
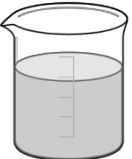


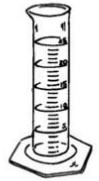
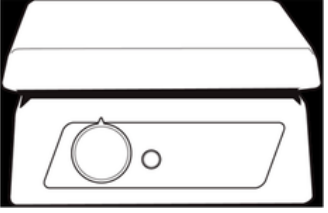
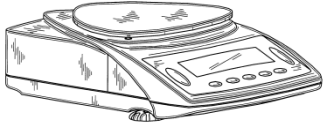



## ANSWER KEY

1. Name the following lab equipment:

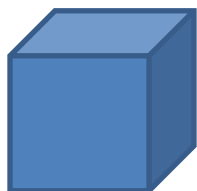
			
Test Tube	Beaker	Thermometer	Beaker clamps/beaker tongs
			
Graduated Cylinder	Hot plate	Electronic balance	Safety Glasses

2. For each of the following terms include the definition and the units used to measure them:

Term	Definition	Units
Mass	Amount of matter contained in an object	g, kg, mg
Volume	Amount of space matter in an object occupies	L, cm <sup>3</sup>
Density	Amount of matter per unit volume in an object	g/cm <sup>3</sup> g/L

3. What is the density of the following objects?

a)



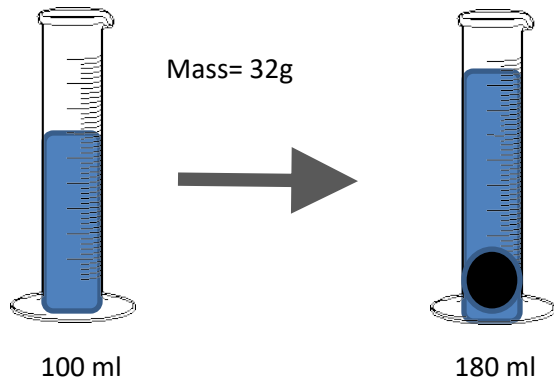
6cm

Mass= 756g

$$V = s^3 = (6\text{cm})^3 = 216\text{cm}^3$$

$$D = \frac{m}{V} = \frac{756\text{g}}{216\text{cm}^3} = 3.5\text{g/cm}^3$$

## ANSWER KEY



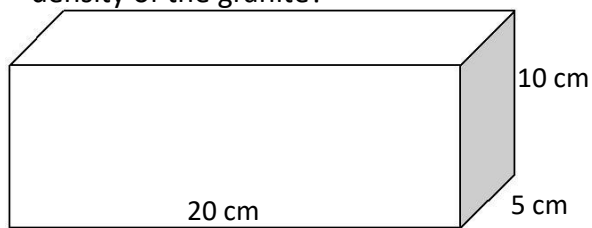
Mass = 32g

100 ml

180 ml

$$V = 180 \text{ mL} - 100 \text{ mL} = 80 \text{ mL}$$
$$D = \frac{m}{V} = \frac{32 \text{ g}}{80 \text{ mL}} = 0.4 \text{ g/mL}$$

4. A carver begins work on the following block of granite that weighs 2700 g. What is the density of the granite?



$$V = l \times w \times h$$
$$= 10 \text{ cm} \times 20 \text{ cm} \times 5 \text{ cm}$$
$$= 1000 \text{ cm}^3$$
$$D = \frac{m}{V} = \frac{2700 \text{ g}}{1000 \text{ cm}^3} = 2.7 \text{ g/cm}^3$$

5. A piece of PVC plumbing pipe is put in a graduated cylinder with 25 mL of water. It displaces 85 mL when placed into a container of water. If the pipe has a mass of 78 g, what is the density of PVC?

$$V = 85 \text{ mL} - 25 \text{ mL} = 60 \text{ mL}$$

$$D = \frac{m}{V} = \frac{78 \text{ g}}{60 \text{ mL}} = 1.3 \text{ g/mL}$$

6. Hermione Granger thinks she has finally cracked how to make the philosopher's stone! The stone she's created is in the shape of a perfect cube. Each side of the cube is  $6 \text{ cm}^3$ . The mass of the stone is 4752g. From Nicolas Flamel's biography, she knows the density of the philosopher's stone is supposed to be  $22 \text{ g/cm}^3$ . Has Hermione created the stone?

$$V = s^3 = (6 \text{ cm})^3 = 216 \text{ cm}^3$$

$$D = \frac{m}{V} = \frac{4752 \text{ g}}{216 \text{ cm}^3} = 22 \text{ g/cm}^3$$

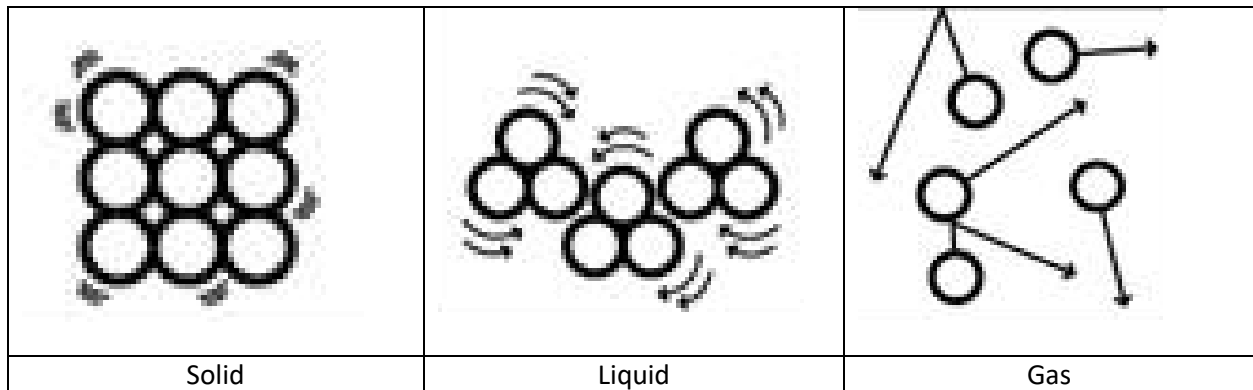
Yes she did 😊

**ANSWER KEY**

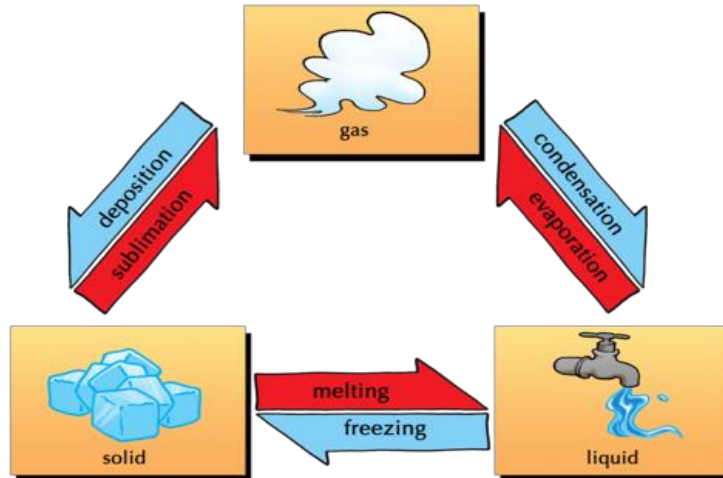
7. Place the following terms into either **characteristic property** or **non-characteristic property** category. *Boiling point, Density, Melting point, Mass, pH level, Temperature, Volume, Weight*

Characteristic Property	Non-Characteristic Property
Boiling point Density Melting Point	Mass pH level Temperature Volume Weight

8. Draw the particle model for each phase



9. In the below diagram, write in the appropriate phase change for the states of matter



- a. Temperature at which a substance changes from a liquid to a gas: **Boiling Point**  
 b. Temperature at which a substance changes from a solid to a liquid: **Melting Point**  
 c. Temperature at which a substance changes from a liquid to a solid: **Freezing Point**

## ANSWER KEY





10. Match the following terms to their definitions.

- |          |                          |  |
|----------|--------------------------|--|
| <b>H</b> | 1. Pure substance        | a. This substance has the ability to dissolve in another           |
| <b>C</b> | 2. Heterogeneous mixture | b. Substance there is less of, and which is being dissolved        |
| <b>E</b> | 3. Homogeneous mixture   | c. Mixture where you can see the different components              |
| <b>D</b> | 4. Dissolution           | d. The process of dissolving                                       |
| <b>J</b> | 5. Filtrate              | e. Mixture where you cannot see the different components           |
| <b>F</b> | 6. Residue               | f. What is left over after you have done decantation or filtration |
| <b>A</b> | 7. Soluble substance     | g. This substance cannot to dissolve in another                    |
| <b>G</b> | 8. Non-soluble substance | h. Only one type of particle                                       |
| <b>B</b> | 9. Solute                | i. Substance there is more of, and which is doing the dissolving   |
| <b>I</b> | 10. Solvent              | j. The liquid that goes through the filter paper in filtration     |

11. What separation technique would you use to separate:

- a. A mixture of salt and water: **Distillation**
- b. A mixture of sand and water: **Sedimentation and Decantation/ Filtration**
- c. A mixture of oil and water: **Decantation**
- d. A mixture of sand and rocks: **Sifting**

12. Indicate whether each of the following mixtures is heterogeneous or homogeneous.

			
<b>Heterogeneous</b>	<b>Homogeneous</b>	<b>Heterogeneous</b>	<b>Homogeneous</b>

13. Diana tests 3 different unknown solutions with litmus paper. Her results are presented in the table below. For each unknown indicate whether the substance is an acid, base or neutral.

	<b>Red Litmus Paper</b>	<b>Blue Litmus Paper</b>	<b>Acid, Base or Neutral</b>
<b>Unknown A</b>	Red → Red	Blue → Red	<b>Acid</b>
<b>Unknown B</b>	Red → Red	Blue → Blue	<b>Neutral</b>
<b>Unknown C</b>	Red → Blue	Blue → Blue	<b>Base</b>

## ANSWER KEY

14. Name five of the characteristics of life:

1. Composed of at least one cell
2. Uses energy to function
3. Grows and repairs itself
4. Undergoes reproduction
5. Responds to its environment

15. Bears are known to eat both berries and hunt other animals and therefore eat meat.

- a. What do we call an organism that eats both meat and plants? Omnivore
- b. What would you call an animal that eats only plants? Herbivore
- c. What about an animal that eats only meat? Carnivore
- d. Name one physical adaptation that the bear would have that would allow it to eat these different types of food: Specialized teeth; combination of canines and molars
- e. Name one behavioural adaptation of the bear that allows it to survive:  
Hibernates during the winter when food is scarce

16. Define each of the following terms:

- a. Habitat: General environment where a species lives
- b. Ecological niche: Specific part of the habitat where the species thrives
- c. Population: Number of the same species that live in the same habitat
- d. Community: Different organisms that share the species' habitat
- e. Ecosystem: Combination of living and non-living factors where organisms occupy

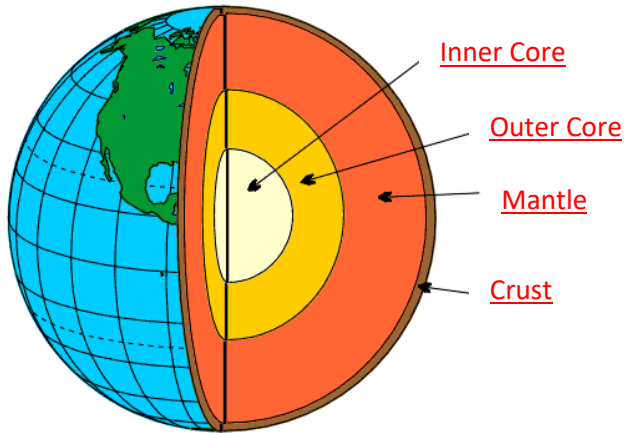


17. A donkey and a zebra have been known to mate in zoos producing what biologists call a Zonkey. People find Zonkeys so cute that they would like to make more of them, but nobody can seem to get Zonkeys to produce any babies. Are zebras and donkeys the same species? **Justify your answer.**

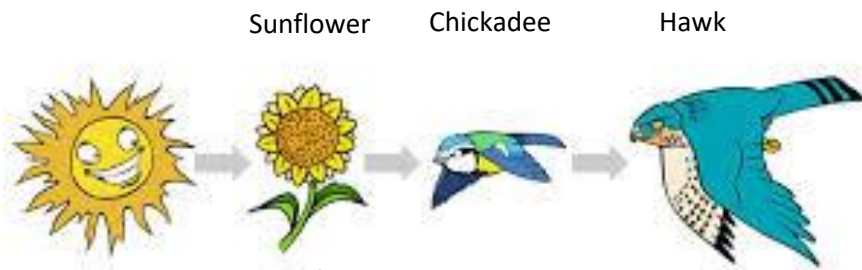
No, a zebra and donkey is not the same species. To be considered the same species, three criteria must be met. First, the organisms needs to share similar characteristics. Second, a male and female must be able to mate and produce an offspring. Third, the offspring, when it mature, must be able to produce offspring. The Zonkey only satisfies the first two criteria; the zonkey cannot mate with other zonkeys to make zonkey babies. Therefore, the zebra and the donkey are not the same species.

## ANSWER KEY

18. Label the following diagram of the Earth:



19. Observe the following food chain and answer the questions below.



- Name the producer: Sunflower
- Name the consumers: Chickadee and Hawk
- Name the primary consumer: Chickadee
- Name the top predator: Hawk
- Name the herbivore: Chickadee
- Name the carnivore: Hawk

20. Name the type of tectonic plate movement caused by:

- Plates coming together: Convergence (collision)
- Plates pulling apart from one another: Divergence (separating)
- Plates rubbing against one another: Transform fault

21. What is the mechanism that causes tectonic plates to move: Convection current

- Describe how this occurs. Make sure to mention the following terms: **core, mantle, magma, tectonic plates**. **The earth's core heats up the magma found in the upper mantle. This causes the magma to rise. The magma at the top of the upper mantle (right**

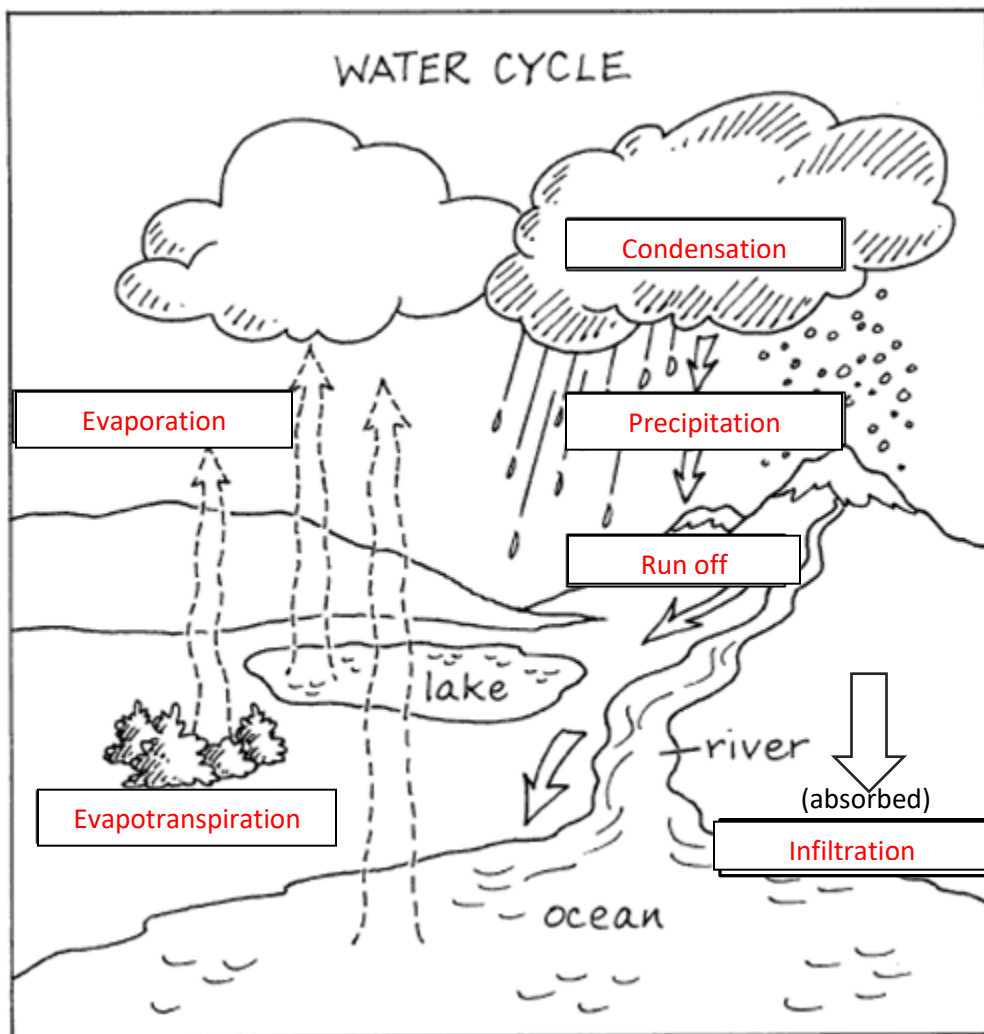
**ANSWER KEY**

below the crust) then will cool. Once the magma cools, it falls through the mantle, where it will then get heated. This cycling of heating up, rising, cooling and falling forms a circular current, causing the tectonic plates to move apart from one another at the surface.

22. Name 2 geological phenomena that can be caused by the movement of the tectonic plates, and name which type of movement causes them (convergent, divergent, transform fault):

- a. Phenomenon 1: Earthquakes/Tsunami (convergent or transform fault)
- b. Phenomenon 2: Volcanoes (convergent or divergent); Mountains (convergent)

23. Complete the water cycle:



24. What are the four main gases of the atmosphere?

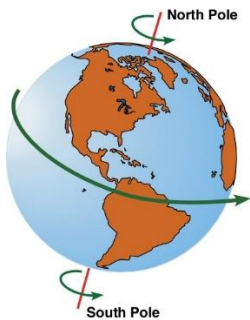
- Nitrogen
- Oxygen
- Carbon Dioxide
- Water

**ANSWER KEY**

25. Name 5 properties of light:

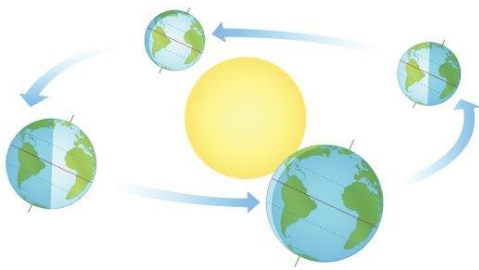
1. Light is a form of energy
2. The sun is Earth's main source of light
3. Light travels in a straight line
4. Light can transform into different forms of energy
5. Light can be reflected and/or absorbed
6. White light is formed by all of the colour of the rainbow

26. In the following images, indicate whether it is rotation or revolution, and the amount of time it takes to complete 1 turn.



**Rotation** or Revolution (circle one)

Amount of time: 24 Hours



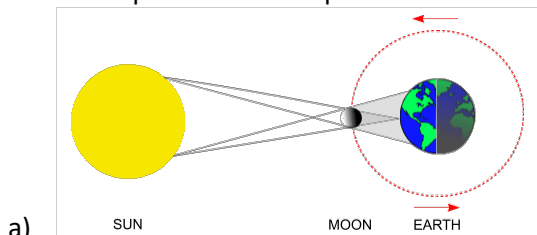
Rotation or **Revolution** (circle one)

Amount of time: 365.25 days

27. Explain why we see different phases of the moon. In other words, why does the moon not always look the same?

Due to the revolution of the moon around the Earth.

28. Name the phenomenon represented in each of the following images:



**Solar Eclipse**



**Lunar Eclipse**



## ANSWER KEY

29. Write a laboratory procedure for determining the density of a sphere made of an unknown material.

1. Take unknown sphere and place it on an electronic balance to determine its mass. Record Mass.
2. Take a graduated cylinder and fill it with enough water so that it would cover the sphere. Record initial volume
3. Place sphere in graduated cylinder. Record new water level (final volume)
4. Subtract final volume from initial volume to determine volume of the sphere
5. Divide mass of the sphere by volume of the sphere (density of sphere)

30. Label the cells below

