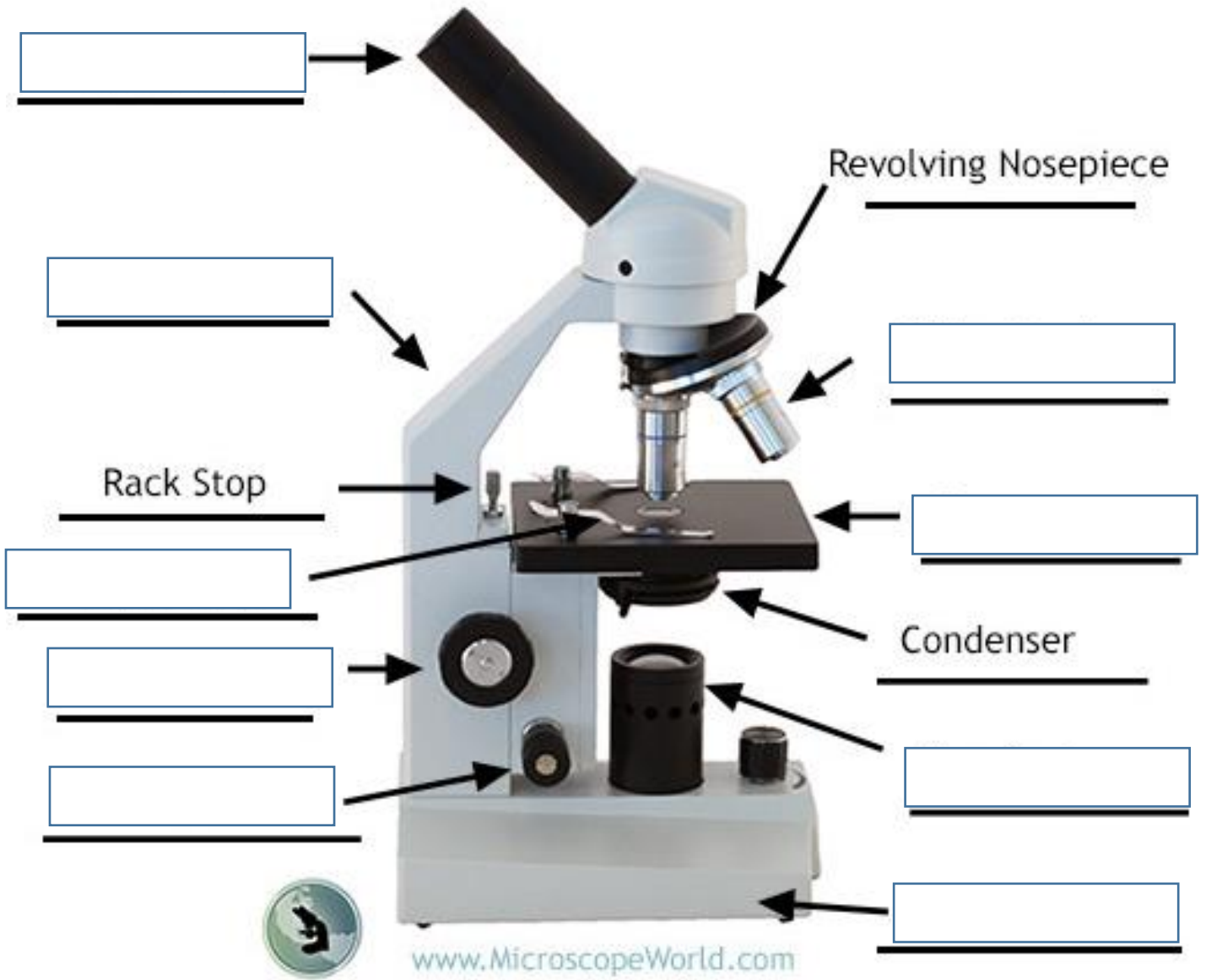


**THE PARTS OF A MICROSCOPE**



Label the microscope to the best of your ability:

- |                                   |                            |                |                                       |
|-----------------------------------|----------------------------|----------------|---------------------------------------|
| eyepiece                          | arm                        | stage clip     | Coarse Focus (coarse adjustment knob) |
| Fine Focus (fine adjustment knob) | revolving nosepiece        | objective lens |                                       |
| stage condenser                   | illuminator (light source) | base           |                                       |

Check your answers, back of last page.

**Microscope 101: Today your challenge will be to**

(1) **Determine a Field of View** \_\_\_\_\_ ← How large is it? Count cells across.

(2) Observe a specimen under low power magnification

(3) Sketch your specimen

(4) **Then answer the following**

4.1 How many body segments

\_\_\_\_\_

4.2 How many legs

\_\_\_\_\_

4.3 Insect or Arachnid

\_\_\_\_\_

4.4 length in mm ← millimeters

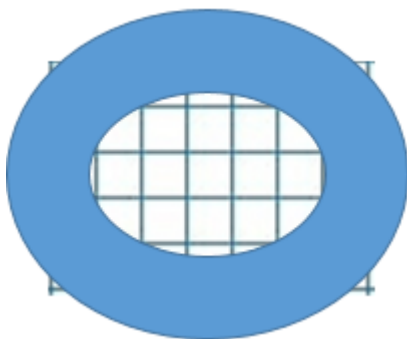
\_\_\_\_\_



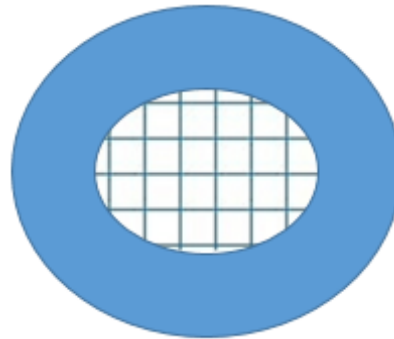
Extend Question (1)

Imagine you are looking down the eyepiece of a microscope at either of the following two images. They depict rafter cells (grids lines on a slide for measuring microscopic organisms).

Each grids line equals 1mm. What is your field of view, as the observer?



5. **Field of view:** \_\_\_\_\_mm



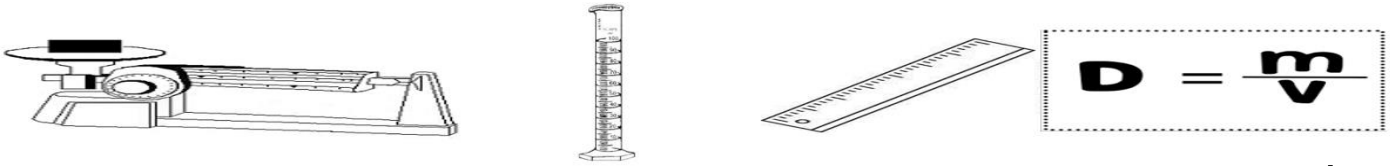
6. **Field of view:** \_\_\_\_\_mm



You are simply measuring the field of view at magnification (zoomed in).

Name \_\_\_\_\_ per \_\_\_\_\_ date \_\_\_\_\_ mailbox \_\_\_\_\_

**Density Review 101:** For prep you must complete the following over break.



**Density** is a measure of mass per unit of volume. ... The average **density** of an object equals its total mass divided by its total volume. An object made from a comparatively dense material (such as iron) will have less volume than an object of equal mass made from some less dense substance (such as water).

**volume:** It is the amount of **space** occupied by a given sample of matter. The SI units can be for that of liquids or solids cubed. (ml) milliliter or (cm<sup>3</sup>) centimeters<sup>3</sup> ← examples

**mass:** It is the **amount** of matter an object has. The SI units are grams, kilogram (heavy)milligram (light). (g) grams or (kg) kilograms ← examples

**density:** This is a *measured value* found by dividing mass by volume. The SI units are a metric of mass divided by a metric of volume. (g/ml) grams per milliliter or (g/cm<sup>3</sup>) grams per centimeter

**Density = mass / volume**                      **D=m/v**

1. Write formula
2. plug in numbers with units
3. box answer with units

Q1. If the mass of a piece of aluminum was 200g and the volume of the aluminum was 35 cm<sup>3</sup>, what is the density of the aluminum?

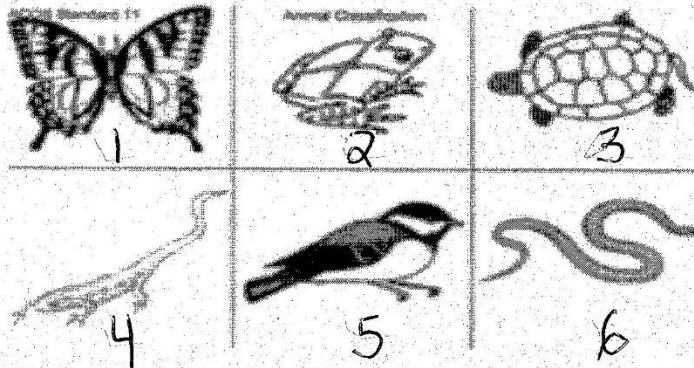
Q2. Steve found a strange material in his garage. It seemed lightweight, yet very sturdy. He was wondering if it could be used to float in his pool. The dimensions of the object were 30 cm in length, 5 cm in height, and 20 cm in width. Its mass was 400 grams. What is this materials density? Will it make a good float? Why or Why not?  
**Hint: the density of liquid water is 1 g/cm<sup>3</sup>**

Q3. Jennifer wanted to determine the density of oil. She poured 50 mL of the oil into a graduated cylinder. The graduate had a mass of 120 grams but with the oil in it, it had a mass of 143 grams. What is the density of the oil?

Basic Classification Skills 101:

For prep you must complete the following over break.

**Directions:** Classify the following images using questions that are answered by YES or NO. Place the numbers on the lines that



1. Write a **yes or no** question that separates the animals into two groups.

**Question** → Ex: Does the creature have wings?

Yes: butterfly and bird <-- list animals here ←Group 1

No: frog, turtle, lizard, snake <-- list animals here ←Group 2

2. Now write two more secondary **yes or no** questions that separates each of these **Groups** further into four groups.

butterfly and bird

**Question** → \_\_\_\_\_ for Group 1

Yes: \_\_\_\_\_ <-- list animals here ←Group 1A

No: \_\_\_\_\_ <-- list animals here ←Group 1B

frog, turtle, lizard, snake

**Question** → \_\_\_\_\_ for Group 2

Yes: \_\_\_\_\_ <-- list animals here ←Group 2A

No: \_\_\_\_\_ <-- list animals here ←Group 2B

3. Write another question(s) that can further **classify** and group(s) **Group 2A & Group 2B**

**Question** → \_\_\_\_\_ for Group 2A

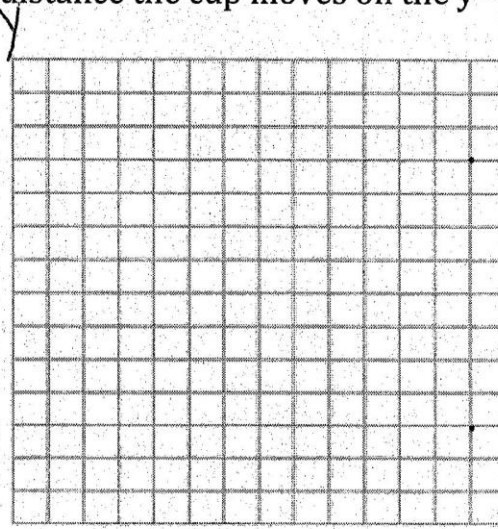
**Question** → \_\_\_\_\_ for Group 2B

**Momentum and Graphing 101: For prep you must complete the following over break.**

**Part III: Momentum**

**Directions:** You rolled a golf ball down a ramp at different release points the distance that the cup moved was recorded in the data table below. Graph the data -the release points should be placed on the x-axis and the distance the cup moves on the y-axis.

| Golf Ball's Release Point (cm) | Distance Cup Moved (cm) |
|--------------------------------|-------------------------|
| 10.0                           | 5.0                     |
| 15.0                           | 8.0                     |
| 20.0                           | 12.0                    |
| 25.0                           | 16.0                    |



If you were to repeat this experiment using a ping pong ball, what do you think would happen to the distance that the cup moves?

**Answer key to page 1**

Parts of a Microscope

