

# Part 1 Lab Safety & Magnification

Name:

Due:

## Part 1 Lesson 1 Lab Safety

Many laboratories contain significant \_\_\_\_\_, and the prevention of laboratory accidents requires great \_\_\_\_\_ and constant \_\_\_\_\_.

Handle everything as if it is \_\_\_\_\_.

- Pathogenic means that what your handling could be an infective agent that could cause \_\_\_\_\_.
- Clean your work area / table periodically with \_\_\_\_\_.

Avoid \_\_\_\_\_ and other bodily \_\_\_\_\_.

- Blood of any kind can expose you to a number of bloodborne \_\_\_\_\_: HIV, Hepatitis B, Hepatitis C, MRSA, and other transmittable diseases.

Use proper safety protection.

- \_\_\_\_\_ covering eyes.
- \_\_\_\_\_ (Non-latex) for allergy reasons.

Do not breathe vapors or put anything close to your \_\_\_\_\_ to \_\_\_\_\_ unless instructed.

- When smelling, do not \_\_\_\_\_ the object below your nose, make a \_\_\_\_\_ from one side to the other.

Please check \_\_\_\_\_ for cracks or chips prior to use.

- If glassware is broken please \_\_\_\_\_.

If you break glassware in the lab or suffer any kind of injury you should...

- A.) Immediately access the first aid kit and begin treating the injury and pick up any broken glass.
- B.) Fight through the pain and complete the lab activity.
- C.) Immediately contact the teacher.
- D.) Leave the room and visit the school nurse.
- E.) Blame your useless lab partners.

If you don't understand a lab direction you should...

- A.) Try things at random until something happens.
- B.) Skip that part of the procedure completely.
- C.) Blame the teacher
- D.) Ask the teacher for assistance.
- E.) Sit silently at your lab table until the teacher realizes that you're confused.

Clean spills from the \_\_\_\_\_ in.

- Apply paper towels over the spill, then, carefully starting from the outside, wipe in.

Please do not \_\_\_\_\_ or \_\_\_\_\_ in the classroom / During a lab day.

Keep \_\_\_\_\_ solutions and materials away from flame.

Know where the fire extinguisher is and how to use it. What does P.A.S.S. stand for?

**P**

**A**

**S**

**S**

## Part 1 Lesson 2 Lab Safety Continued

Keep \_\_\_\_\_ equipment away from water and vice versa.

Know where the \_\_\_\_\_ station is and how to use it. Where is the station?

Clean \_\_\_\_\_ before and after use to avoid harmful residue.

Handle \_\_\_\_\_ with care

-While handling chemicals in the lab, you want to read the \_\_\_\_\_  
\_\_\_\_\_ for safe handling.

- \_\_\_\_\_ chemical when not use.

Be \_\_\_\_\_ in your measuring of reagents and chemicals.

Never \_\_\_\_\_ towards yourself or others.

<p>When you have finished a lab investigation you should...</p> <p>A.) Clean your work area according to the teacher.          B.) Wash your hands with soap and water.          C.) Return equipment to the proper area.          D.) Work on any questions from the lab that need answering.          E.) All of the above.</p>	<p>When your group has completed a lab activity you should...</p> <p>A.) Clean your lab table and dispose of the materials according to your teacher.          B.) Throw out all of your materials in the waste bin.          C.) Pour everything into the sink and run and the water.          D.) Take any extra materials home with you.          E.) Leave class and let your lab partners deal with the clean-up.</p>
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### Quiz Lab Safety 1-10

1)	2)	3)
4)	5)	6)
7)	8)	9)
10)	*11) Bonus	Use _____ Sense

Please view the picture and answer the questions below about laboratory safety.



List 6 unsafe activities shown in the illustration and the person making them? Why is it unsafe?

Name: _____ Unsafe Activity:	Name: _____ Unsafe Activity:	Name: _____ Unsafe Activity:
Name: _____ Unsafe Activity:	Name: _____ Unsafe Activity:	Name: _____ Unsafe Activity:

List three items in the illustration that are there for the safety of the students in the lab.

1.) \_\_\_\_\_ 2.) \_\_\_\_\_ 3.) \_\_\_\_\_

What are three things shown in the lab that should not be there?

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Where are safety features in your own classroom?

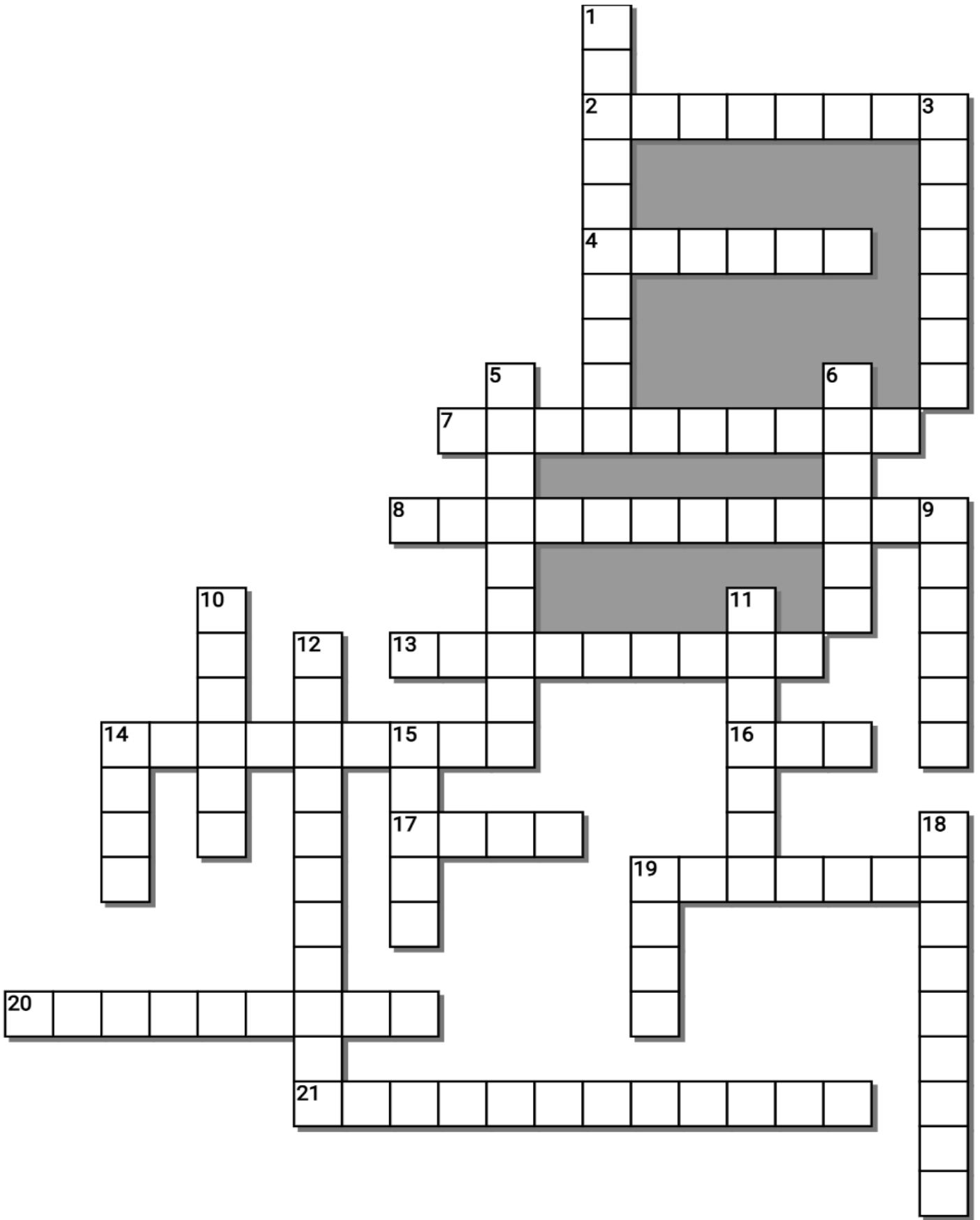
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**Across**

2. Backpacks and other belongings that could become a \_\_\_\_\_ hazard should be stored away.
4. Use proper safety protection. \_\_\_\_\_ (Non-latex) for allergy reasons.
7. Keep \_\_\_\_\_ equipment away from water and vice versa.
8. While handling chemicals in the lab, you want to read the \_\_\_\_\_ for safe handling.
13. Please check \_\_\_\_\_ for cracks or chips prior to use.
14. Keep \_\_\_\_\_ solutions and materials away from flame.
16. \_\_\_\_\_ chemicals when not in use
17. No \_\_\_\_\_ toed footwear on lab day!
19. Know where the \_\_\_\_\_ station is and how to use it.
20. Many laboratories contain significant risks, and the prevention of laboratory accidents requires great care and constant V\_\_\_\_\_.
21. Know where the fire \_\_\_\_\_ is and how to use it.

**Down**

1. Handle everything as if it's \_\_\_\_\_/ It can cause a disease
3. Use proper safety protection. \_\_\_\_\_ covering eyes. Gloves (Non-latex) for allergy reasons.
5. Clean \_\_\_\_\_ before and after use to avoid harmful residue.
6. Do not breathe \_\_\_\_\_ or put anything close to your nose to smell unless instructed.
9. Clean \_\_\_\_\_ from the outside in.
10. Avoid cutting \_\_\_\_\_ yourself or others
11. Be \_\_\_\_\_ in your measuring of reagents and chemicals.
12. Most Importantly! Use C\_\_\_\_\_
14. Please do not eat \_\_\_\_\_ or drink in the classroom.
15. Avoid \_\_\_\_\_ and other bodily fluids.
18. Handle \_\_\_\_\_ with care
19. Don't leave materials next to the \_\_\_\_\_ of tables to avoid slips and spills.

Notes

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-----Teacher can remove word bank to the make the puzzle more challenging-----

**Possible Answers**

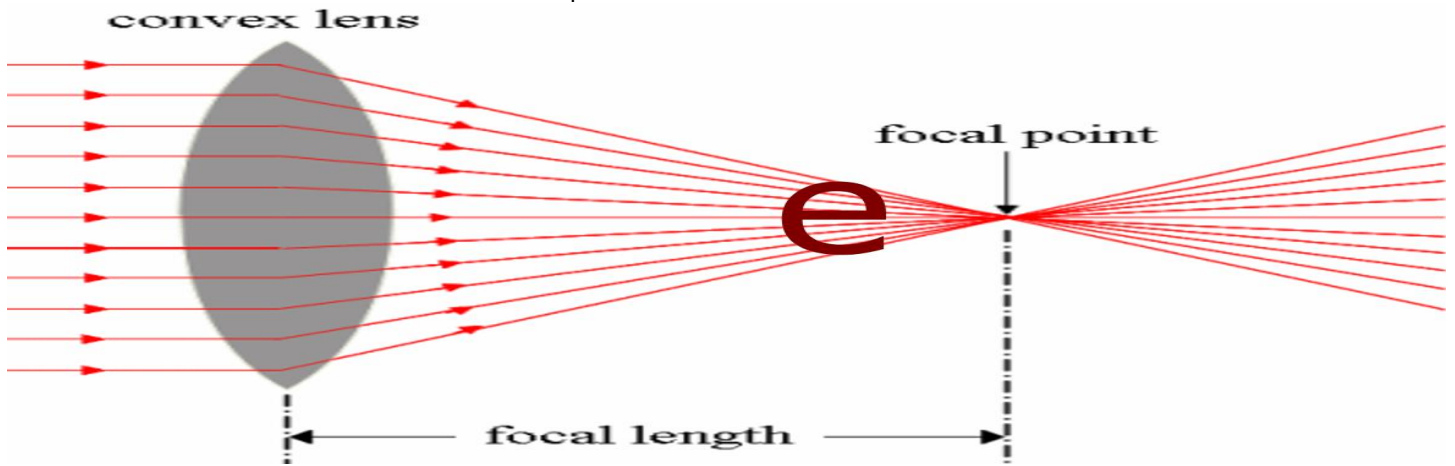
BLOOD, CAP, CHEMICALS, COMMONSENSE, EDGE, GLOVES, GOGGLES, OPEN, PATHOGENIC, SPILLS, TOWARD, VAPORS, ELECTRICAL , EXTINGUISHER, EYEWASH , FLAMMABLE, FOOD, GLASSWARE , GLASSWARE , INSTRUCTIONS, PRECISE, TRIPPING , VIGILANCE





\_\_\_\_\_ lens: This type of lens bends the light that goes through it toward a focal point. The light spreads out again past this focal point. (Image reverses)

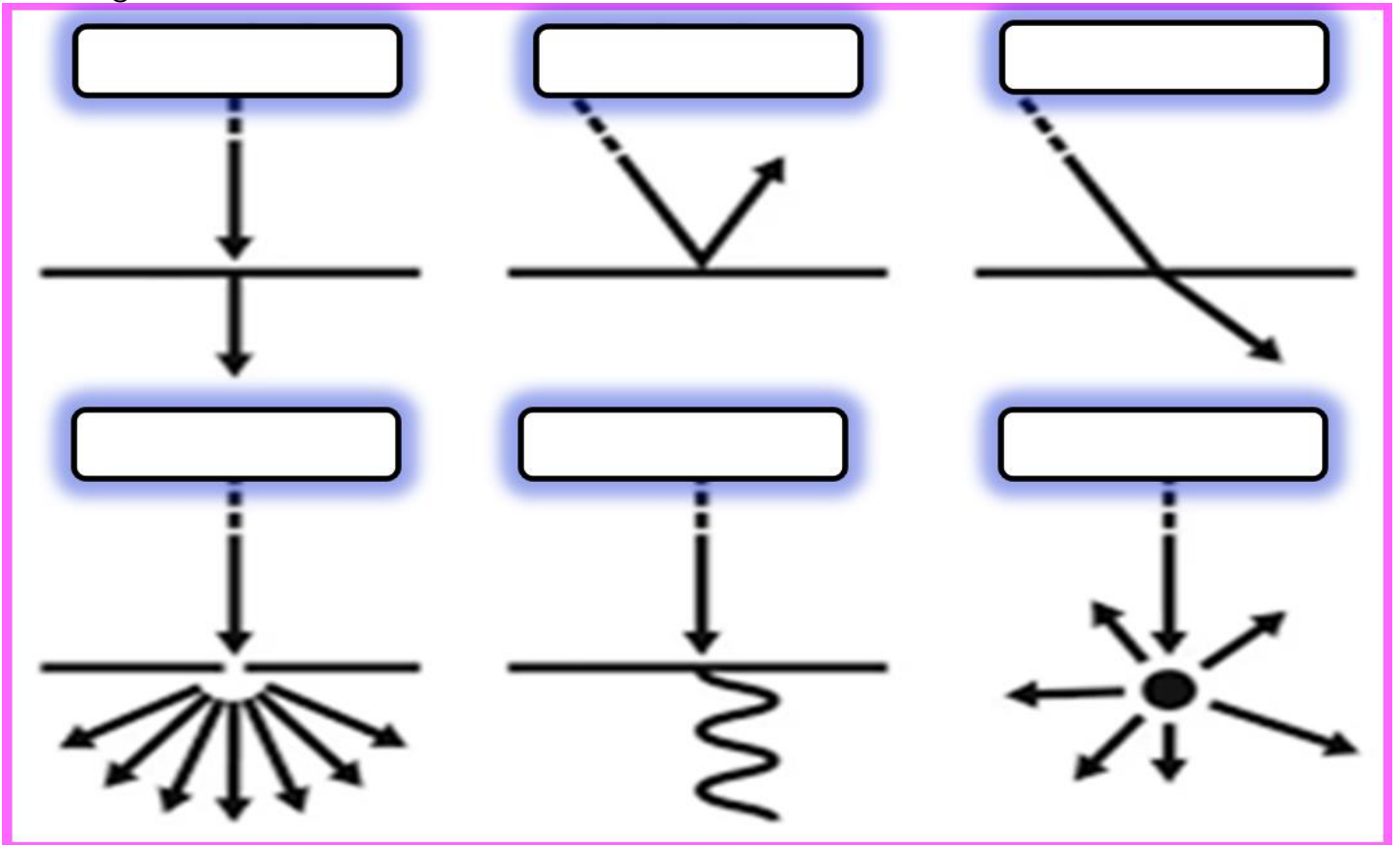
Record the letter "e" after the focal point?



A magnifying lens uses a \_\_\_\_\_ lens to magnify the specimen.  
 -Focusing can occur by \_\_\_\_\_ the object or the lens.

Light transmission refers to the amount of light that can successfully \_\_\_\_\_ glass and other types of materials.

When lights interacts with a medium, it can have...



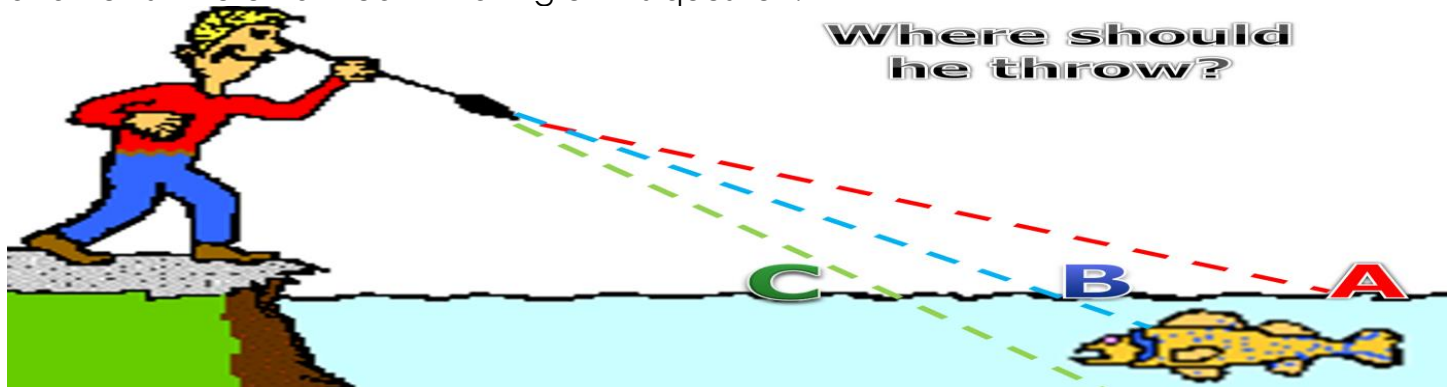


Reflection involves a \_\_\_\_\_ of waves when they bounce off a barrier.

Refraction is the \_\_\_\_\_ of light (it also happens with sound, water and other waves) as it passes from one transparent substance into another.

This bending by refraction makes it possible for us to have lenses, magnifying glasses, prisms and rainbows. Even our eyes depend upon this bending of light.

Where should he throw if he's trying to catch the fish. Explain below- It's a survival situation and no fish were harmed in making of this question.



\_\_\_\_\_ occurs when photons from incident light hit atoms and molecules and cause them to vibrate.

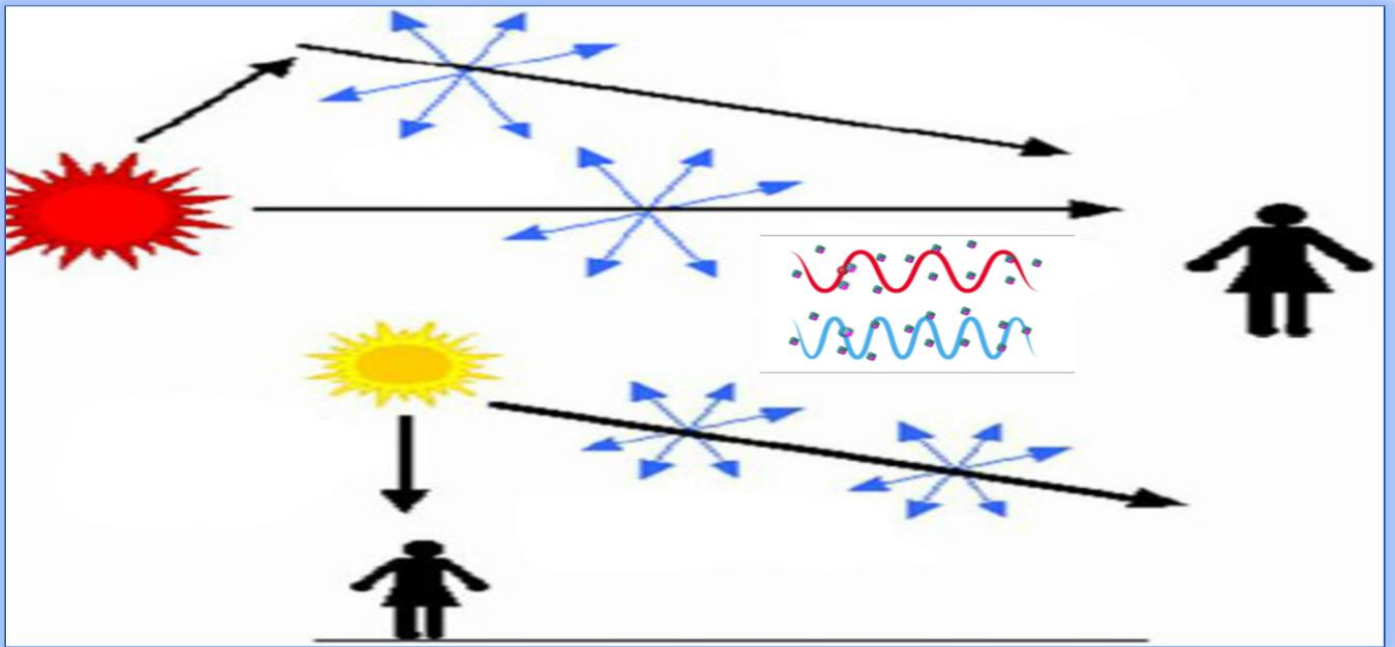
The more an object's molecules move and vibrate, the \_\_\_\_\_ it becomes. This heat is then emitted from the object as thermal energy.

Light \_\_\_\_\_ by particles is the process by which small particles scatter light causing optical phenomena such as the blue color of the sky, and halos.

Why is the sky blue? Why do sunsets look the way they do? The diagram below can assist you when you complete it later in the lesson.



Please add information to describe why sunsets are colored / red, and the sky is blue when the sun is directly overhead.



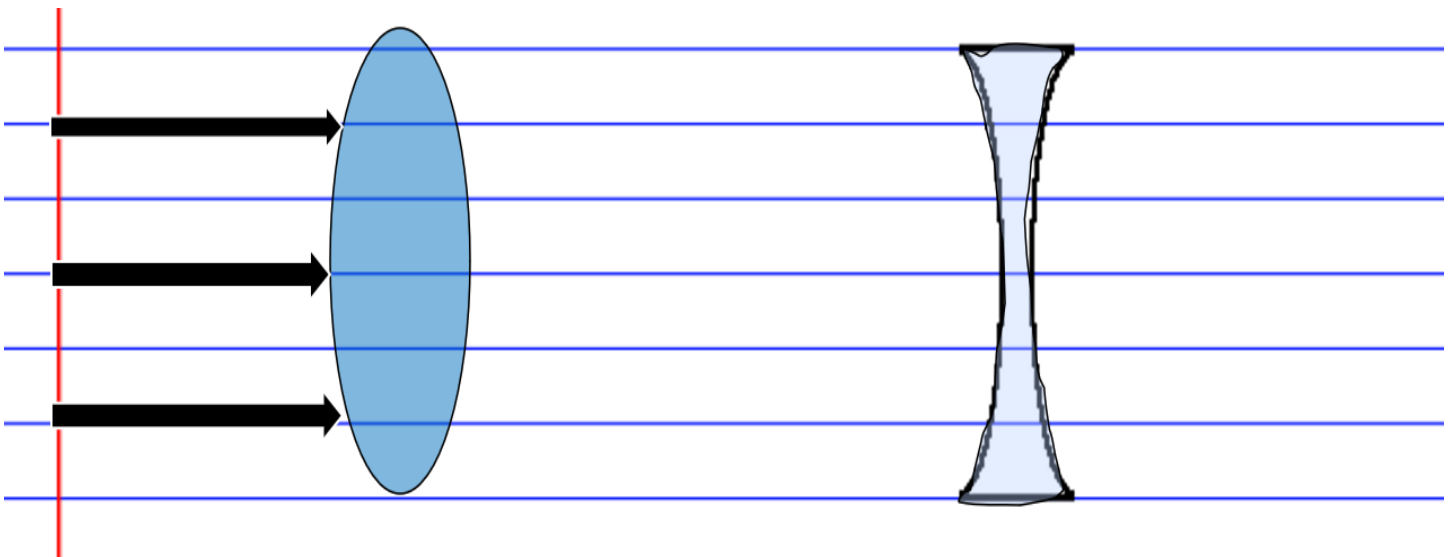
\_\_\_\_\_ involves a change in direction of waves as they pass through an opening or around a barrier in their path.

Wave \_\_\_\_\_ is the phenomenon that occurs when two waves meet while traveling along the same medium.

The interference of waves causes the medium to take on a shape that results from the net effect of the two individual waves upon the particles of the medium.

### Part 1 Lesson 4 Optics

Please sketch how light will move through these lenses. Which is converging light? And which is diverging light. Please label each lens as well.

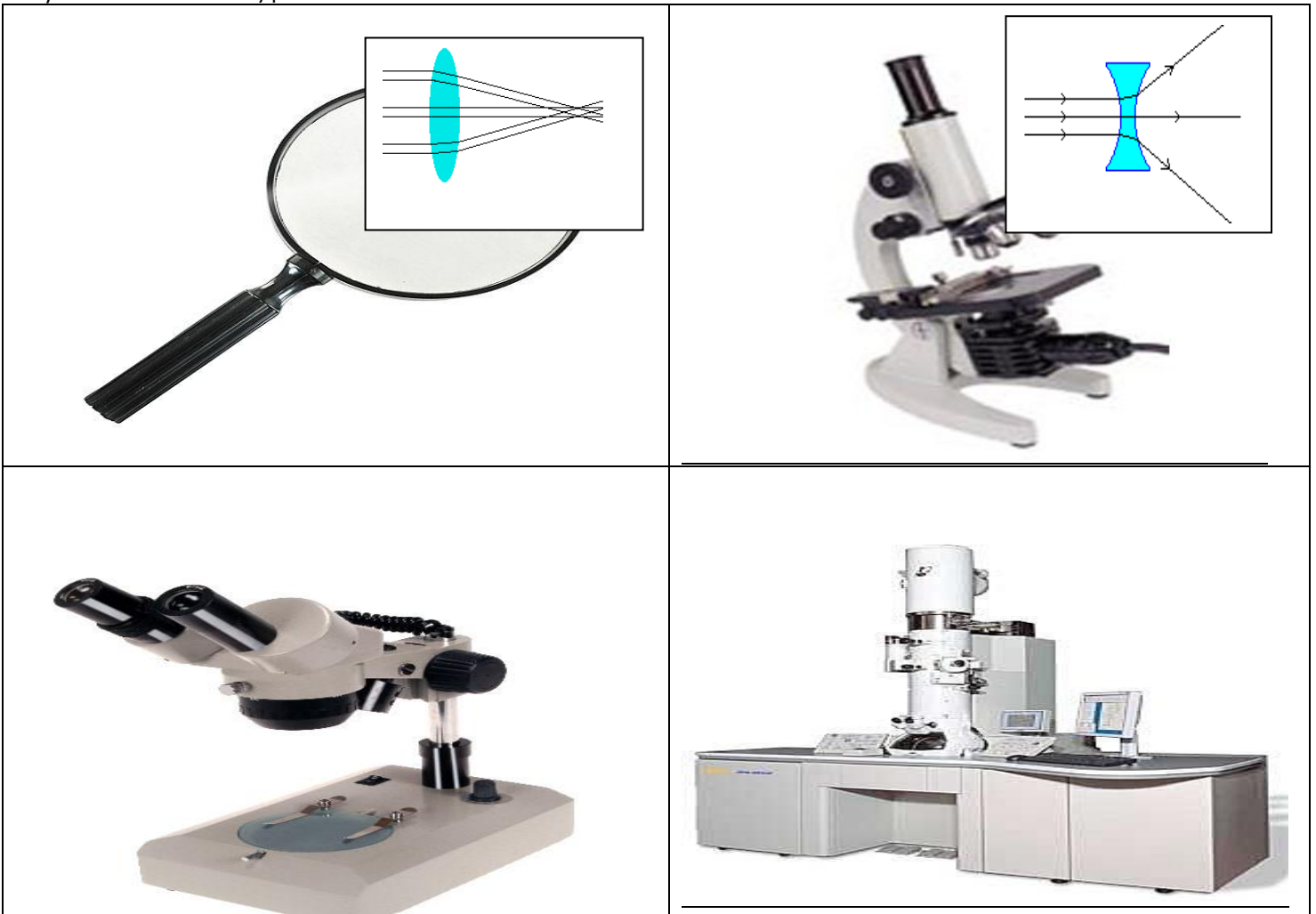


Use a magnification device to look at a penny? What can you tell me about the penny below?



**Warning! 3 Part Question!** Check each diamond after completion!

- ◇1) Record the name of each type of magnification device below.
- ◇2) Describe specifics about each of the pictures below (what type of specimen does it magnify).
- ◇3) Describe the types of lens in the smaller boxes



**Part 1 Lesson 5 Microscopes**

Please label the parts of the compound light microscope below. Use the word bank below. Cross off the word when used.

1.

2.

3.

4.

5.

6.

7.

8.

9.

10.

11.

12.

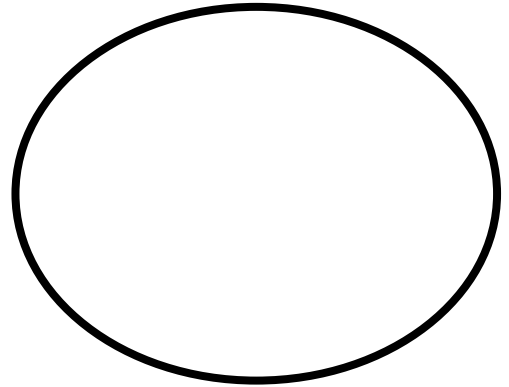
13.

14.

Base, Eyepiece, Light Source, Arm, Body Tube, Stage, Stage Clips, Coarse Adjustment Knob, Diaphragm, Revolving Nose piece, Fine Adjustment knob, Low Power Objective Lens, Medium Power Lens, High Power Lens

Please record three things that need to be done when storing this microscope. How should you hold it when traveling?

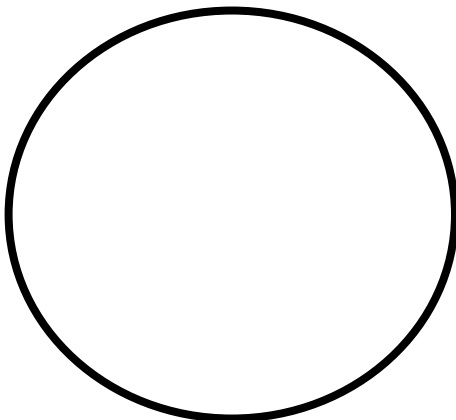
What type of microscope is this? What kind of specimens does it use?



Magnification = \_\_\_ x \_\_\_ = \_\_\_

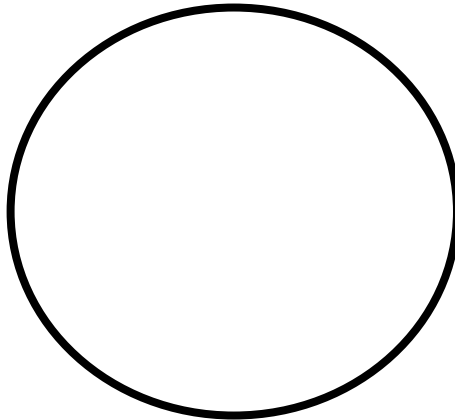
Please make a quick sketch of a specimen found in pond water using a depressed slide or from a prepared slide.

Low Power



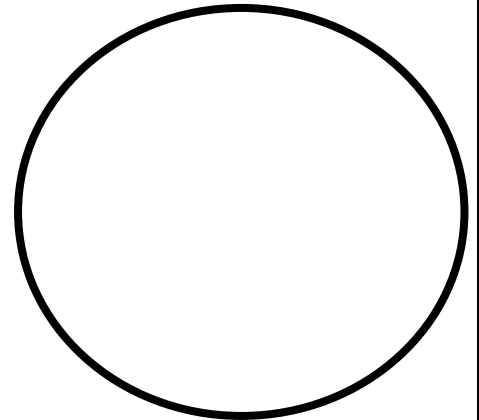
Magnification = \_\_\_ x \_\_\_ = \_\_\_

Medium Power



Magnification = \_\_\_ x \_\_\_ = \_\_\_

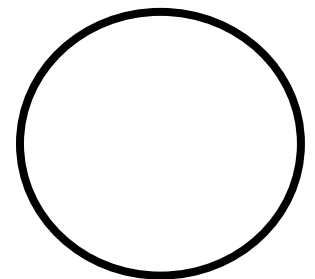
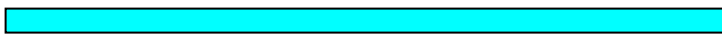
High Power



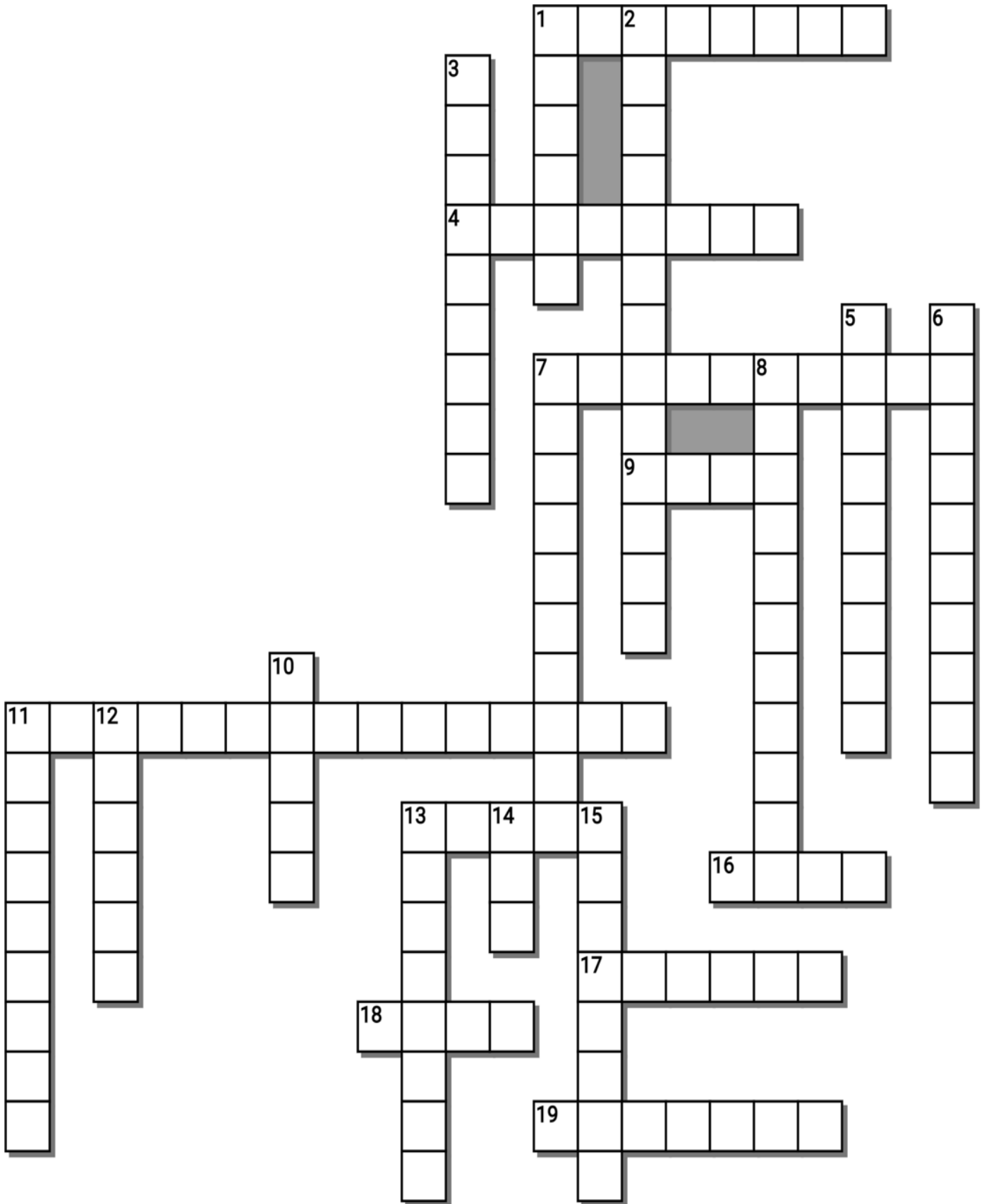
Magnification = \_\_\_ x \_\_\_ = \_\_\_

Part 1 Lesson 6 Microscopes Wrap-Up

In this space please draw how to prepare a wet mount slide. Draw what you see on the right after making a wet mount slide. What's the magnification?



The electron microscope uses a beam of \_\_\_\_\_ and their wave-like characteristics to magnify an object's image, unlike the optical microscope that uses visible light to magnify images.





**Across**

1. A \_\_\_\_\_ microscope is an upright microscope that uses two sets of lenses (a compound lens system) to obtain higher magnification than a stereo microscope.
4. The \_\_\_\_\_ lens is 10x –That means it multiplies the object ten times
7. A \_\_\_\_\_ is a laboratory instrument used to examine objects that are too small to be seen by the naked eye.
9. Body \_\_\_\_\_: Connects the eyepiece to the objective lenses
11. To make something smaller in appearance.
13. The flat platform where you place your slides.
16. A transparent optical device used to converge or diverge transmitted light.
17. \_\_\_\_\_ and Fine Focus knobs are used to focus the microscope.
18. Do not use the coarse adjustment when the microscope is using the \_\_\_\_\_ power lens.
19. It is a diverging lens, meaning that it spreads out light rays that have been refracted through it.

**Down**

1. \_\_\_\_\_ lens: A lens that bends the light that goes through it toward a focal point
2. The act of expanding something in apparent size.
3. \_\_\_\_\_ Lenses: They almost always consist of 4x, 10x, 40x and 100x powers.
5. Revolving \_\_\_\_\_: This is the part of the microscope that holds two or more objective lenses and can be rotated to easily change power.
6. The bending of a wave when it enters a medium where its speed is changed.
7. A \_\_\_\_\_ lens uses a single lens to magnify the specimen.
8. A \_\_\_\_\_ is a device for viewing a pair of separate images, depicting left-eye and right-eye views of the same scene, as a single three-dimensional image.
10. Magnification works because of \_\_\_\_\_
11. Many microscopes have a rotating disk under the stage. This \_\_\_\_\_ has different sized holes and is used to vary the intensity and size of the cone of light that is projected upward into the slide.
12. A concave \_\_\_\_\_ is a mirror that is curved inward in the middle.
13. Light travels in a \_\_\_\_\_ line
14. Supports the tube and connects the microscope to the base
15. An \_\_\_\_\_ microscope is a microscope that uses a beam of accelerated electrons as a source of illumination.

-----Teacher can remove this word bank to make the crossword more challenging-----

**Possible Answers**

ARM, COARSE, CONCAVE, CONVEX, DEMAGNIFICATION, ELECTRON, HIGH, LENS, LIGHT, MAGNIFICATION, NOSEPIECE, OBJECTIVE, REFRACTION, STAGE, TUBE, COMPOUND, DIAPHRAGM, EYEPIECE, MAGNIFYING, MICROSCOPE, MIRROR, STEREOSCOPE, STRAIGHT

# Part 1 Review Game

1-20 = 5 pts  
 \*20-\*25 \* = Bonus + 1 pt,  
 (Secretly write owl in correct space +1 pt)  
 Final Question = 5 pt wager

Lesson 7

Name: \_\_\_\_\_  
 Due: Today

Score \_\_\_\_ / 100

SHOULD I	IT BURNS	MICRO MANAGE	BEAM ME UP	SUPER SIZE ME Bonus round 1pt each
1)	6)	11)	16)	*21)
2)	7)	12)	17)	*22)
3)	8)	13)	18)	*23)
4)	9)	14)	19)	*24)
5)	10)	15)	20)	*25)

Final Question Wager \_\_\_\_ /5 Answer: \_\_\_\_\_

# Part 1 Lab Safety & Magnification

Name:

Due:

## Part 1 Lesson 1 Lab Safety

Many laboratories contain significant **risks**, and the prevention of laboratory accidents requires great **care** and constant **vigilance**.

Handle everything as if it is **pathogenic**.

- Pathogenic means that what your handling could be an infective agent that could cause **diseases**.
- Clean your work area / table periodically with **disinfectants**.

Avoid **blood** and other bodily **fluid**.

- Blood of any kind can expose you to a number of bloodborne **pathogens**: HIV, Hepatitis B, Hepatitis C, MRSA, and other transmittable diseases.

Use proper safety protection.

- Goggles** covering eyes.
- Gloves** (Non-latex) for allergy reasons.

Do not breathe vapors or put anything close to your **nose** to **smell** unless instructed.

- When smelling, do not **hold** the object below your nose, make a **pass** from one side to the other.

Please check **glassware** for cracks or chips prior to use.

- If glassware is broken please **contact the teacher**.

If you break glassware in the lab or suffer any kind of injury you should...

- Immediately access the first aid kit and begin treating the injury and pick up any broken glass.
- Fight through the pain and complete the lab activity.
- Immediately contact the teacher.**
- Leave the room and visit the school nurse.
- Blame your useless lab partners.

If you don't understand a lab direction you should...

- Try things at random until something happens.
- Skip that part of the procedure completely.
- Blame the teacher
- Ask the teacher for assistance.**
- Sit silently at your lab table until the teacher realizes that you're confused.

Clean spills from the **outside** in.

- Apply paper towels over the spill, then, carefully starting from the outside, wipe in.

Please do not **eat food** or **drink** in the classroom / During a lab day.

Keep **flammable** solutions and materials away from flame.

Know where the fire extinguisher is and how to use it. What does P.A.S.S. stand for?



PULL PIN	AIM at Base of Fire	Squeeze Trigger	Sweep Side to Side
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### Part 1 Lesson 2 Lab Safety Continued

Keep **electrical** equipment away from water and vice versa.

Know where the **eyewash** station is and how to use it. Where is the station?

Clean **glassware** before and after use to avoid harmful residue.

Handle **chemicals** with care

-While handling chemicals in the lab, you want to read the **instructions / safety information** for safe handling.

-Cap **chemical** when not use.

Be **precise** in your measuring of reagents and chemicals.

Never **cut** towards yourself or others.

<p>When you have finished a lab investigation you should...</p> <p>A.) Clean your work area according to the teacher.          B.) Wash your hands with soap and water.          C.) Return equipment to the proper area.          D.) Work on any questions from the lab that need answering.  <b>E.) All of the above.</b></p>	<p>When your group has completed a lab activity you should...</p> <p><b>A.) Clean your lab table and dispose of the materials according to your teacher.</b>          B.) Throw out all of your materials in the waste bin.          C.) Pour everything into the sink and run the water.          D.) Take any extra materials home with you.          E.) Leave class and let your lab partners deal with the clean-up.</p>
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### Quiz Lab Safety 1-10

1) C.) Keep a clean work station and do everything possible to avoid contact with pathogens.	2) B.) Report broken glassware to the teacher so it can be safely removed and the area cleaned.	3) A.) Stay away from it and alert the teacher so that he / she can clean the area.
4) C.) Place a paper towel over the spill and then wipe up the spill from the outside in.	5) C.) Food and Drink.	6) B.) Flammable materials were not set away from the flame.
7) C.) Find key, pull it out, stand back, pull handle, point and shoot until fire is extinguished. PASS	8) B.) The glassware should be cleaned prior to use.	9) A.) Goggles and Gloves.
10) C.) Avoid Commonsense whenever possible.	*11) Bonus Beaker from the Muppets	Use <b>Common</b> Sense

Please view the picture and answer the questions below about laboratory safety.



List 6 unsafe activities shown in the illustration and the person making them? Why is it unsafe?

Name: <b>Bob</b> Unsafe Activity: <b>Sitting on lab desk, broken glassware and not contacting the teacher, scissor in outlet</b>	Name: <b>Tim and Ray</b> Unsafe Activity: <b>Inappropriate lab behavior. No horseplay or fooling around, Clean all spills</b>	Name: <b>May</b> Unsafe Activity: <b>She should be wearing eye protection and gloves</b>
Name: <b>Joe</b> Unsafe Activity: <b>Don't drink chemicals</b>  <b>Duke – Don't use the sun to view through a microscope, it could damage your eyes</b>	Name: <b>Jim</b> Unsafe Activity: <b>Don't drink in the lab</b>  <b>Know where the safety gear is located in the lab</b>	Name: <b>Sue</b> Unsafe Activity: <b>Keep hair away from flames. Please put hair back.</b>  <b>John-Don't wash electronics</b>

List three items in the illustration that are there for the safety of the students in the lab.

1.) **Eye Wash** 2.) **First Aid Kit** 3.) **Fire Extinguisher and Blanket**

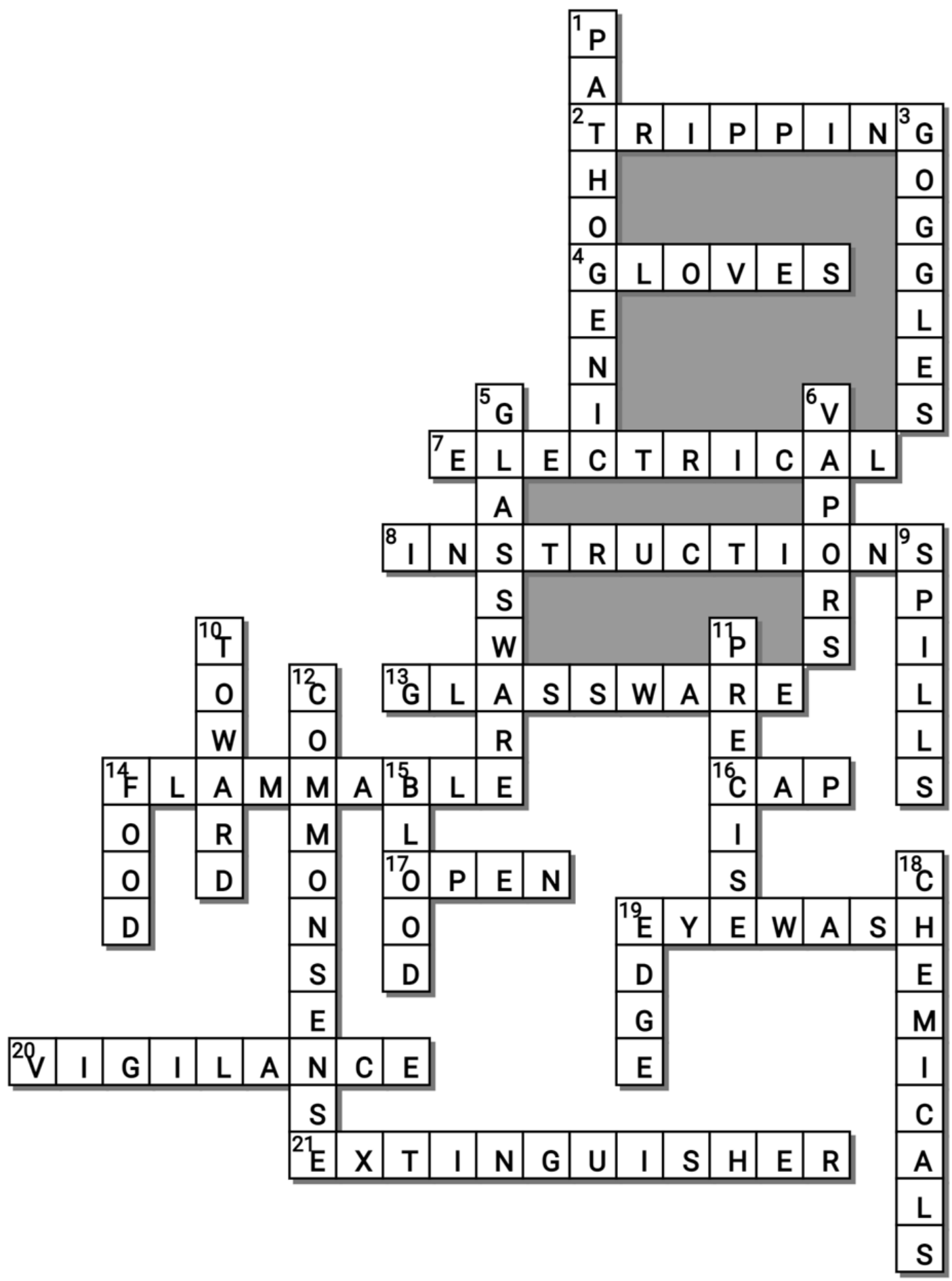
What are three things shown in the lab that should not be there?

<b>Food and Drink</b>	<b>Broken Glassware</b>	<b>Snake?</b>
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Where are safety features in your own classroom?

**Answers will vary**





**Across**

2. Backpacks and other belongings that could become a \_\_\_\_\_ hazard should be stored away.
4. Use proper safety protection. \_\_\_\_\_ (Non-latex) for allergy reasons.
7. Keep \_\_\_\_\_ equipment away from water and vice versa.
8. While handling chemicals in the lab, you want to read the \_\_\_\_\_ for safe handling.
13. Please check \_\_\_\_\_ for cracks or chips prior to use.
14. Keep \_\_\_\_\_ solutions and materials away from flame.
16. \_\_\_\_\_ chemicals when not in use
17. No \_\_\_\_\_ toed footwear on lab day!
19. Know where the \_\_\_\_\_ station is and how to use it.
20. Many laboratories contain significant risks, and the prevention of laboratory accidents requires great care and constant V\_\_\_\_\_.
21. Know where the fire \_\_\_\_\_ is and how to use it.

**Down**

1. Handle everything as if it's \_\_\_\_\_/ It can cause a disease
3. Use proper safety protection. \_\_\_\_\_ covering eyes. Gloves (Non-latex) for allergy reasons.
5. Clean \_\_\_\_\_ before and after use to avoid harmful residue.
6. Do not breathe \_\_\_\_\_ or put anything close to your nose to smell unless instructed.
9. Clean \_\_\_\_\_ from the outside in.
10. Avoid cutting \_\_\_\_\_ yourself or others
11. Be \_\_\_\_\_ in your measuring of reagents and chemicals.
12. Most Importantly! Use C\_\_\_\_\_
14. Please do not eat \_\_\_\_\_ or drink in the classroom.
15. Avoid \_\_\_\_\_ and other bodily fluids.
18. Handle \_\_\_\_\_ with care
19. Don't leave materials next to the \_\_\_\_\_ of tables to avoid slips and spills.

Notes

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-----Teacher can remove word bank to the make the puzzle more challenging-----

**Possible Answers**

BLOOD, CAP, CHEMICALS, COMMONSENSE, EDGE, GLOVES, GOGGLES, OPEN, PATHOGENIC, SPILLS, TOWARD, VAPORS, ELECTRICAL , EXTINGUISHER, EYEWASH , FLAMMABLE, FOOD, GLASSWARE , GLASSWARE , INSTRUCTIONS, PRECISE, TRIPPING , VIGILANCE

## Part 1 Lesson 3 Magnification

Magnification: The act of **expanding** something in apparent size.

De-magnification: To make something **smaller** in appearance.

Describe two uses of magnification on the lines below. Write a couple of complete sentences that describe the specifics of the use.

**Example - Magnification enables precision work to be done with greater efficiency and ease. Examples include surgery, dentistry, ophthalmology, jewelry trade, gemology, and technology. Magnification is also important for daily life in the form of eyeglasses that help correct vision, and let's astronomers see deep into the cosmos using advanced space telescopes.**

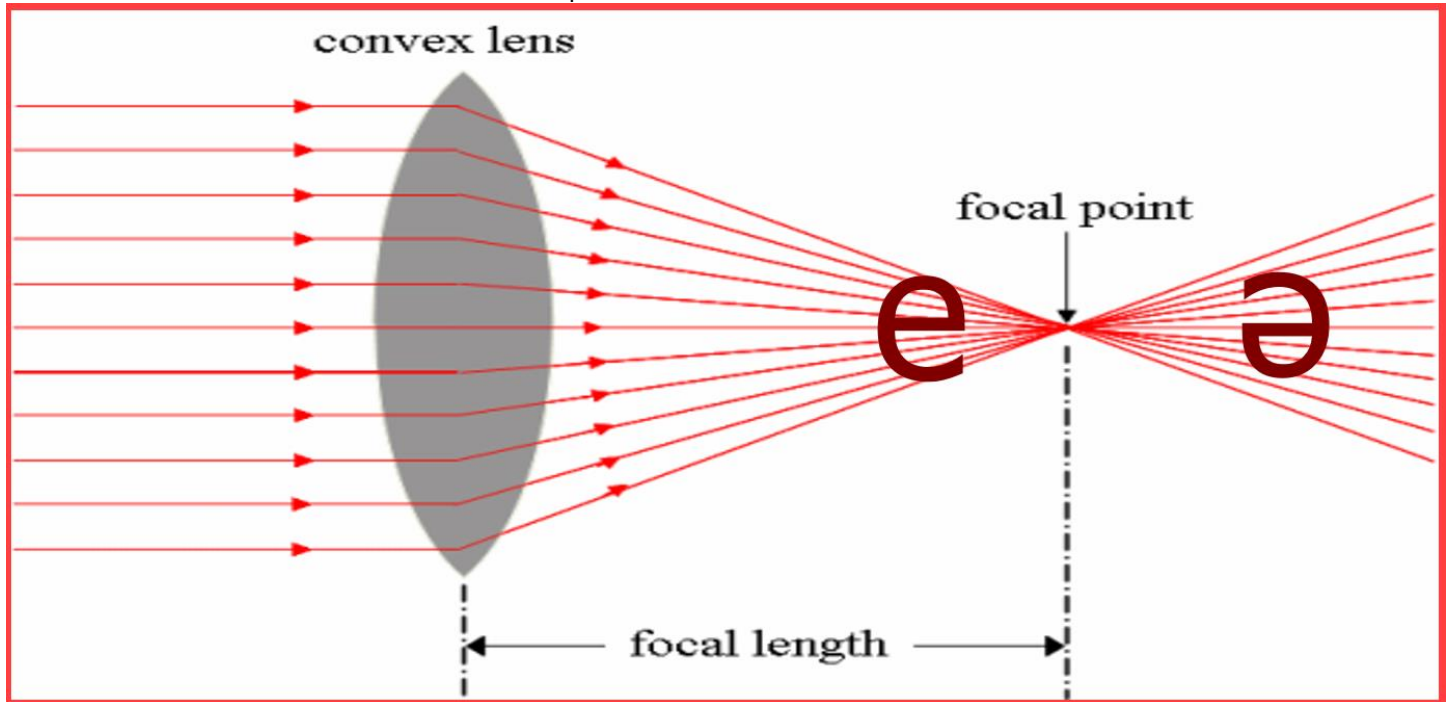
Magnification works because of **light**. Without light, you would not be able to see any image, magnified or not.

Where is the hidden Owl? Circle It?



**Convex lens:** This type of lens bends the light that goes through it toward a focal point.

Record the letter "e" after the focal point?



A magnifying lens uses a **single** lens to magnify the specimen.

-Focusing can occur by **moving** the object or the lens. The light spreads out again past this focal point. (Image reverses)

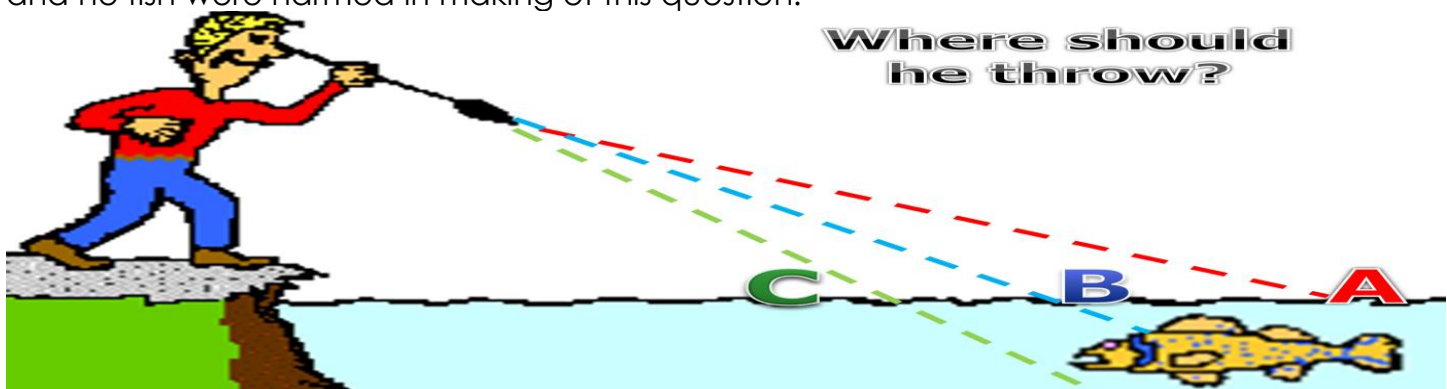
Magnification deals **with light**.

-Light travels in a straight line (**transmission**) until it hits something.

-Light can do a few things such as be **absorbed, reflected / scattered, interference**.

Refraction: The **bending** of a wave when it enters a medium where its speed is changed.

Where should he throw if he's trying to catch the fish. Explain below- It's a survival situation and no fish were harmed in making of this question.



He should throw at letter C to get the fish due to the effects of refraction.

Wave **Reflection**.

-Reflection occurs when light or ocean waves change directions as a result of "bouncing off" a surface like a mirror.

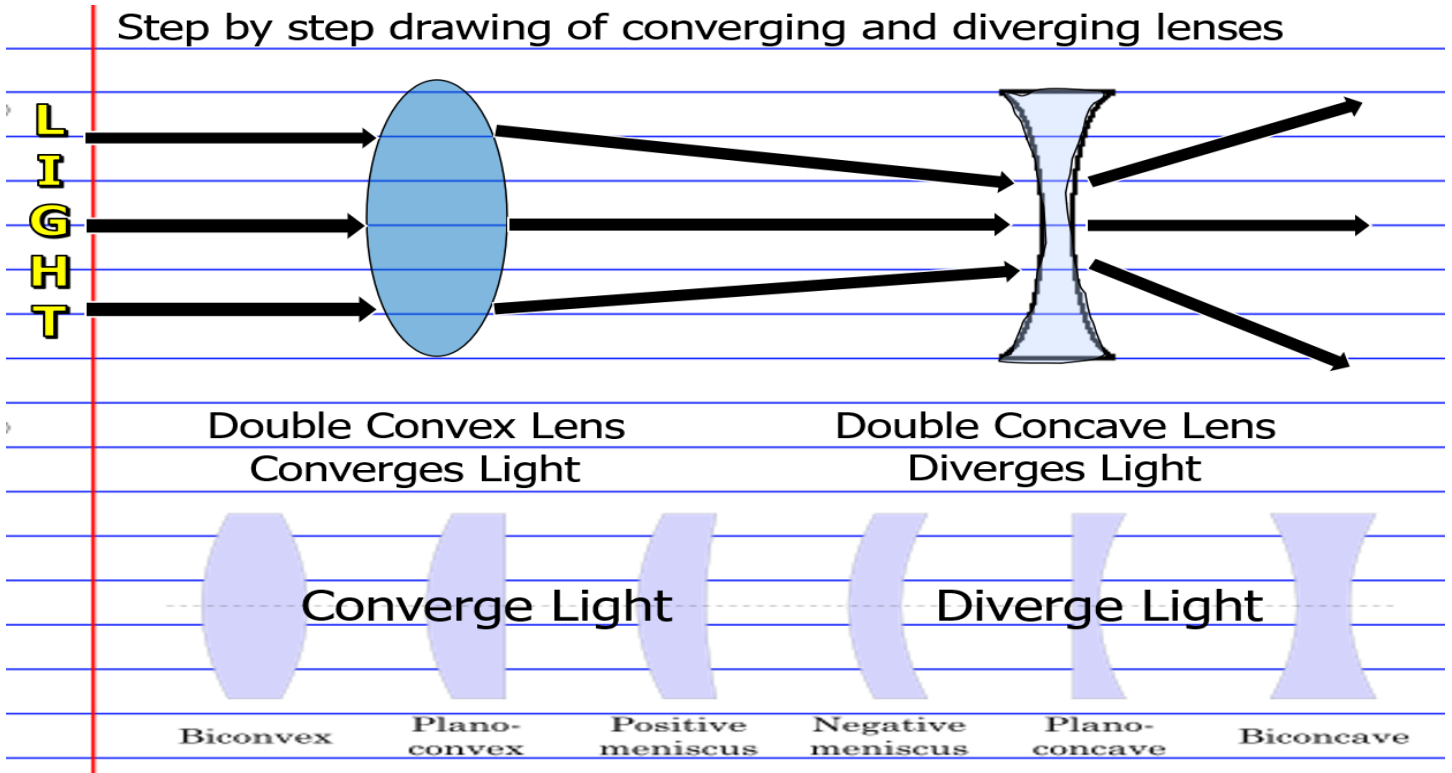
Diffraction: **Bending** of waves.



Scattering: **Bouncing** off of something

Part 1 Lesson 4 Optics

Please sketch how light will move through these lenses. Which is converging light? And which is diverging light. Please label each lens as well.



Use a magnification device to look at a penny? What can you tell me about the penny below?

- Look for a single letter below year.
  - D, meaning the coin was minted in Denver
  - S, meaning it came from San Francisco, and is an older penny, since the city doesn't make coins for circulation anymore.
  - No letter, meaning it's from Philadelphia, PA

**In 1918, the initials V.D.B were added to the penny.**

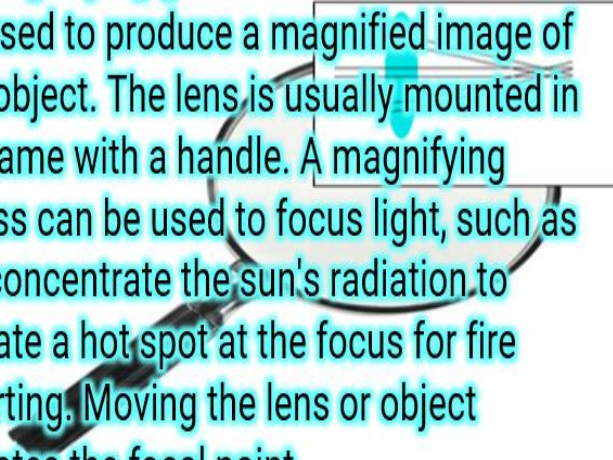
**Warning! 3 Part Question!** Check each diamond after completion!

◇1) Record the name of each type of magnification device below.

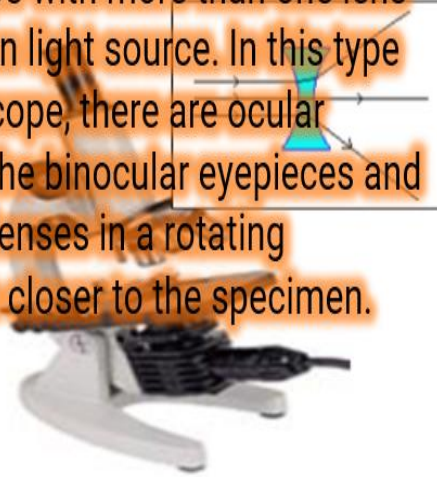
◇2) Describe specifics about each of the pictures below (what type of specimen does it magnify).

◇3) Describe the types of lens in the smaller boxes

A magnifying glass is a convex lens that is used to produce a magnified image of an object. The lens is usually mounted in a frame with a handle. A magnifying glass can be used to focus light, such as to concentrate the sun's radiation to create a hot spot at the focus for fire starting. Moving the lens or object creates the focal point.



A compound light microscope is a microscope with more than one lens and its own light source. In this type of microscope, there are ocular lenses in the binocular eyepieces and objective lenses in a rotating nosepiece closer to the specimen.



A stereoscope is a device for viewing a stereoscopic pair of separate images, depicting left-eye and right-eye views of the same scene, as a single three-dimensional image



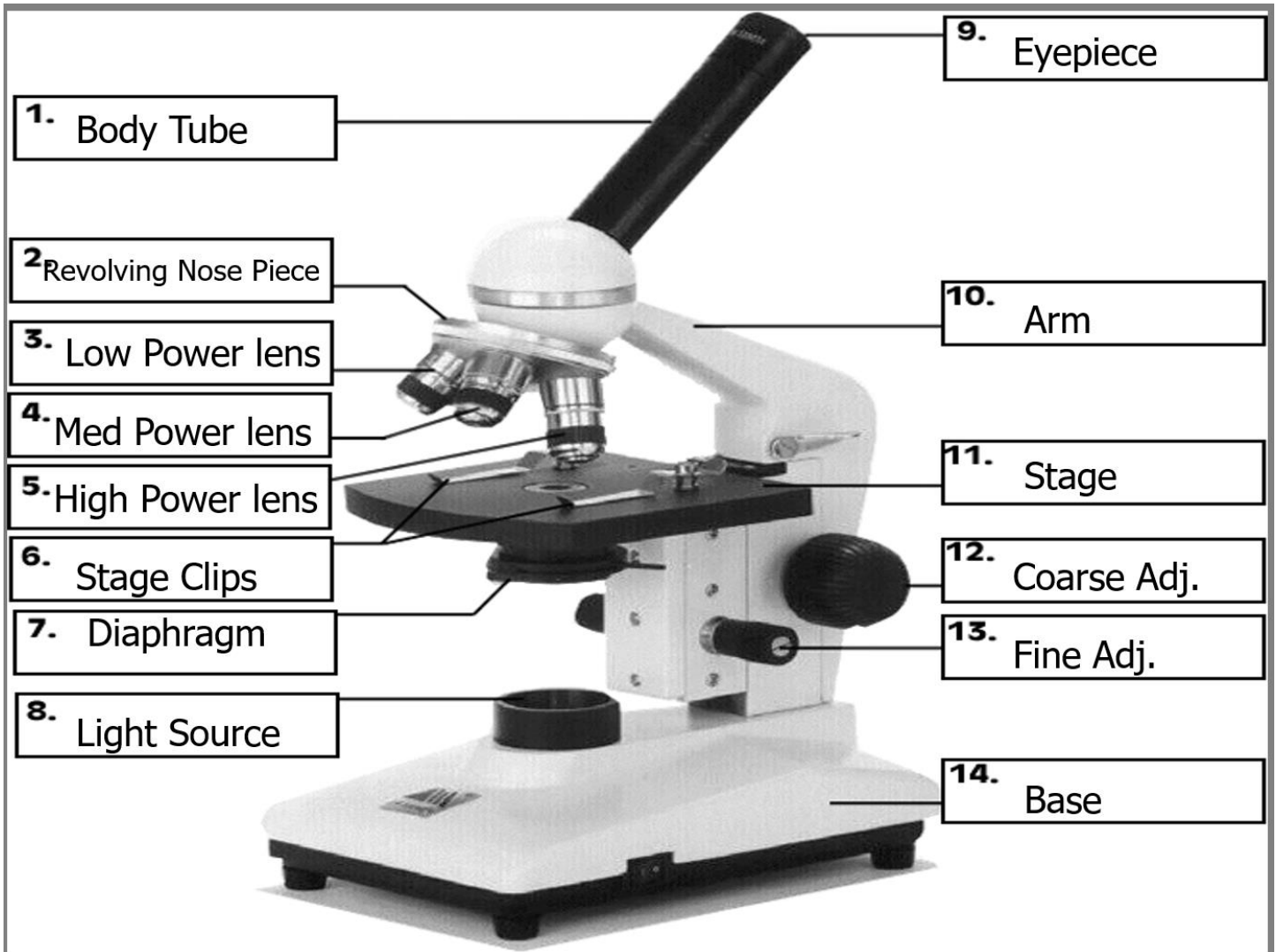
The electron microscope is a microscope that can magnify very small details with high resolving power due to the use of electrons rather than light to scatter off material, magnifying at levels up to 500,000 times.



### Part 1 Lesson 5 Microscopes

Please label the parts of the compound light microscope below. Use the word bank below. Cross off the word when used.





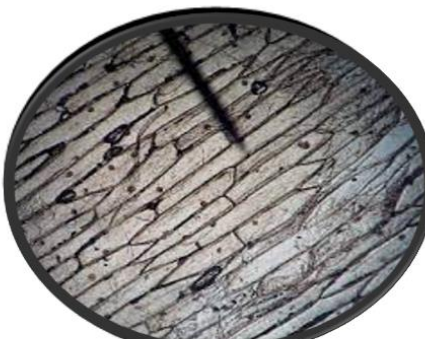

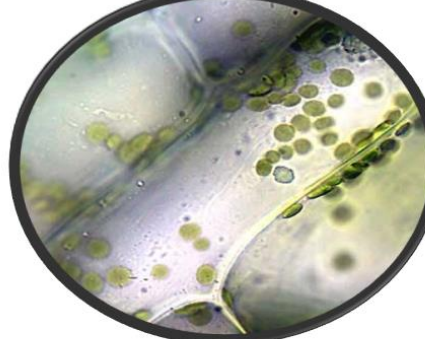
Please record three things that need to be done when storing this microscope.  
How should you hold it when traveling?

1. Put the low power objective into place.
2. Lower the stage.
3. Take the slide off the stage.
4. Turn the microscope off.
5. Wrap the cord.
6. Cover and push the microscope to the back of the lab bench (to a safe location)
7. Clean lab station.



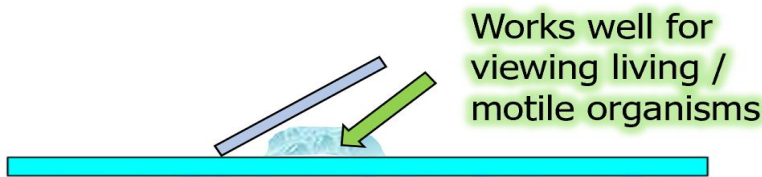
Please make a quick sketch of a specimen found in pond water using a depressed slide or from a prepared slide.

Please make a quick sketch of a specimen found in pond water using a depressed slide or from a prepared slide.

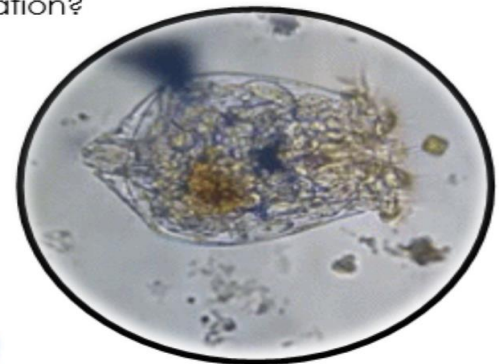
Low Power	Medium Power	High Power
		
<p>Magnification = <math>10 \times 4 = 40x</math></p>	<p>Magnification = <math>10 \times 10 = 100x</math></p>	<p>Magnification = <math>10 \times 40 = 400x</math></p>

Part 1 Lesson 6 Microscopes Wrap-Up

In this space please draw how to prepare a wet mount slide. Draw what you see on the right after making a wet mount slide. What's the magnification?



A wet mount slide is made by placing a fluid solution on a slide, suspending a specimen in a solution, and then covering the specimen and the solution with a cover slide.

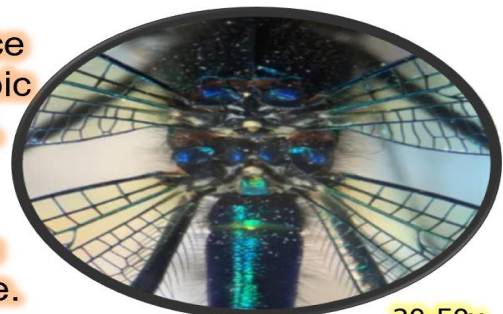


Magnification =  $10 \times 10 = 100x$

What type of microscope is this? What kind of specimens does it use?



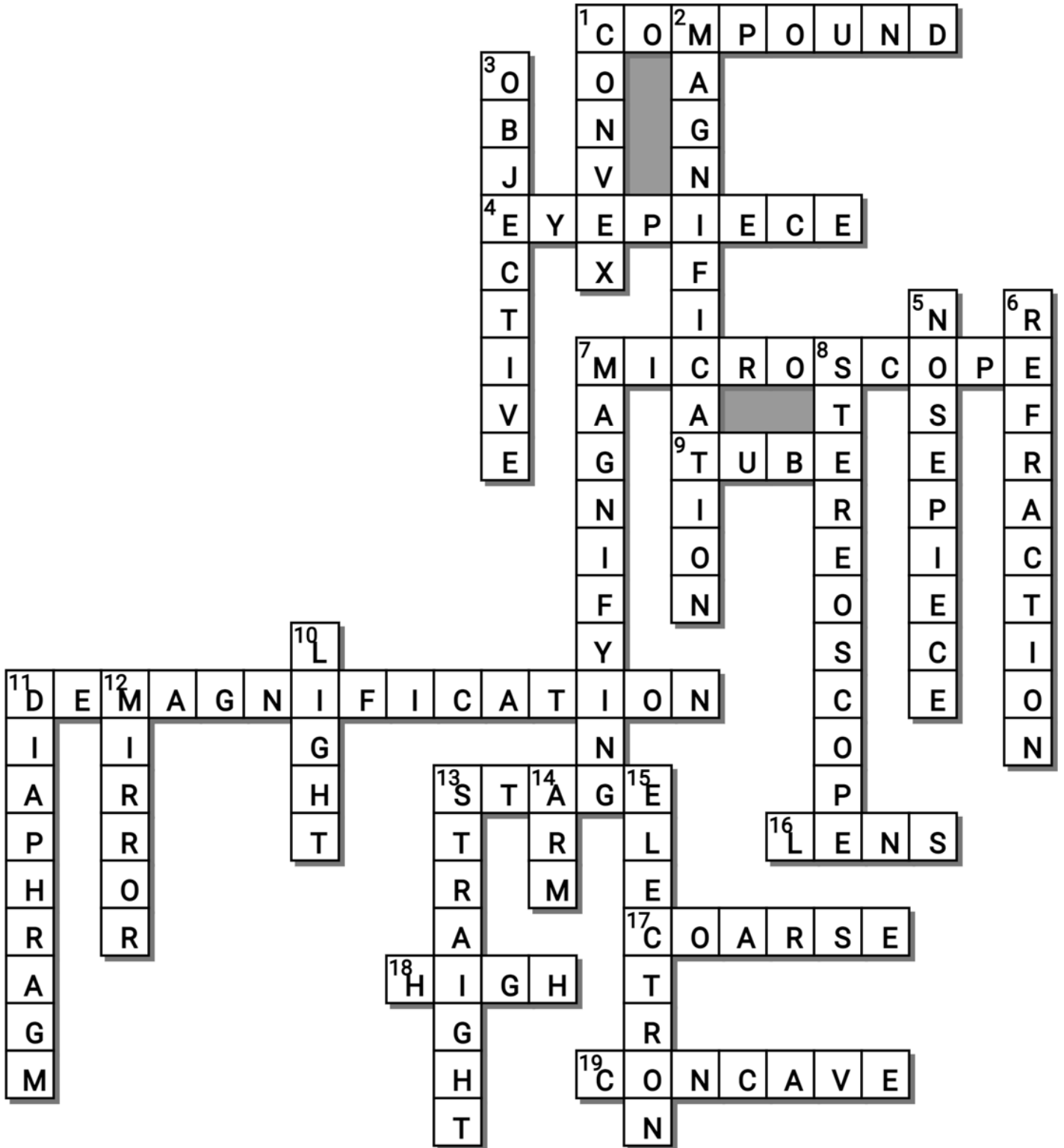
A stereoscope is a device for viewing a stereoscopic pair of separate images, depicting left-eye and right-eye views of the same scene, as a single three-dimensional image.



20-50x

**Better for larger specimens** Magnification =  $\_\_ \times \_\_ = \_\_$

The electron microscope uses a beam of **electrons** and their wave-like characteristics to magnify an object's image, unlike the optical microscope that uses visible light to magnify images.



**Across**

1. A \_\_\_\_\_ microscope is an upright microscope that uses two sets of lenses (a compound lens system) to obtain higher magnification than a stereo microscope.
4. The \_\_\_\_\_ lens is 10x – That means it multiplies the object ten times
7. A \_\_\_\_\_ is a laboratory instrument used to examine objects that are too small to be seen by the naked eye.
9. Body \_\_\_\_\_: Connects the eyepiece to the objective lenses
11. To make something smaller in appearance.
13. The flat platform where you place your slides.
16. A transparent optical device used to converge or diverge transmitted light.
17. \_\_\_\_\_ and Fine Focus knobs are used to focus the microscope.
18. Do not use the coarse adjustment when the microscope is using the \_\_\_\_\_ power lens.
19. It is a diverging lens, meaning that it spreads out light rays that have been refracted through it.

**Down**

1. \_\_\_\_\_ lens: A lens that bends the light that goes through it toward a focal point
2. The act of expanding something in apparent size.
3. \_\_\_\_\_ Lenses: They almost always consist of 4x, 10x, 40x and 100x powers.
5. Revolving \_\_\_\_\_: This is the part of the microscope that holds two or more objective lenses and can be rotated to easily change power.
6. The bending of a wave when it enters a medium where its speed is changed.
7. A \_\_\_\_\_ lens uses a single lens to magnify the specimen.
8. A \_\_\_\_\_ is a device for viewing a pair of separate images, depicting left-eye and right-eye views of the same scene, as a single three-dimensional image.
10. Magnification works because of \_\_\_\_\_
11. Many microscopes have a rotating disk under the stage. This \_\_\_\_\_ has different sized holes and is used to vary the intensity and size of the cone of light that is projected upward into the slide.
12. A concave \_\_\_\_\_ is a mirror that is curved inward in the middle.
13. Light travels in a \_\_\_\_\_ line
14. Supports the tube and connects the microscope to the base
15. An \_\_\_\_\_ microscope is a microscope that uses a beam of accelerated electrons as a source of illumination.

-----Teacher can remove this word bank to make the crossword more challenging-----

**Possible Answers**

ARM, COARSE, CONCAVE, CONVEX, DEMAGNIFICATION, ELECTRON, HIGH, LENS, LIGHT, MAGNIFICATION, NOSEPIECE, OBJECTIVE, REFRACTION, STAGE, TUBE, COMPOUND, DIAPHRAGM, EYEPIECE, MAGNIFYING, MICROSCOPE, MIRROR, STEREOSCOPE, STRAIGHT



# Part 1 Review Game

1-20 = 5 pts

Lesson 7

\*20-\*25 \* = Bonus + 1 pt,

(Secretly write owl in correct space +1 pt)

Final Question = 5 pt wager

Name:

Due: Today

Score \_\_\_\_ / 100

SHOULD I	IT BURNS	MICRO MANAGE	BEAM ME UP	SUPER SIZE ME Bonus round 1pt each
1) E.) None of the above	6) False, Eyeglasses Are not safety glasses	11) Demagnification	16) A=Double Convex	*21) Honey I shrunk the Kids
2) D.) Ask the teacher for assistance.	7) E.) All of the above.	12) A= Reflection B=Transmission C=Absorption D=Scattering	17) Concave Lens	*22) Alice in Wonderland
3) C.) Immediately contact the teacher.	8) Letter D.) A and B.	13) Refraction	18) 1) Revolving Nose piece, 2) Eyepiece 3)Base 4) Coarse adjustment, 5) Light Source.	*23) Beetlejuice
4) A.) Clean your lab table and dispose of the materials according to your teacher.	9) Never Cut Towards Yourself or others	14) Diffraction	19) Low power lens is 4x Medium power lens is 10x High power lens is 40x	*24) Gulliver's Travels
5) Name the locations of safety equipment in room.	10) No goggles, no gloves, hair is not back, didn't put flammable materials away from flame, more	15) Lens	20) Electron Microscope	*25) Night at the Museum

Final Question Wager \_\_\_\_ /5 Answer: 1.) Adjust to low power 2.) Remove slide from stage 3.) Lower stage 4.) Turn off light 5.) Wrap cord around microscope neck 6.) Put on the dust cover 7.) Carry with two hands when you put it away holding the neck and base.

