المدرسة الوطنية الأرثوذكسية الشميساني
The National Orthodox School Shmaisani

The Primary Stage of Grades (4-5)
School Year 2022 - 2023

Name: __Key_____ **Unit (5): Properties of matter**
Worksheet (2)

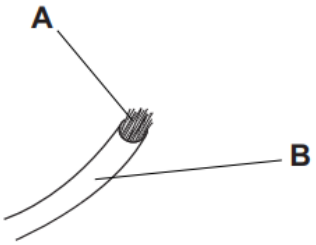
Date: / / **Grade 5 CP (All sections)**

Objective:

- **Identify properties of materials including: mass, melting point, boiling point and solubility.**
- **Analyze given data to identify different substances.**
- **Identify different lab tools and their uses.**

Question 1:

Wires are used in electrical circuits.



Complete the sentences.

Choose from the following words.

conductor **copper** **insulator** **plastic** **reflector** **wood**

These words can be used once, more than once or not at all.

Material **A** is Copper .

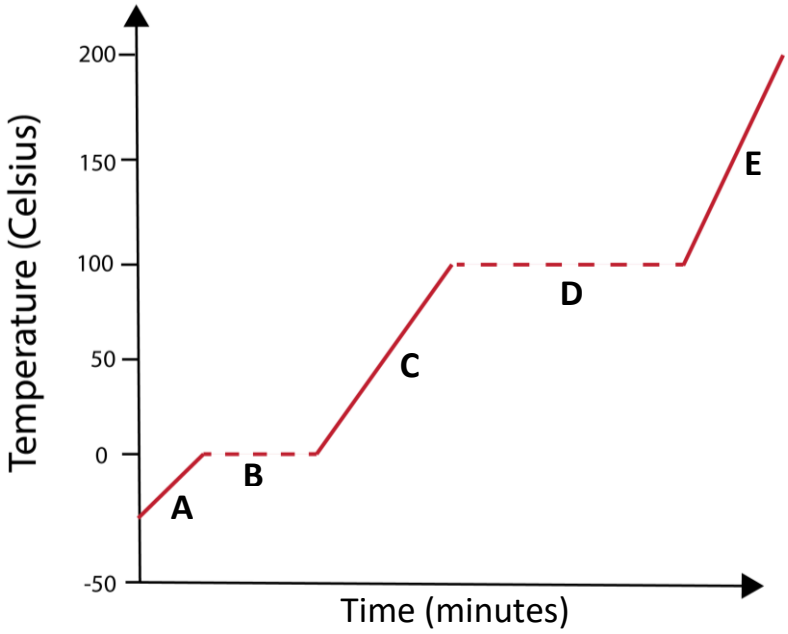
This material is used because it is a good Conductor .

Material **B** is Plastic .

This material is used because it is a good Insulator .

Question 2:

The following line graph shows the heating curve of a substance:



a. What is the state of the substance at point A? …… **Solid** ……

b. What is the state of the substance at point C? …… **Liquid**……

c. What is the change of state taking place in region B?

The substance is changing from solid to liquid (Melting).

d. What is the change of state taking place in region D?

The substance is changing from liquid to gas (boiling).

e. What is the melting point of the substance?

0 °C.

How did you know?

The temperature stayed constant (the same) until all solid turned into liquid.

f. What is the boiling point of this substance?

100 °C.

How did you know?

The temperature stayed constant (the same) until all the liquid turned into gas.

Question 3:

The three states of matter are solid, liquid and gas.

(a) The table shows the state of matter at room temperature of some substances.

Complete the table by putting ticks (✓) in the correct boxes.

Water has been done for you.

substance	state of matter at room temperature		
	solid	liquid	gas
carbon dioxide			√
gasoline		√	
mercury		√	
water		✓	
wood	√		

(b) Copper has a melting point of 1083 °C.

What change of state happens when copper **melts**?

solid **to** liquid

(c) Copper has a boiling point of 2567 °C.

What change of state happens when copper **boils**?

liquid **to** gas

(d) Copper is heated to 2000 °C.

What is the state of matter of copper at 2000 °C?

liquid

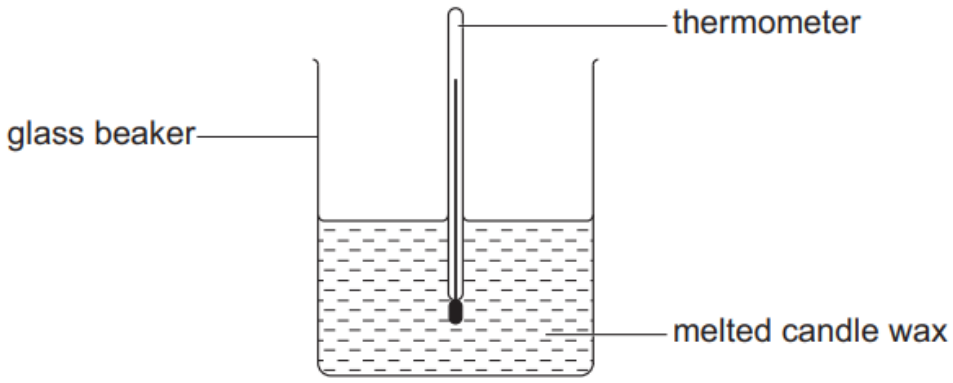
(e) What is meant by **the melting point** of a substance?

It is the temperature at which a substance changes from solid to liquid

Question 4:

Gabriella investigates the cooling of melted candle wax.

Here is the apparatus she uses.



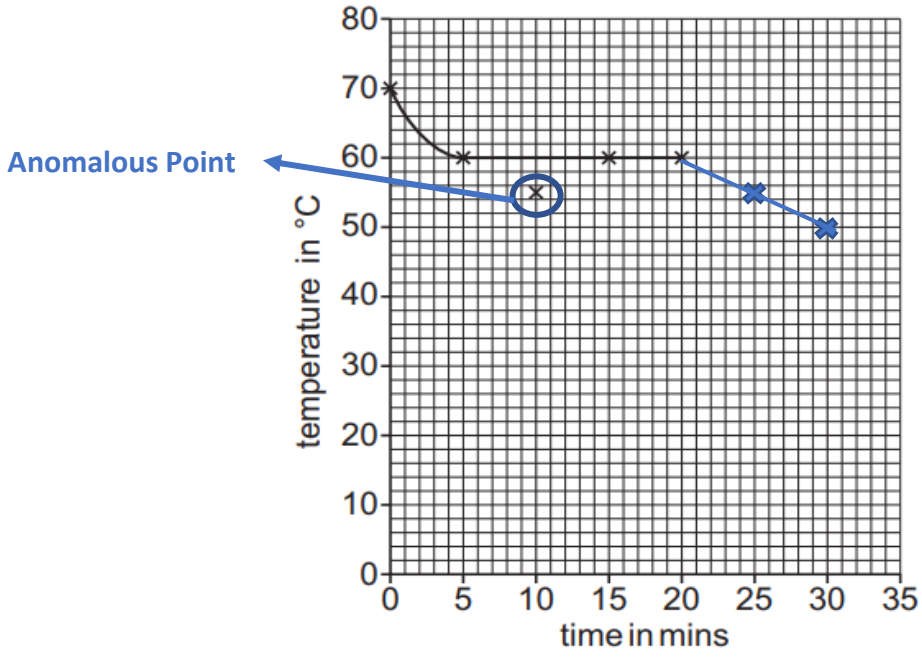
She measures the temperature of the candle wax every 5 minutes.

Here are her results.

time in minutes	temperature in °C
0	70
5	60
10	55
15	60
20	60
25	55
30	50

(a) Gabriella has plotted the first five results on this graph.

Plot the other two results.



(b) Complete the line graph.

(c) One of the results is **not** correct, it does **not** fit the pattern.

This result is at 10 minutes.

Question 5:

(a) Pierre is sorting metals in a recycling yard.

He is using a magnet to help him.

Which objects will be attracted towards the magnet?

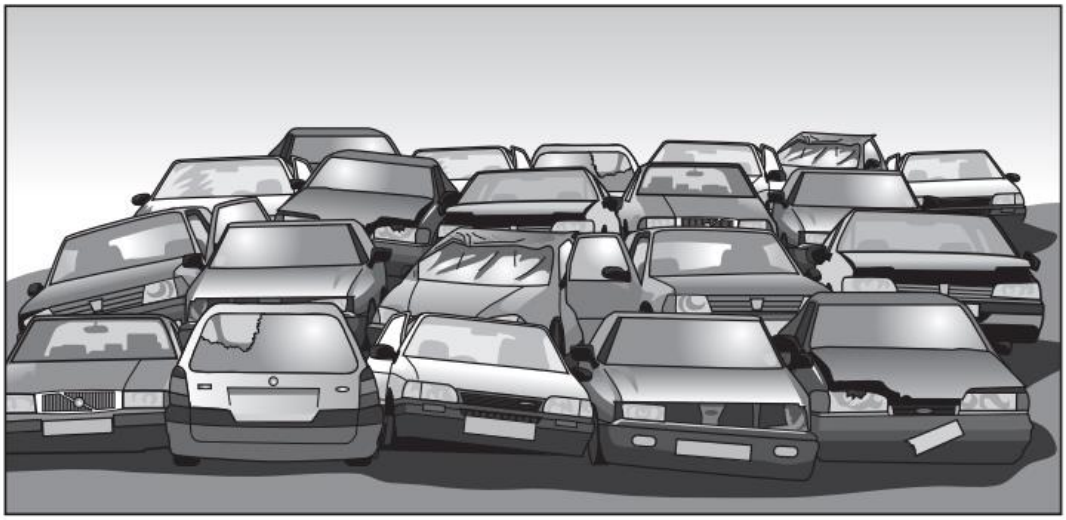
Circle the correct answers.

Brass button	**copper tube**	**gold ring**	**iron bath**
Lead pipe	**silver coin**	**steel wire**	**zinc foil**

(b) Some cars are made from steel.

Other cars are made from aluminium.

The picture shows cars in a scrapyard.



Suggest how steel cars can be separated from aluminium cars.

By using a magnet.

Explain why this method works.

Because steel is a magnetic material, where aluminum is a non-magnetic material and will not be attracted to the magnet.

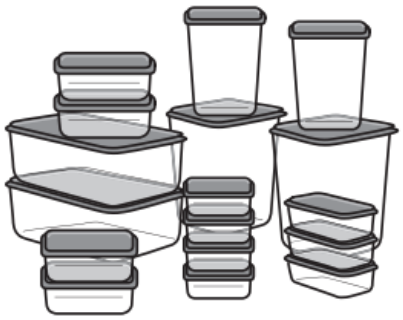
Question 6:

(a) Some materials conduct electricity.

Circle **two** materials that conduct electricity.

copper	**glass**	**iron**	**paper**
plastic	**sand**	**wood**	**rubber**

(b) Plastic is often used to make containers for food.



Which properties must this plastic have to make containers for food?

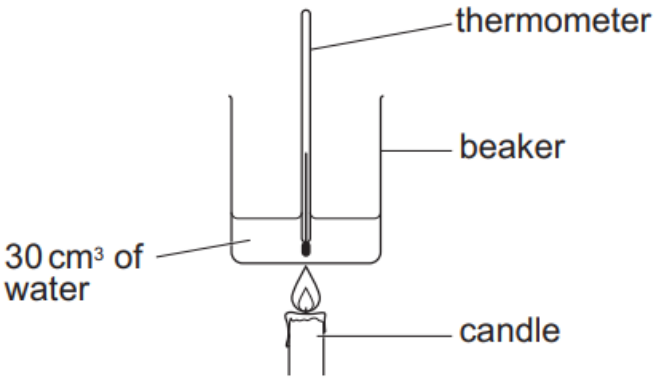
Tick (✓) the **three** correct properties of the plastic.

conducts electricity	
conducts heat	
insoluble in water	√
magnetic	
melting point above 100 °C	√
non-poisonous	√

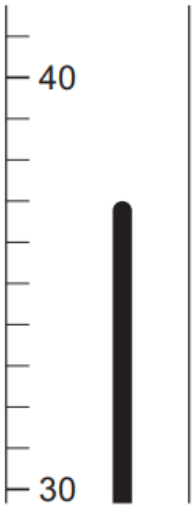
Question 7:

Pierre uses a candle to heat a beaker of water.

Here is a diagram of his experiment.



(a) The diagram shows the thermometer after 10 minutes.



What is the temperature of the water after 10 minutes?

37 °C

(b) At the start the temperature of the water was 20 °C.

What is the temperature increase?

37-20= 17 °C

(c) Pierre continues to heat the beaker.

What happens to the water when its temperature reaches 100 °C?

It boils.

(d) Pierre sees some liquid wax at the top of the candle.

What process has happened to the solid wax?

Melting.

Question 8:

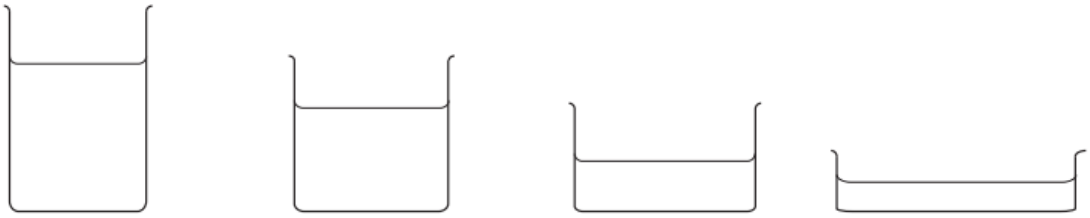
Blessy investigates the evaporation of water.

She measures 100 cm^3 of water and puts this into a beaker.

She measures the time for all the water to evaporate.

Blessy repeats the experiment three more times.

Each time she uses a different sized beaker.



beaker **A** beaker **B** beaker **C** beaker **D**

(a) Blessy always uses 100 cm^3 of water.

Explain why.

To have a fair test.

(b) Blessy thinks that the temperature of the water affects the time taken for all the water to evaporate.

Write down a possible prediction for the effect of **temperature**.

As the temperature of water increases, the time taken by water to evaporate will become shorter.

(c) Which factor affecting the rate of evaporation is Blessy investigating?

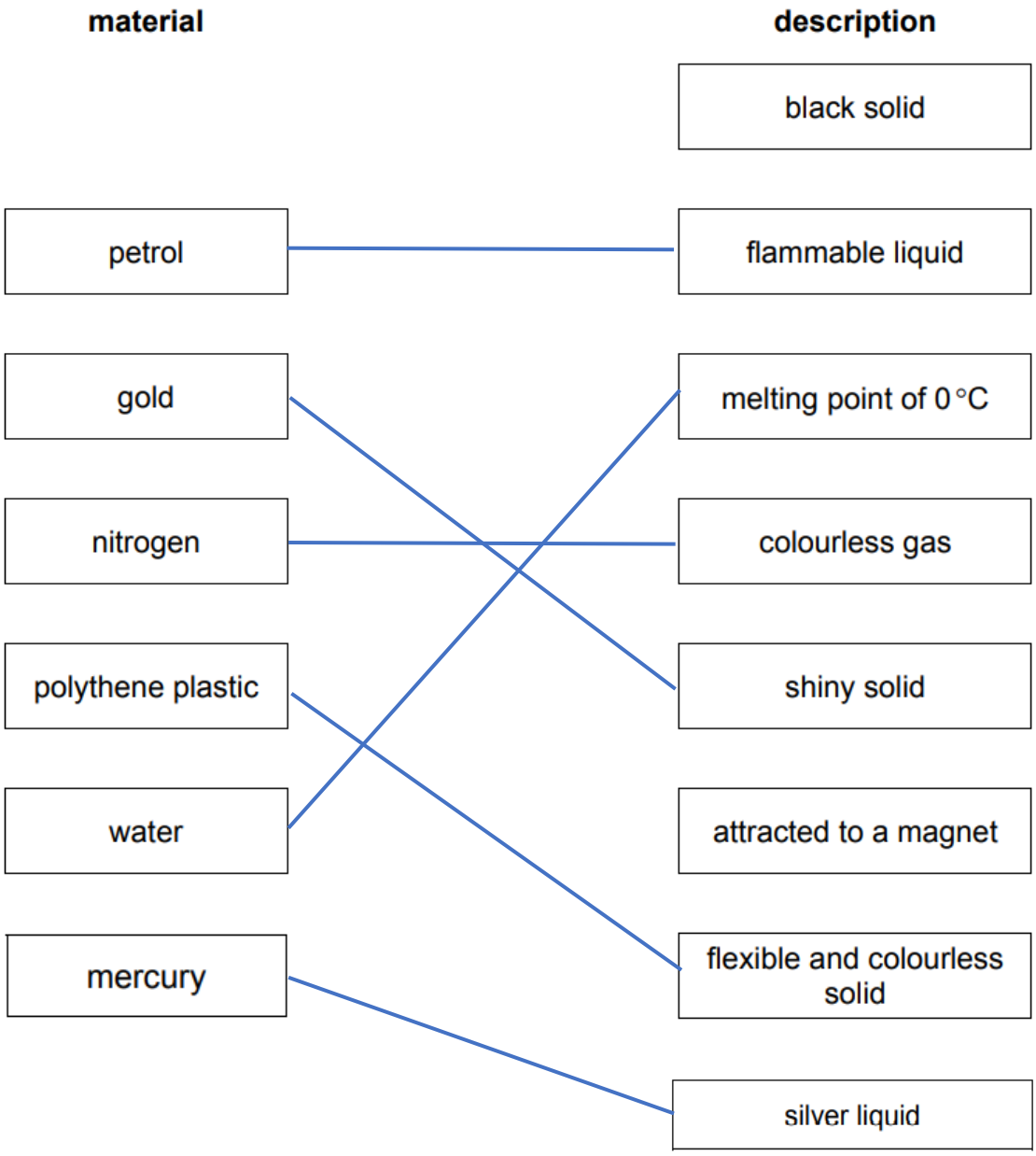
The surface area of the container.

(d) Knowing that water in all the beakers has the same temperature, predict from which beaker will water evaporate the fastest?

Beaker D, the larger the surface area is, the faster water evaporates.

Question 9:

Draw a line between each **material** and **one** correct **description** of the material.



Question 10:

Anastasia finds this information about some materials.

material	is it a solid, liquid or a gas?	colour of material?	does it dissolve in water?	does it have a high or low melting point?
carbon dioxide	gas	colourless	yes	low
gold	solid	gold	no	high
hydrogen	gas	colourless	no	low
iron	solid	grey	no	high
magnesium sulfate	solid	white	yes	high
marble	solid	white	no	high
mercury	liquid	silver	no	low
paraffin	liquid	colourless	no	low

(a) Which material is a solid attracted to a magnet?

Choose from the table.

Iron.

(b) Anastasia sorts these materials into two groups.

One group is **soluble** in water and the other group is **insoluble** in water.

Use the information about materials to complete these groups.

soluble materials	insoluble materials
Carbon dioxide, magnesium sulfate.	iron, mercury, paraffin, marble, hydrogen, gold.

(c) Anastasia sorts the materials into two **different** groups.

group A	group B
carbon dioxide	gold
hydrogen	iron
mercury	magnesium sulfate
paraffin	marble

Which **two** questions in the table does Anastasia use to sort the materials?

1 Does the material have a low or high melting point?

2 Is the material solid? If yes, Group B.

Question 11:

State the use of each of the following laboratory tools:

Tool	Use	Tool	Use
 forcemeter	Weight (force) Unit: N	 balance	Mass Unit: g, Kg
 measuring cylinder	To measure the volume of a liquid accurately. Unit: ml, cm^3	 stop clock	Time Unit: sec, min.
 ruler	Length Unit: mm, cm, m	 thermometer	Temperature Unit: °C

12 It is possible to identify a substance from looking at its properties.

Here are some properties of six substances.

substance	melting point in °C	boiling point in °C	Is it magnetic?	Is it a good conductor of heat?
A	1470	3010	yes	yes
B	–77	–10	no	no
C	0	106	no	no
D	1535	2750	yes	yes
E	0	100	no	no
F	–20	100	no	no

(a) Which **two** substances could be steel?

Choose from **A**, **B**, **C**, **D**, **E** or **F**.

A ..... **and** D .....

Explain your answer.

They both have high melting points and they are magnetic. .....

(b) One of the substances is water.

Which substance?

Choose from **A**, **B**, **C**, **D**, **E** or **F**.

E .....

(c) The temperature in a laboratory is 25 °C.

Which substance is a gas in this laboratory?

Choose from **A**, **B**, **C**, **D**, **E** or **F**.

B .....

(d) Substance **D** melts at 1535 °C.

What happens when a substance melts?

It changes from a solid to liquid. .....

Question 13:

Carlos adds some salt to a beaker of water.

He also adds some sand to another beaker of water.

Complete these sentences about adding salt and sand to water.

Choose from the words below.

condenses

evaporates

dissolves

insoluble

soluble

solute

solvent

(a) Salt dissolves in water to make a solution.

(b) Water is the solvent in this process.

(c) Salt is the solute in the solution.

(d) When all water evaporates from the salt solution a white solid is left behind.

(e) Sand does not make a solution when mixed with water because it is insoluble.

Question 14:

The table shows the properties of some substances.

substance	state at room temperature	colour	soluble in water
chalk	solid	white	no
copper sulfate	solid	blue	yes
gasoline	liquid	colourless	no
iron sulfate	solid	green	yes
magnesium sulfate	solid	white	yes

(a) Which substances are insoluble in water?

Chalk and gasoline.

(b) Rajiv mixes gasoline and water.

Suggest what he would see.

He sees two layers of liquid since gasoline does not dissolve in water.