

ScienceTopic 10: States of Matter



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1. Choose the correct words from the list to fill the gaps in the table about **physical properties of matter**. Some words are used more than once.

compressibility	definite shape	incompressible	kerosene		
methane	no definite shape	stones			

Matter	Physical properties	Examples				
Solid	a)	Desks				
	Definite volume	Books				
	Definite size	c)				
	Do not flow					
	b)					
Liquid	Definite volume	Water				
	d)	Milk				
	(takes shape of container)	f)				
	e)	Petrol				
	Able to flow					
Gas	Elasticity	Air				
	g)	Water vapour				
	h)	i)				
	No definite volume					

2. Draw a line between two words to make compound phrases about items that can be used to demonstrate a **changing state**.

toy
bicycle
measuring
water
chemical
glass
palm
spirit
candle

wax
burner
changes
balloon
cylinder
mirror
oil
pump
vapour

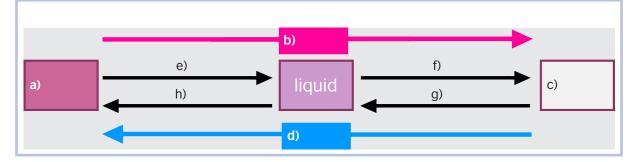


3. Underline the words with incorrect spelling in the sentences about **changing states**. Write the correct spelling in the box.

a)	At room temperature water is a liquid, but you can easily cheinge its state.	
b)	If you place water in the freezer, at 0 degrees centigrade it freezes to solid eyes.	
c)	If you heat water in a kettle, at 100 degrees centigrade it boils, changing state into the gas steem.	
d)	Other substances change state too, but at different temperatures. Chocolate meltz at about 40 degrees centigrade, cooking oil boils at about 180 degrees centigrade.	
e)	A liquid can change to a gas by evapurating or boiling.	
f)	Water evaporates into the air at all temperatures. At room temperature this change is slow, but evaporation spides up when the water is heated.	
g)	Eventually the change becomes so fast that steam bubles grow inside the liquid. The water is then boiling.	

4. Use the words about **changes of state** to label the diagram. Write your answers in the grid below.

colder	condensing	evaporating/boiling	freezing		
gas	hotter	melting	solid		



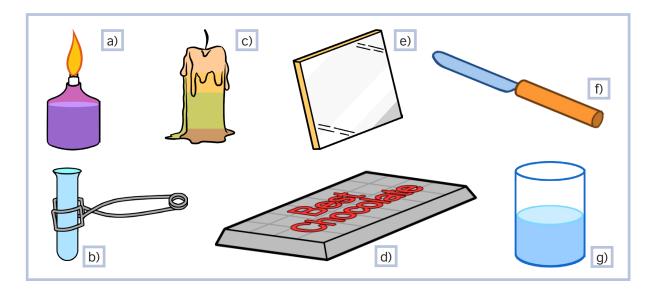
Write your answers here:

a)	b)	
c)	d)	
e)	f)	
g)	h)	



5. Use the words about **observing changes of state** to label the pictures. Write your answers in the grid below.

beaker of water	candle wax	chocolate	glass mirror			
knife	spirit burner	test tube holder				



Write your answer here:

a)	b)	
c)	d)	
e)	f)	
g)		

6. Choose the correct words from the list to fill the gaps in the sentences about **observing changing states of liquids and gases**.

cool surface	a test tube	gas to liquid
liquid to gas	test tube	

- b) Observe how the water changes state from ______.
- c) Hold a mirror over the mouth of the steaming ______.
- d) Observe how the steam changes state from ______ .
- e) The steam condenses as water droplets on the ______.



7. Find the words on **changes of state** in the word search.

F	-1	Α	Н	С	Χ	С	Ε	L	Н	Ε	S	0	1	L	R	atoms
K	Р	Т	Ε	Ο	-1	S	В	Τ	L	Ι	Χ	0	Н	R	G	bend
L	Т	Ο	Ε	L	U	Α	G	Ε	R	Т	S	Р	Ε	0	V	colourless
Α	D	М	Υ	Ο	R	Ν	Р	Α	Ν	Z	Τ	Ε	Α	I	Α	density
М	-1	S	R	U	Ε	Α	L	Ε	С	D	L	R	٧	Ν	G	elasticity
М	Р	Ο	S	R	Н	U	R	L	Α	В	Ε	М	Υ	R	D	expand
D	Р	S	T	L	G	Α	Н	Α	1	J	Ν	Α	D	0	T	gaseous
Q	М	S	Ε	Е	Р	Z	Τ	S	R	В	F	Ν	Α	D	G	heavy
J	R	С	R	S	Α	Υ	1	Τ	G	1	G	Ε	K	F	Р	invisible
Ι	G	U	Ν	S	Т	V	Υ	Ι	D	Ε	L	Ν	S	Χ	F	light
Р	S	Α	S	-1	Ν	Н	R	С	U	R	W	Τ	F	R	K	mass
Ε	R	Α	S	-1	Ε	Α	Р	I	Ε	Н	Н	F	В	R	W	permanent
Τ	М	Ν	R	Е	Т	Р	Ν	Τ	L	G	М	Ν	Ε	Ε	М	porous
Ε	Ε	Р	R	Ν	0	М	Ε	Υ	1	Τ	S	N	K	S	I	regular
D	Ε	S	R	W	В	U	Α	L	G	Ν	Χ	F	В	С	I	size
L	L	F	В	Υ	Ε	Ε	S	I	Z	Ε	Ν	L	Н	F	Z	strength
																transparent

8. Complete the crossword by answering the following questions. All the correct answers are words about **working with different types of matter.**

Across:

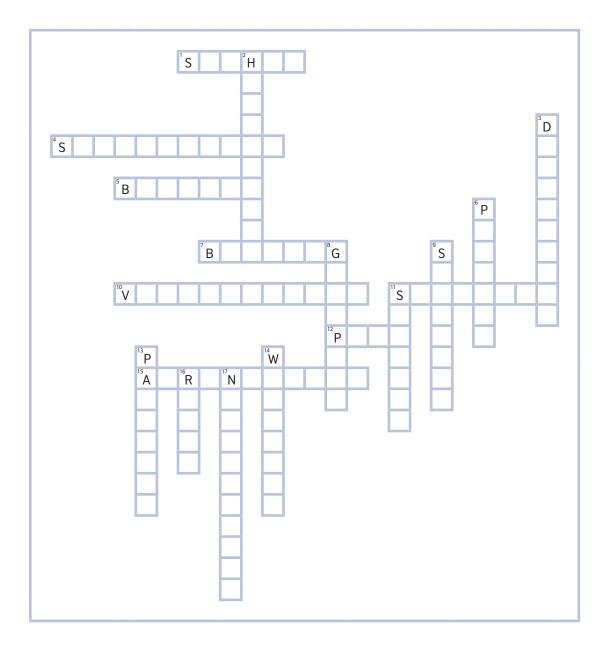
- 1. A small flat paper or plastic bag that contains a small amount of something, especially a powder or a liquid.
- 4. The process in which a substance is changed from a solid substance into a gas or from a gas into a solid substance without first becoming a liquid.
- 5. A situation in which different aspects or features are treated equally or exist in the correct relationship to each other.
- 7. Being destroyed by fire.
- 10. The process of changing something from liquid to gas; another word for evaporation.
- 11. A round, deep metal container with a long handle used for cooking food.
- 12. To make a liquid or substance flow out of a container that you are holding.
- 15. The way that things are placed in a particular order or pattern.

Down:

- 2. A piece of equipment used for measuring the density of liquids.
- 3. The process of mixing a substance into a liquid so that it becomes included in it.
- 6. To keep someone or something safe from harm, injury or damage.
- 8. A set of people or things, or the process of bringing them together.
- 9. Damaged by being pressed or crushed.
- 11. A needle fitted to a plastic tube, used for taking blood from your body or for putting medicine or drugs into it.



- 13. A clear oil with a strong smell that is used for fuel. The American word is kerosene.
- 14. Measuring how heavy something is.
- 16. What a chemical substance does when it comes in contact with another and changes as a result.
- 17. A substance used to make dyes, explosives, and mothballs.





9. Unscramble the letters to make words about **changing states of matter** that match with the definitions. Write your answers in the empty boxes.

a)	The opposite of what has been said.	icve ervsa
b)	To fill in an available area.	steak up capes
c)	To accept the size or form of something used for storing or holding things (for example, a box, bottle, or bowl).	keat the peash of
d)	To mix a substance with water by moving it around with an object such as a stick or spoon.	rits into rewat
e)	To get into an area or place of reduced size by pushing or tightening hard.	seezequ into a remalls capes
f)	A thing that is not alive and is usually solid that falls below surface of a liquid.	inkings jobtec
g)	To fasten a cover to a container with a raised twisted part called a thread.	crews on the dil
h)	Turning or changing to a previous state following a series of things that happen to give a particular result.	versering the scropes
i)	To make air move into a soccer ball by using a special piece of equipment.	mupp up a baltloof
j)	The normal level of heat in an indoor space that is neither too hot nor too cold.	at moor maturepreet



Glossary

at room temperature	/ət ruːm ˈtemprɪtʃə(r)/ the normal level of heat in an indoor space that is neither too hot nor too cold.
arrangement	/əˈreɪndʒmənt/ noun [C/U] the way that things are arranged in a particular order or pattern.
atmosphere	/ˈætməsˌfiə(r)/ noun [C] the air round the Earth or round another planet.
atoms	/ˈætəm/ noun [C] the smallest unit of any substance. It consists of a nucleus made of protons and neutrons with electrons travelling around it.
balance	/ˈbæləns/ noun [C/U] a situation in which different aspects or features are treated equally or exist in the correct relationship to each other.
beaker	/ˈbiːkə(r)/ noun [C] a glass or plastic container with straight sides that is used in a laboratory.
bend	/bend/ noun [C] a curve in a road, river etc.
bicycle pump	/ˈbaɪsɪk(ə)l pʌmp/ a piece of equipment for making air move into the tyre of a vehicle with two wheels that you ride by pushing pedals with your feet.
blow up	/bləʊ ʌp/ verb [I/T] fill something with air or gas.
boiling	/ˈbɔɪlɪŋ/ adj extremely hot.
break apart	/breɪk əˈpɑː(r)t/ make something separate into two or more pieces, for example by hitting or dropping it.
burning	/ˈbɜː(r)nɪŋ/ adj being destroyed by fire.
candle	/ˈkænd(ə)l/ noun [C] a stick of wax with a string in it called a wick that you burn to give light.
candle wax	/ˈkænd(ə)l wæks/ the material from which candles are made.
changing state	/ˌtʃeɪndʒɪŋ steɪt/ the condition of something at a particular time, which alters, does not stay the same all the time.
chemical changes	/ˈkemɪk(ə)l tʃeɪndʒz/ a substance used in chemistry or produced by a process involving chemistry
colourless	/ˈkʌlə(r)ləs/ adj something that has no colour.
compressibility	/kəmˈpresəbɪləti/ noun [C] pressing or squeezing something so that it fits into a smaller space.
condensation	/ˌkɒndenˈseɪʃ(ə)n/ noun [C] the process in which a gas changes into a liquid, usually when it becomes cooler.
cool	/kuːl/ adj rather cold, often in a pleasant way.
definite	/ˈdef(ə)nət/ adj clearly decided and specific.
density	/ˈdensəti/ noun [U] a measurement of how much space a particular amount of a substance takes up. It is found by dividing its mass by its volume.
dissolving	/dıˈzɒlvɪŋ/ adj mixed into the liquid so that it becomes included in it.
	7



graduated beaker	/ˈgrædʒuˌeɪtɪd ˈbiːkə(r)/ a piece of equipment, such as a container, that has marks on it to show measurements.
elasticity	/ˌiːlæˈstɪsəti/ noun [U] the ability of a substance to stretch easily and then return to its original shape quickly.
evaporate	/ɪˈvæpəreɪt/ verb [I/T] change into gas or steam and disappear.
evaporating	/ɪˈvæpəreɪtɪŋ/ adj changing into gas or steam and disappearing.
expand	/ıkˈspænd/ verb [I/T] become larger in size and fill more space.
fixed shape	/fikst ʃeip/ definite, with exact, non-changing size and amount, outer form.
floating object	/ˈfləʊtɪŋ ˈɒbdʒekt/ not fixed or permanent, and therefore likely to change,a thing that you can see and touch that is not alive and is usually solid.
flow	/fləʊ/ noun [C/U] the continuous movement of a liquid in one direction.
freezing	/ˈfriːzɪŋ/ adj very cold.
gas	/gæs/ noun [C/U] a substance such as air that is neither a solid nor a liquid.
gas steam	/gæs stiːm/ the substance like a thin cloud that is produced when gas is released by pressure.
gaseous	/ˈgæsiəs/ adj in the form of a gas or similar to a gas, rather than a solid or liquid.
glass mirror	/glɑːs ˈmɪrə(r)/ an object made from the same material as used for a window or bottle, in which you can see yourself or see what is behind you.
grouping	/ˈgruːpɪŋ/ noun [C] a set of people or things that are considered as a group.
heavy	/ˈhevi/ adj something weighing a lot.
hurricane lamp	/ˈhʌrɪkən læmp/ a light with a strong glass cover that protects the light or flame from wind and rain.
hydrometer	/haiˈdrɒmitə(r)/ noun [C] a piece of equipment used for measuring the density of liquids.
ice	/ais/ noun [C/U] water that has frozen and become solid.
iceberg	/ˈaɪsˌbɜː(r)g/ noun [C] a very large piece of ice floating in the sea with only a small amount of it above the surface of the water.
incompressible	/ınkəmˈpresəbl/ adj unable to be squeezed so that it fits into a smaller space.
invisible	/ınˈvızəb(ə)l/ adj something that cannot be seen.
iodine	/ˈaɪədiːn/ noun [U] a dark chemical that is put on cuts in the skin to prevent infection.
light	/laɪt/ adj not weighing much, or weighing less than you expect.
	/ˈlɪkwɪd/ noun [C/U] a substance that can flow, has no fixed shape, and is not a solid



mass	/mæs/ noun [C/U] the amount of matter that something contains.
matter	/ˈmætə(r)/ noun [C/U] the physical substance that everything in the world is made of.
measuring cylinder	/ˈmeʒərɪŋ ˈsılındə(r)/ a glass or plastic container, in the shape of cylinder, that you use for measuring food and liquids when you are cooking.
melting	/ˈmeltɪŋ/ adj making you feel love or sympathy.
methane gas	/ˈmɪːθeɪn gæs/ noun [U] also known as natural gas and which burns with a blue flame
molten wax	/ˈməʊltən wæks/ very hot soft natural or artificial substance that becomes liquid when heated, used for making candles and models.
naphthalene	/ˈnæfθəliːn/ noun [U] a substance used to make dyes, explosives, and mothballs
palm oil	/pɑːm ɔɪl/ a thick type of oil produced from the fruit of palm trees that is used especially for cooking and making soap.
paraffin	/'pærəfin/ noun [U] a clear oil with a strong smell that is used for fuel. The American word is kerosene.
permanent	/'ps:(r)mənənt/ adj happening or existing for a long time or for all time in the future.
physical changes	/'fızık(ə)l tʃeındʒz/ the process of becoming different referring to size, shape, volume.
physical properties	/ˈfizɪk(ə)l ˈprɒpə(r)tiz/ qualities or features of something, referring to size, shape, volume.
porous	/'po:res/ adj a substance that has a lot of very small holes in it so that air and water can pass through it.
pour	/pɔ:(r)/ verb [T/I] make a liquid or substance flow out of a container that you are holding.
protect	/prəˈtekt/ verb [T] keep someone or something safe from harm, injury, damage, or loss.
pump up a football	/pʌmp ʌp eɪ ˈfʊtˌbɔːl/ make air move into a soccer ball, by using a special piece of equipment.
rapidly	/rəˈpɪdli/ adv happening, moving, or acting quickly.
react	/ri'ækt/ verb [I] when a chemical substance comes in contact with another and changes as they are mixed together.
regular	/ˈregjʊlə(r)/ characteristic of things that are ordinary or average outer form, regular in shape.
relation to	/rıˈleɪʃ(ə)n tʊ/ a connection between two or more people or things.
relative density	/ˈrelətɪv ˈdensəti/ thickness of something, having a particular quality when compared with something else.
require	/rıˈkwaıə(r)/ verb [T] need someone or something.
reversible	/rıˈvɜː(r)səb(ə)l/ adj able to return or be changed to a previous state.
reversed	/rıˈvɜː(r)sd/ adj change the order or development of events, a process, or a situation to be the opposite of what it was.



reversing the process	/rɪˈvɜː(r)sɪŋ ðə ˈprəʊses/ turning or changing to a previous state of a series of things that happen and have a particular result.
sachet	/ˈsæʃeɪ/ noun [C] a small flat paper or plastic bag that contains a small amount of something, especially a powder or a liquid.
saucepan	/ˈsɔːspən/ noun [C] a round deep metal container with a long handle, used for cooking food on a cooker.
screw on the lid	/skru: pn ei lid/ verb phrase fasten a cover to a container with a raised twisted part called a thread.
shape	/ʃeɪp/ noun [C/U] the outer form of something.
sinking object	/ˈsɪŋkɪŋ ˈɒbdʒekt/ a thing that you can see and touch that is not alive and is usually solid, which is going under the surface of a certain liquid.
size	/saɪz/ noun [C/U] how large or small something is.
slow	/sləʊ/ adj not happening fast.
solid	/ˈsɒlɪd/ adj a substance that is firm and hard and is not a liquid or a gas.
speed up	/spiːd ʌp/ verb [T/I] move or happen faster.
spirit burner	/ˈspɪrɪt ˈbɜː(r)nə(r)/a special device used for heating or producing alcohol.
squashed	/skwpʃt/ adj damaged by being pressed or crushed.
squeeze into a smaller space	/skwi:z 'ıntə eı smɔ:lɜ:(r) speis/ get into an area or place of reduced size by pushing or tightening hard.
state	/steɪt/ noun [C/U] the condition of something at a particular time.
steam bubbles	/stiːm ˈbʌb(ə)lz/ hot wet balls of air or gas in a liquid that is produced when water is heated.
stir into water	/sta:(r) 'intə 'wo:tə(r)/ mix a substance by moving it around with an object such as a stick, in liquid.
stone	/stəʊn/ noun [C/U] the hard substance that rocks are made of, often used for building.
strength	/stren θ / noun [U] the ability of something to support a force or weight without breaking.
sublimation	/,snbli meif(ə)n/ noun [U] the process in which a substance is changed from a solid substance into a gas or from a gas into a solid substance without first becoming a liquid.
syringe	/sıˈrɪndʒ/ noun [C] a needle fitted to a plastic tube, used for taking blood from your body or for putting medicine or drugs into it.
take shape of container	/teɪk ʃeɪp ɒv kənˈteɪnə(r)/ accept the size or form of something used for storing or holding things, for example a box, bottle, or bowl.
takes up space	/teɪk ʌp speɪs/ verb phrase fill in available area.
test-tube	/test tju:b/ noun [C] a long thin glass container that is open at one end and is used in laboratories.
test-tube holder	/test tju:b 'həʊldə(r)/ a device that is designed to hold or support long thin glass containers that are open at one end and are used in laboratories.



thinnest	/θınest/ adj superlative form extremely thin.
tie it shut	/tai it ʃʌt/ make a knot with two ends of a piece of string, rope etc, so as to close something.
toy balloon	/toi bəˈluːn/ a small coloured bag of thin rubber that you fill with air, used as a child's toy or a decoration.
transparent	/træns pærent/ adj a transparent object or substance is clear or thin enough for you to see things through.
vaporization	/,veiperai'zeif(e)n/ noun [U] the process of becoming a vapour, or of changing something into a vapour.
vice versa	/,vais 'va:(r)sə/ adv the opposite of what has been said.
volume	/'vɒljuːm/ noun [C/U] the amount of space something fills, or the amount of space in a container.
water droplets	/ˈwɔːtə(r) ˈdrɒpləts/ very small drops of water.
water vapor	/ˈwɔːtə(r) ˈveɪpə(r)/ very small drops of water or other liquids in the air that make the air feel wet.
weighing	/weiin / verb progressive measuring how much something weighs.



Key:

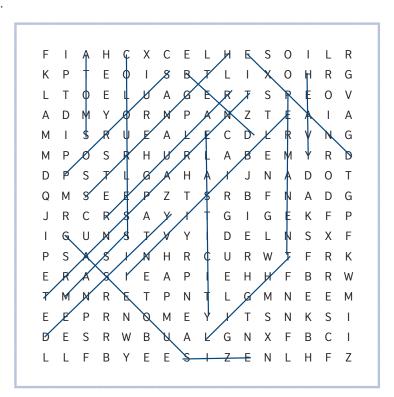
1. a) definite shape, b) incompressible, c) stones, d) no definite shape, e) incompressible, f) kerosene, g) no definite shape, h) compressibility, i) methane

2.

toy bicycle		wax
bicycle		
		burner
measuring		changes
water		balloon
chemical	\times \times	cylinder
glass		mirror
palm		oil
spirit		pump
candle		vapour

- 3. a) change, b) ice, c) steam, d) melts, e) evaporating, f) speeds, g) bubbles
- 4. a) solid, b) hotter, c) gas, d) colder, e) melting, f) evaporating/boiling, g) condensing, h) freezing
- 5. a) spirit burner, b) test tube holder, c) candle wax, d) chocolate, e) glass mirror, f) knife, g) beaker of water
- 6. a) a test tube, b) liquid to gas, c) test tube, d) gas to liquid, e) cool surface

7.





- 8. **Across:** 1. sachet, 4. sublimation, 5. balance, 7. burning, 10. vaporisation, 11. saucepan, 12. pour, 15. arrangement; **Down:** 2. hydrometer, 3. dissolving, 6. protect, 8. grouping, 9. squashed, 11. syringe, 13. paraffin, 14. weighing, 16. react, 17. naphthalene
- 9. a) vice versa, b) takes up space, c) take the shape of, d) stir into water, e) squeeze into a smaller space, f) sinking object, g) screw on the lid, h) reversing the process, i) pump up a football, j) at room temperature