

## **Grade 8 Science Lab Exam REVIEW**

**Your lab exam is on Wednesday, May 30<sup>th</sup> during period 3 (Group 28)**

**Your lab exam is on Thursday, May 31<sup>st</sup> during period 3 (Group 27)**

### **How does a lab exam work?**

During the 75 minute period you will be rotating through 5 different stations. At every station, you will need to do a task that relates to labs we have done throughout the year and skills you have been taught.

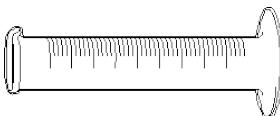
### **Possible Lab Topics**

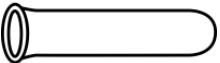
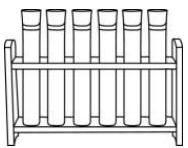
Topics you should review before your lab exam:

- Lab Instruments & Their Functions
- Cells (Plant Cells and Animal Cells)
- pH Scale (Acids and Bases)
- Finding the Mass of Objects
- Finding the Volume of Objects
- Rocks and Minerals
- Physical and Chemical Changes
- Classification of Living Things

## Review for Lab Exam

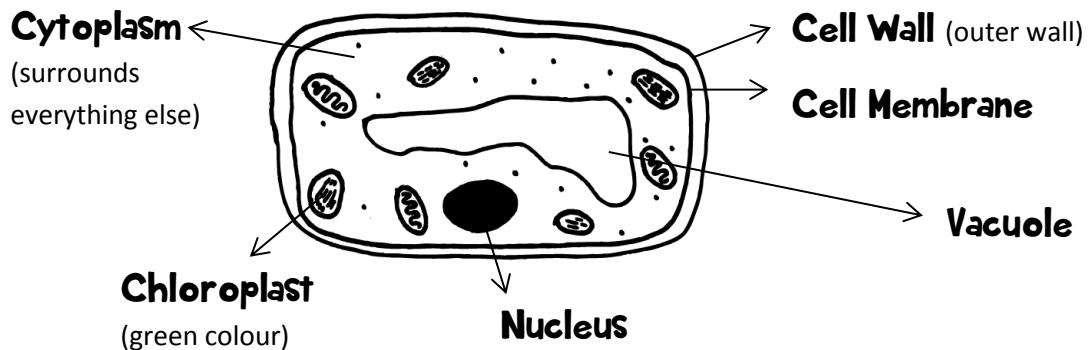
- **Lab Instruments and their functions**

	Name	Function
	Electronic Scale	Used to find the precise mass of substances.
	Triple beam balance	Used to find the mass of substances.
	Overflow can	Used to find the volume of an irregular shaped object (ex: rock)
	Beaker	Used to hold various liquids
	Tongs	Used to pick up and hold items
	Thermometer	Used to measure temperature
	Graduated Cylinder	Used to measure the amount of various liquids

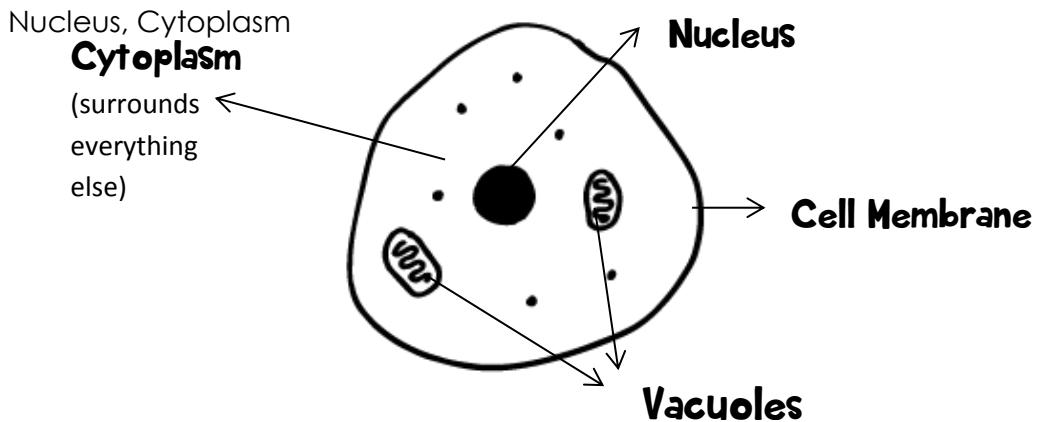
	<b>Name</b>	<b>Function</b>
	Test tube	Used to hold liquids
	Test tube rack	Used to hold one or more test tubes
	Pipette/Eye dropper	Used to transfer small amounts (drops) of liquid.
	Litmus Paper	Used to find out if a substance is acidic, basic or neutral.
	Weigh Boat	Used to weigh substances that will be transferred to another vessel
	Retort Stand (or Ring Stand) and Ring Clamp	Used to attach and hold other lab equipment in place
	Spatula	Used to transfer small amounts of solids.

## • Cells (Plant Cells and Animal Cells)

- a) Draw a plant cell below; label the following: Cell Wall, Cell Membrane, Vacuole, Nucleus, Cytoplasm, Chloroplast



- b) Draw an animal cell below; label the following: Cell Membrane, Vacuole,



- c) What are some similarities and differences between the two types of cells?

Similarities	Differences
<ul style="list-style-type: none"> <li>- Both have a nucleus, cell membrane, and cytoplasm</li> </ul>	<ul style="list-style-type: none"> <li>- Plant cell has chloroplasts and a cell wall</li> <li>- Plant cell has one large vacuole, animal cell has several.</li> <li>- Plant cells have a rectangular shape</li> <li>- Animal cells have a circular (round) shape</li> </ul>

## Acids

If you dip red litmus paper into an **acid**, the red paper stays red

If you dip blue litmus paper into an **acid**, the blue paper turns red

Acids have a pH value that is less than 7.

If you dip red litmus paper into a **base**, the red paper turns blue

If you dip blue litmus paper into a **base**, the blue paper stays blue

Bases have a pH value that is more than 7.

If you dip red litmus paper into a **neutral solution**, the red paper stays red

If you dip blue litmus paper into a **neutral solution**, the blue paper stays blue

Neutral solutions have a pH value that is exactly 7.

## Bases

## • Finding the Mass of Objects

- What is mass? The amount of matter a substance contains
- You have a rock and you are asked to find its mass. What equipment could you use and how would you do it?  
You could use a triple beam balance, or an electronic balance. First, make sure the balance is at zero. Then place the rock on the balance, and calculate its mass.
- You are asked to find the mass of 25 mL of water. What equipment could you use and how would you do it?

You could use a triple beam balance, or an electronic balance, and a graduated cylinder.

Option 1: Place empty graduated cylinder on balance and zero the scale. Measure 25 mL of water, and place graduated cylinder with water on scale. This allows you to find the mass of just the water (and not the graduated cylinder).

Option 2: Place empty graduated cylinder on balance and find the mass of empty graduated cylinder. Measure 25 mL of water, and place graduated cylinder with water on scale, this allows you to find the mass of the water and the graduated cylinder. Use the following formula to find the mass of just water: Mass of water and graduated cylinder – Mass of empty graduated cylinder = Mass of 25 mL of water

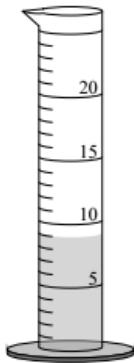
## Finding the Volume

a) What is volume? The amount of space a substance occupies (or takes up)

b) Explain how you could find the volume of the following:

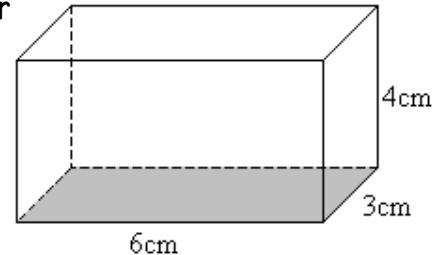
i) Of a liquid:

Pour the liquid into a piece of equipment that allows you to take a reading of the volume (for example, a graduated cylinder). Read the level the liquid reaches. In the picture to the right, the volume is 9 mL.



ii) Of a regular shaped object:

Measure each side of the object with a ruler and for a cube or rectangular prism use the formula; Volume = Length x Width x Height. The volume of the prism to the right would be,  
 $V = L \times W \times H$  so  $V = 6 \times 3 \times 4$  so  $V = 72 \text{ cm}^3$



iii) Of an irregular shaped object:

First, fill an overflow can with water. Place the overflow can on a flat edge and allow any access water to drip out on its own.

Second, hold an empty graduated cylinder under the spout of the overflow can.

Third, place the rock into the overflow can, collecting the water that flows out in the graduated cylinder.



Finally, the water collected in the graduated cylinder is the volume of the rock.

## • Rocks & Minerals

- a) Fill in the table below indicating the four types of rocks and how they are formed.

Rock Type	Formation
Extrusive Igneous Rock	Formed when magma cools and solidifies above the surface (above ground).
Intrusive Igneous Rock	Formed when magma cools and solidifies below the surface (underground).
Sedimentary Rock	Formed by the accumulation of sediments (or pieces) of debris.
Metamorphic Rock	Formed when igneous or sedimentary rocks are transformed by extreme heat and pressure.

- b) What are some of the different properties we can use to help us identify minerals?

The minerals lustre (is it metallic or non-metallic?), and the colour of the mineral. Also, the minerals hardness, whether it is magnetic or not, the streak it leaves behind when rubbed on porcelain and whether it has a reaction to acids.



Mohs Scale	
Mineral	Hardness
Talc	1 baby powder
Gypsum	2 fingernail
Calcite	3 copper penny
Fluorite	4
Apatite	5
Orthoclase	6 steel nail
Quartz	7
Topaz	8
Corundum	9
Diamond	10 diamond

## • Physical and Chemical Changes

What are some examples of a physical change? Crumpling a piece of paper, breaking a pencil in half, ice cream freezing, candlewax melting.

What are some signs that a physical change has occurred? A physical transformation or deformation can occur (ex: crumpling paper, breaking a pencil). Or there can be a change of state (melting, freezing, evaporation, etc).



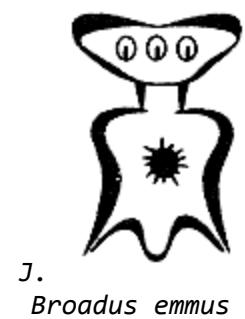
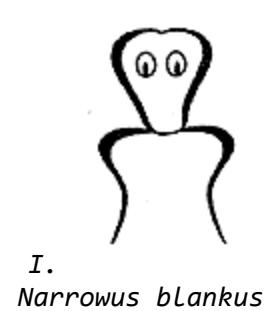
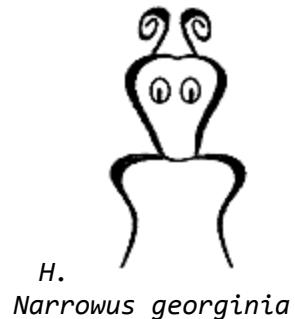
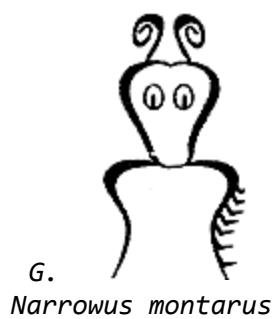
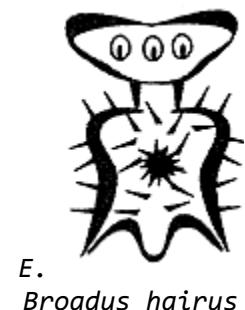
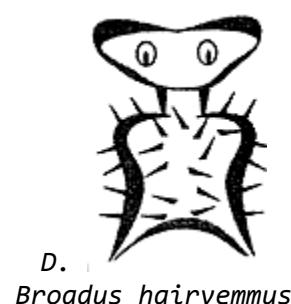
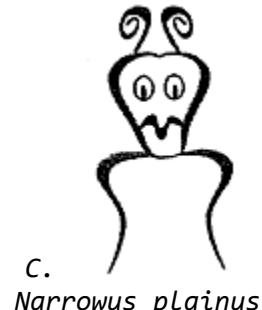
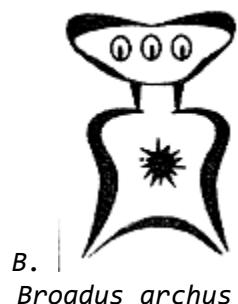
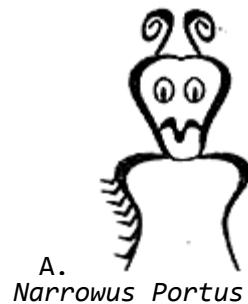
What are some examples of a chemical change? Frying an egg, wood burning, fireworks exploding.

What are some signs that a chemical change has occurred? A gas forms, a colour change occurs, heat or light is produced, a residue forms.

## • Classification of Living Things

a) Ensure you can use a dichotomous key to identify living things.

Help! Scientists have discovered quite a few new creatures on planet Pamishan. They need your help to identify and classify them. Use the dichotomous key on the next page to identify these creatures.





K.  
*Narrowus cyclops*



L.  
*Broadus hairystus*



M.  
*Narrowus beardus*



N.  
*Broadus walter*



O.  
*Broadus plainus*



P.  
*Broadus kiferus*



Q.  
*Narrowus starboardus*



R.  
*Broadus tritops*



S.  
*Narrowus wolfus*



T.  
*Narrowus fuzzus*

## A Key to New Pamishan

1. a. The creature has a large wide head.....go to 2  
b. The creature has a small narrow head.....go to 11
2. a. It has 3 eyes .....go to 3  
b. It has 2 eyes .....go to 7
3. a. There is a star in the middle of its chest.....go to 4  
b. There is no star in the middle of its chest .....go to 6
4. a. The creature has hair spikes .....*Broadus hairus*  
b. The creature has no hair spikes.....go to 5
5. a. The bottom of the creature is arch-shaped .....*Broadus archus*  
b. The bottom of the creature is M-shaped .....*Broadus emmus*
6. a. The creature has an arch-shaped bottom .....*Broadus plainus*  
b. The creature has an M-shaped bottom.....*Broadus tritops*
7. a. The creature has hairy spikes .....go to 8  
b. The creature has no spikes.....go to 10
8. a. There is a star in the middle of its body .....*Broadus hairystarus*  
b. The is no star in the middle of its body .....go to 9
9. a. The creature has an arch shaped bottom .....*Broadus hairyemmus*  
b. The creature has an M shaped bottum .....*Broadus kiferus*
10. a. The body is symmetrical .....*Broadus walter*  
b. The body is not symmetrical.....*Broadus anderson*
11. a. The creatrue has no antennae .....go to 12  
b. The creature has antennae .....go to 14
12. a. There are spikes on the face .....*Narrowus wolfs*  
b. There are no spikes on the face .....go to 13
13. a. The creature has no spike anywhere .....*Narrowus blankus*  
b. There are spikes on the right leg .....*Narrowus starboardus*
14. a. The creature has 2 eyes.....go to 15  
b. The creature has 1 eye.....*Narrowus cyclops*
15. a. The creature has a mouth.....go to 16  
b. The creature has no mouth.....go to 17
16. a. There are spikes on the left leg .....*Narrowus portus*  
b. There are no spikes at all .....*Narrowus plainus*
17. a. The creature has spikes .....go to 18  
b. The creature has no spikes .....*Narrowus georgia*
18. a. There are spikes on the head .....go to 19  
b. There are spikes on the right leg.....*Narrowus montanian*
19. a. There are spikes covering the face .....*Narrowus beardus*  
b. There are spikes only on the outside edge of head .....*Narrowus fuzzus*