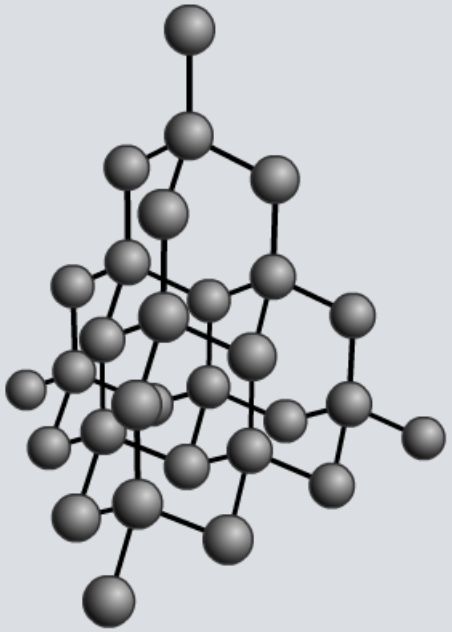
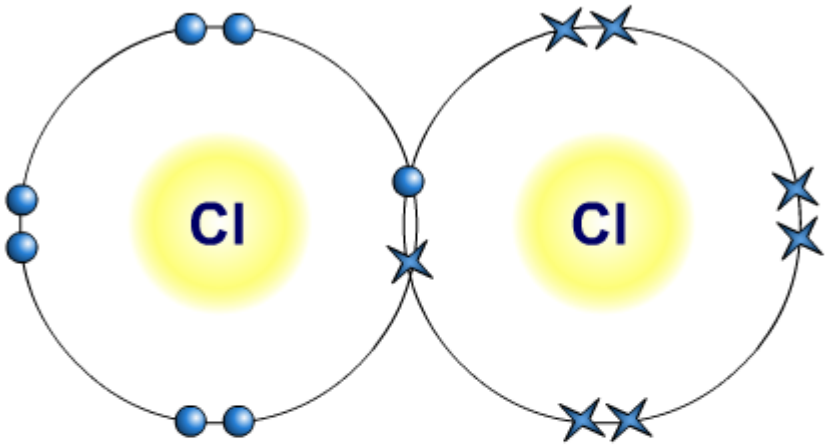
Comparing Bonding



Which words match the covalent substance?

substance
1 of 6

chlorine



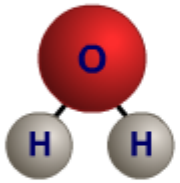
simple structure	element	compound	allotrope	double bond
giant structure	molecule	diatomic	single bond	triple bond

?

solve

Simple or giant covalent structure?

Simple covalent or a giant covalent structure?

Name	Properties	Structure	Simple or giant covalent structure?
water	• liquid at room temperature • cannot conduct electricity		?

structure 1 of 4

simple covalent

giant covalent

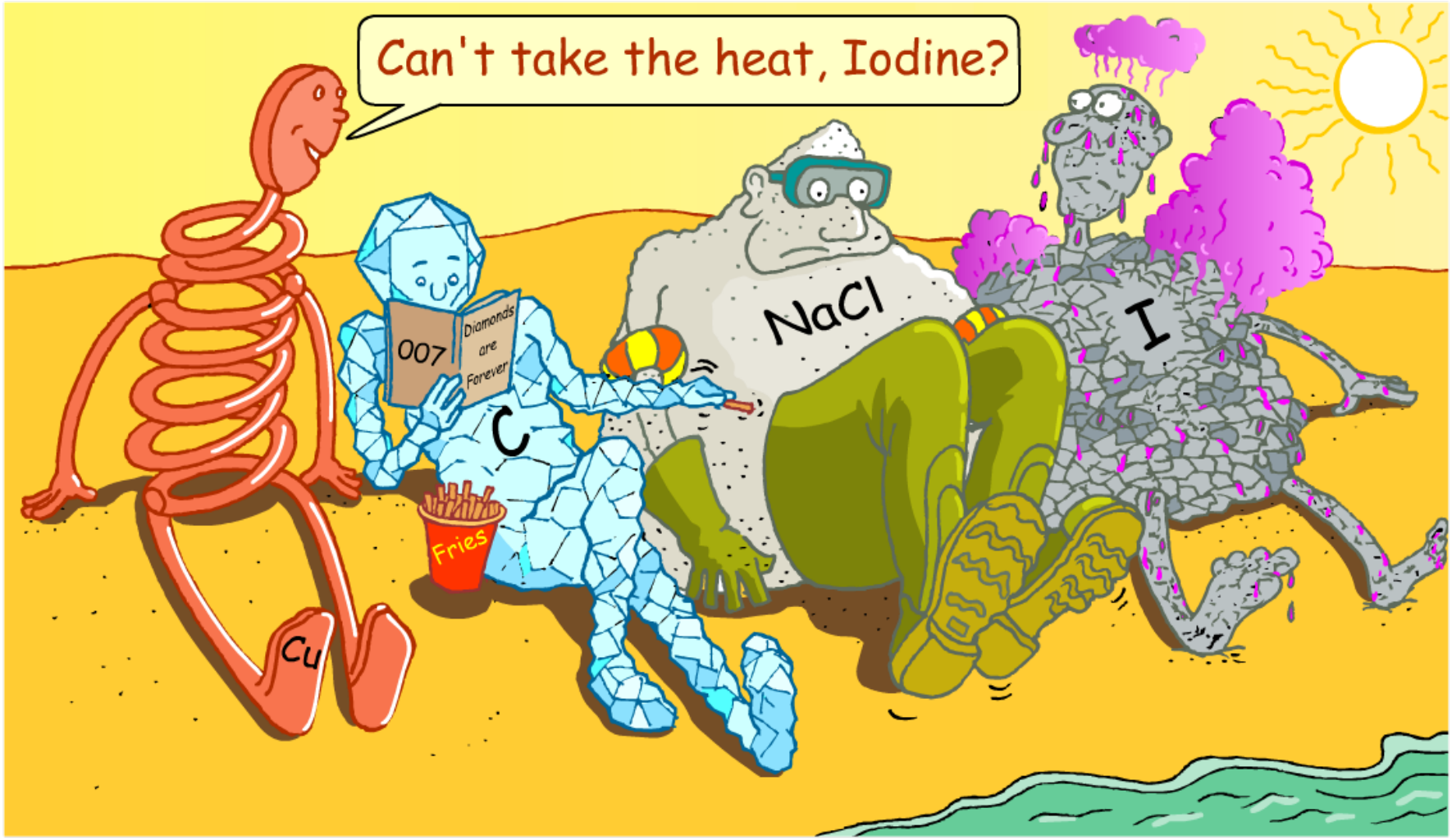
?

C

solve

How does bonding affect properties?

Does the type of bonding in a substance affect its properties?



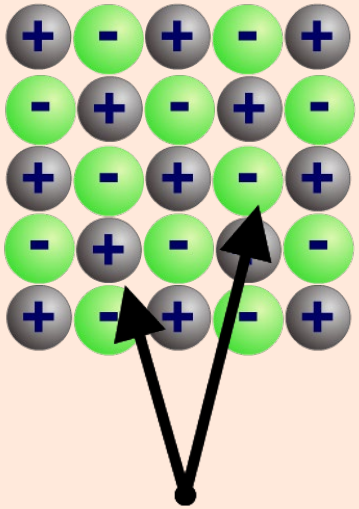
Bonding and structures

The type of bonding in a substance affects the properties of that substance. Can you fill in the gaps in the table below?

Bonding	Type of structure	Particles in structure	State at room temperature
ionic	giant ionic lattice	millions of metal and nonmetal ions	solid
covalent	simple molecular	few nonmetal atoms	usually liquid or solid
	giant covalent lattice	millions of non-metal atoms	solid
metallic	giant metallic lattice	millions of metal ions	solid (except mercury – liquid)

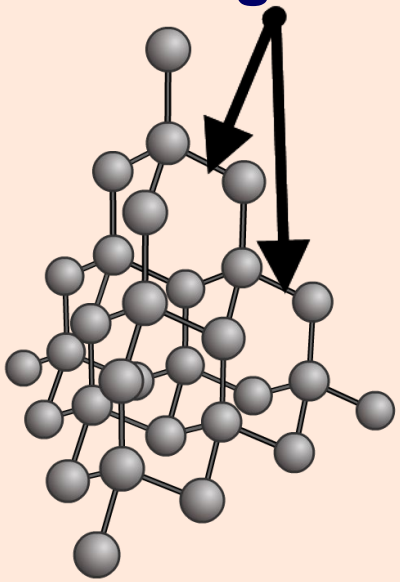
Melting and boiling point: giant structures

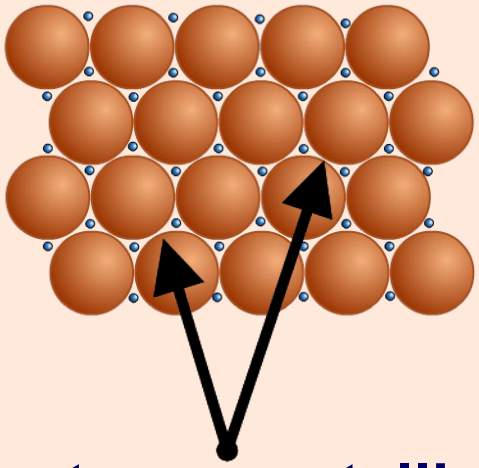
Substances with giant structures generally have **high melting and boiling points** because all the atoms are strongly bonded together to form a continuous 3D lattice. A large amount of energy is needed to break these bonds.



strong ionic bonds holds ions together

strong covalent bonds holds atoms together

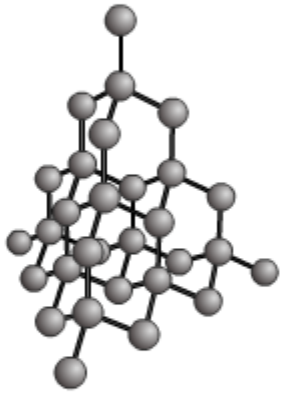




strong metallic bonds holds ions together

Effect of structure on properties

Which words match each substance?

conducts electricity	high melting point	giant structure	soluble in gasoline
dense			brittle
molecular			ionic lattice
ductile	metallic lattice	soluble in water	malleable

structure 1 of 5

?

solve

The effect of bonding on properties

Complete each statement about bonding

Molecules do not conduct electricity because...	Graphite conducts electricity because...	Copper conducts electricity because...
?	?	?
...there are free electrons between layers of atoms	...there are no free electrons to carry a charge.	...it contains a sea of free electrons.

? C solve