

مراجعة الوجدتان 2 و 14 المادة والتغيرات وخصائص المواع



تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ← المناهج الإماراتية ← الصف التاسع المتقدم ← علوم ← الفصل الثالث ← ملفات متنوعة ← الملف

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ملفات اكتب للمعلم اكتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل
منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس

المزيد من مادة
علوم:

التواصل الاجتماعي بحسب الصف التاسع المتقدم



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

المزيد من الملفات بحسب الصف التاسع المتقدم والمادة علوم في الفصل الثالث

أسئلة مراجعة شاملة للاختبار النهائي

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مراجعة الوجدتان 2 و 14 المادة والتغيرات وخصائص المواع

2

مراجعة وفق هيكل الامتحان

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مراجعة نهائية أسئلة وتدريبات

4

الحصة الأولى الحمل وبداية تطور الجنين من الدرس الثاني مراحل نمو الإنسان قبل الولادة الوحدة الأولى تكاثر الإنسان وتطوره

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Grade 9 Science Review -Modules 2 and 14

Matter - Properties and Changes | Solids, Liquids, and Gases

Module 2: Matter - Properties and Changes

1. Properties of Matter

- Matter is anything that has mass and takes up space.
- A substance has a uniform, unchanging composition. Examples: pure water, table salt, oxygen.
- Physical properties can be observed without changing the substance, such as color, state, density, melting point, and boiling point.
- Chemical properties describe the ability of a substance to form new substances, such as flammability or reaction with oxygen.

State	Shape	Volume	Particle arrangement/motion
Solid	Definite	Definite	Particles are tightly packed and vibrate in place.
Liquid	Takes container shape	Definite	Particles are close but slide past one another.
Gas	Takes container shape	Takes container volume	Particles are far apart and move freely.
Plasma	No definite shape	No definite volume	Ionized gas with charged particles; found in lightning and neon signs.
Physical Property		Chemical Property	
Can be observed without changing identity.		Observed when a substance changes into a new substance.	
Examples: density, color, state, melting point, boiling point.		Examples: rusting, burning, reaction with acid, tarnishing.	

2. Changes in Matter

- A physical change changes size, shape, or state but does not make a new substance.
- A chemical change produces one or more new substances with different properties.
- Evidence of chemical change may include color change, gas formation, precipitate formation, heat/light production, or odor change.
- Law of conservation of mass: mass is neither created nor destroyed during a chemical reaction. Mass of reactants = mass of products.

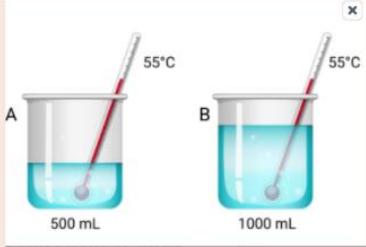
Change	Type	Why
Melting ice	Physical	Only the state changes; it is still water.
Burning paper	Chemical	New substances such as ash and gases form.
Rusting iron	Chemical	Iron reacts with oxygen to form rust.
Cutting aluminum foil	Physical	Shape changes, composition stays the same.
Dissolving sugar in water	Physical	Sugar particles spread out; no new substance forms.

3. Elements, Compounds, and Mixtures

- An element cannot be broken down into simpler substances by chemical means. Examples: copper, oxygen, hydrogen.
- A compound is made of two or more elements chemically combined in a fixed ratio. Examples: water, salt, sugar.
- The properties of a compound are different from the properties of the elements that form it.
- A mixture is a physical blend of substances. The substances keep their original properties and can often be separated physically.

Type	Definition	Examples
Element	One kind of atom; cannot be chemically broken down.	Copper, oxygen, gold
Compound	Two or more elements chemically combined in fixed proportions.	Water, carbon dioxide, sodium chloride
Homogeneous mixture	Uniform throughout; one phase.	Salt water, air, brass
Heterogeneous mixture	Not uniform; different parts can be seen.	Sand and water, salad, granite
Separation Method	Used For	Example
Filtration	Separating insoluble solid from liquid.	Sand from water
Distillation	Separating liquids by different boiling points.	Fresh water from salt water
Sublimation	Separating a solid that changes directly to gas.	Dry ice or iodine separation
Chromatography	Separating dissolved substances by attraction to paper/solvent.	Ink pigments
Crystallization	Forming solid crystals from a solution.	Rock candy or salt crystals

• Extensive: depend on amount (mass, length). • Intensive: do not depend on amount (color, density).		
Property Type	Depends on Amount?	Examples
Extensive	Yes	Mass, Length
Intensive	No	Color, Density



The diagram shows two beakers, A and B, both containing water at 55°C. Beaker A contains 500 mL of water, and Beaker B contains 1000 mL of water. Both beakers have a thermometer showing 55°C.

- ✓ The thermal energy in beaker B is higher than in beaker A. ✓
- ✓ The potential energy in beaker B is higher than in beaker A. ✓
- ✓ The average kinetic energy of the particles is the same in both beakers. ✓

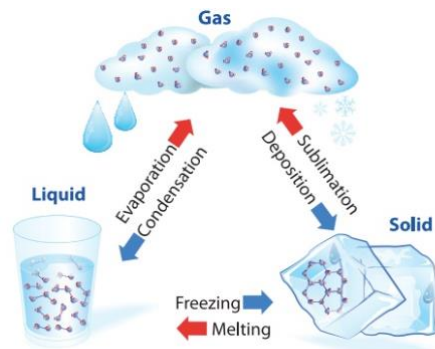
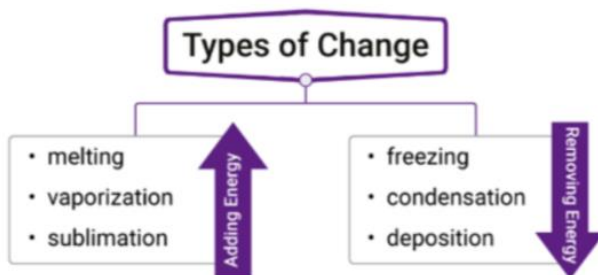


Figure 1.9 Change of state of matter

Module 14: Solids, Liquids, and Gases

1. Matter and Thermal Energy

- Kinetic theory says all matter is made of tiny particles that are in constant motion.
- Temperature is related to the average kinetic energy of particles.
- Thermal energy is the total energy of the particles in a substance.
- Heating usually increases particle motion; cooling decreases particle motion.

Change of State	Direction	Energy Change	Particle Explanation
Melting	Solid -> liquid	Energy absorbed	Particles gain enough energy to move past each other.
Freezing	Liquid -> solid	Energy released	Particles lose energy and lock into fixed positions.
Vaporization	Liquid -> gas	Energy absorbed	Particles overcome attractions and spread far apart.
Condensation	Gas -> liquid	Energy released	Particles slow down and move closer together.
Sublimation	Solid -> gas	Energy absorbed	Particles skip the liquid state.
Deposition	Gas -> solid	Energy released	Particles form a solid directly.

- On a heating curve, slanted parts show temperature increase. Flat parts show a change of state where energy is used to break attractions, not raise temperature.
- Water is unusual because ice is less dense than liquid water, so ice floats.
- Amorphous solids soften over a range of temperatures instead of having one sharp melting point.
- Liquid crystals have properties between liquids and solids and are used in displays.

2. Properties of Fluids

- A fluid is a substance that can flow: liquids and gases are fluids.
- Buoyant force is the upward force a fluid exerts on an object. If buoyant force is greater than weight, the object floats.
- An object sinks if its density is greater than the density of the fluid.
- Pressure is force divided by area. Unit: pascal (Pa).
- Pascal's principle: pressure applied to a confined fluid is transmitted equally in all directions.
- Bernoulli's principle: as the speed of a fluid increases, its pressure decreases.
- Viscosity is resistance to flow. Honey has high viscosity; water has low viscosity.

Concept	Key Idea	Common Example
Archimedes' principle	Buoyant force equals the weight of fluid displaced.	Ships float because they displace water.
Pressure	$P = F / A$	Snowshoes reduce pressure by increasing area.
Pascal's principle	Pressure in a confined fluid is transferred equally.	Hydraulic lift
Bernoulli's principle	Faster fluid means lower pressure.	Airplane wing lift, sprayer
Viscosity	Resistance to flow.	Maple syrup flows slowly.

Quick Check Questions

Question	Answer
1. Which state of matter has definite shape and definite volume?	Solid
2. Which state of matter has definite volume but no definite shape?	Liquid
3. Is boiling water a physical or chemical change?	Physical change
4. Name two signs of a chemical change.	Examples: gas, precipitate, color change, heat/light, odor
5. What law says mass of reactants equals mass of products?	Law of conservation of mass
6. Is salt water homogeneous or heterogeneous?	Homogeneous mixture
7. Which method separates sand from water?	Filtration
8. What happens to particle motion when temperature increases?	Particles move faster
9. On a heating curve, what does a flat line show?	A change of state
10. Why does ice float on water?	Ice is less dense than liquid water
11. What is viscosity?	Resistance to flow
12. What happens to gas volume if pressure increases at constant temperature?	Volume decreases
15. What is plasma?	Ionized gas with charged particles

Exam-Style Practice

1. A student tears paper into small pieces. What type of change is this?

A. Chemical change B. Physical change C. Nuclear change D. Thermal change

Answer: B

2. A rusty nail forms after iron is left outside. What evidence supports a chemical change?

A. New substance forms B. Shape changes only C. Mass disappears D. It melts

Answer: A

3. Which mixture is heterogeneous?

A. Air B. Salt water C. Salad D. Brass

Answer: C

4. Which method is best to separate ink colors?

A. Filtration B. Chromatography C. Freezing D. Melting

Answer: B

5. A gas is compressed from 10 L to 5 L at constant temperature. What happens to pressure?

A. Halves B. Doubles C. Stays the same D. Becomes zero

Answer: B

6. Which statement best describes Bernoulli's principle?

A. Faster fluid has lower pressure B. Solids float in all liquids C. Heat always lowers temperature D. Mass is destroyed

Answer: A

7. What happens during condensation?

A. Liquid becomes gas B. Gas becomes liquid C. Solid becomes gas D. Liquid becomes solid

Answer: B

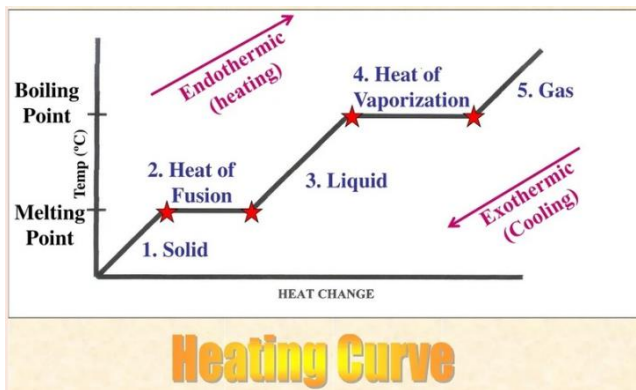
8. Which material likely has the highest viscosity?

A. Water B. Air C. Syrup D. Alcohol

Answer: C

Calculation Practice

Problem	Working	Answer
Pressure: A force of 200 N acts on an area of 2 m ² . Find pressure.	$P = F/A = 200/2$	100 Pa
Conservation of mass: 12 g + 8 g react. Product A is 15 g. Find Product B.	Total reactants=20 g; B=20-15	5 g



- In a hydraulic lift, a 720 N force is applied to a 0.20 m² piston. The minimum surface area of the larger piston must be _____ to lift 10,800 N.

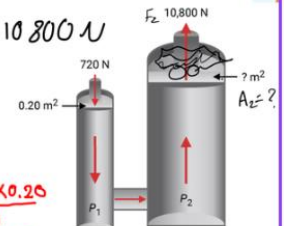
known: $F_1 = 720 \text{ N}$, $A_1 = 0.20 \text{ m}^2$, $F_2 = 10,800 \text{ N}$

unknown: $A_2 = ??$

$$\text{solve: } \frac{F_1}{A_1} = \frac{F_2}{A_2} \Rightarrow \frac{F_1 A_2}{A_1} = \frac{F_2}{1} \Rightarrow A_2 = \frac{F_2 A_1}{F_1}$$

$$\Rightarrow A_2 = \frac{F_2 A_1}{F_1} = \frac{10,800 \times 0.20}{720}$$

$$A_2 = 3 \text{ m}^2$$



Principle	Definition (Simple)	Key Idea	What Happens	Example
Archimedes 	Buoyant force equals weight of displaced fluid	Floating	Float if force ≥ weight, sink if less	Ship floating
Pascal	Pressure is transmitted equally in a fluid	Pressure transfer	Pressure at X = Pressure at Y $\frac{F_1}{A_1} = \frac{F_2}{A_2}$	Hydraulic Lift
Bernoulli 	Faster fluid → lower pressure	Speed vs pressure	Increase speed → decrease pressure	Plane wings, sprayer