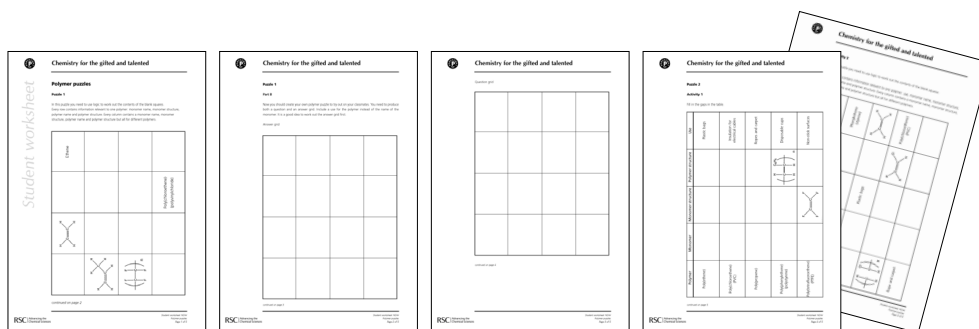
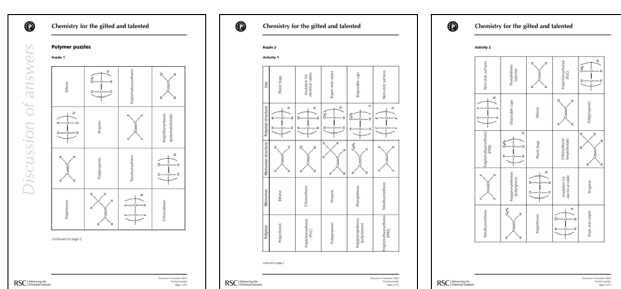


Polymer puzzles



Student worksheet: CDROM index 16SW



Discussion of answers: CDROM index 16DA

Topics

Names and displayed formulae of polymers and their associated monomers. Puzzle 2 also incorporates the uses of polymers.

Level

Able students in the 14–16 age range.

Prior knowledge

Names and displayed formulae of polymers and their associated monomers.

Rationale

This activity is designed to develop the students' higher order thinking – particularly critical thinking skills – in the context of problem solving. It should help students to recall the facts about some common polymers.

Use

These puzzles could be used as part of a topic on polymers or during revision. Puzzle 1 should be used first.

Polymer puzzles

Puzzle 1

In this puzzle you need to use logic to work out the contents of the blank squares.

Every row contains information relevant to one polymer: monomer name, monomer structure, polymer name and polymer structure. Every column contains a monomer name, monomer structure, polymer name and polymer structure but all for different polymers.

Ethene			
			Poly(chloroethene) (polyvinylchloride)

continued on page 2



Chemistry for the gifted and talented

Puzzle 1

Part B

Now you should create your own polymer puzzle to try out on your classmates. You need to produce both a question and an answer grid. Include a use for the polymer instead of the name of the monomer. It is a good idea to work out the answer grid first.

Answer grid

continued on page 3



Chemistry for the gifted and talented

Question grid

continued on page 4

Puzzle 2

Activity 1

Fill in the gaps in the table.

Polymer	Monomer	Monomer structure	Polymer structure	Use
Poly(ethene) (polythene)				Plastic bags
Poly(chloroethene) (PVC)				Insulation for electrical cables
Poly(propene)				Ropes and carpet
Poly(phenylethene) (polystyrene)				Disposable cups
Poly(tetrafluoroethene) (PTFE)				Non-stick surfaces

continued on page 5

Activity 2

In this puzzle you need to use logic to work out the contents of the blank squares.

Every row contains information relevant to one polymer: use, monomer name, monomer structure, polymer name and polymer structure. Every column contains a monomer name, monomer structure, polymer name and polymer structure but all for different polymers.

	Phenylethene (styrene)		Poly(chloroethene) (PVC)	
Poly(tetrafluoroethene) (PTFE)		Plastic bags		
				Rope and carpet

Polymer puzzles

Puzzle 1

Ethene		Poly(tetrafluoroethene)	
	Propene		Poly(chloroethene) (polyvinylchloride)
	Poly(propene)	Tetrafluoroethene	
Poly(ethene) (polythene)			Chloroethene

continued on page 2

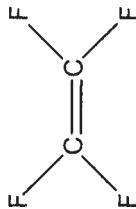
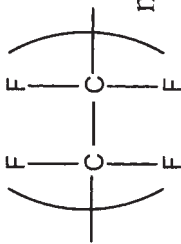
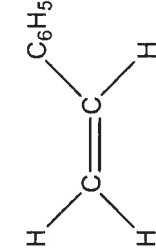
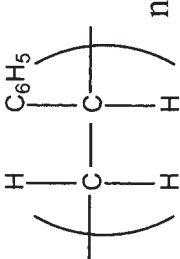
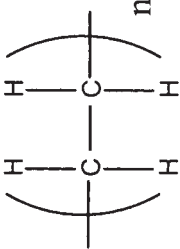

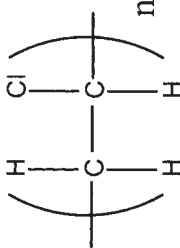

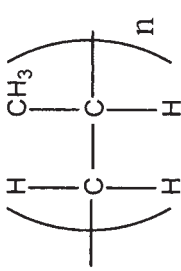
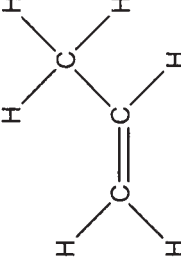

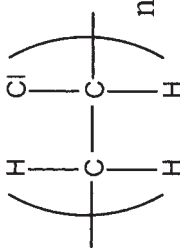
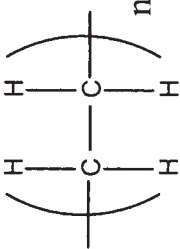
Puzzle 2

Activity 1

Polymer	Monomer	Monomer structure	Polymer structure	Use
Poly(ethene) (polythene)	Ethene			Plastic bags
Poly(chloroethene) (PVC)	Chloroethene			Insulation for electrical cables
Poly(propene)	Propene			Ropes and carpet
Poly(phenylethene) (polystyrene)	Phenylethene			Disposable cups
Poly(tetrafluoroethene) (PTFE)	Tetrafluoroethene			Non-stick surfaces

continued on page 3

Activity 2

Tetrafluoroethene		Poly(tetrafluoroethene) (PTFE)		Non-stick surfaces
Poly(phenylethene) (polystyrene)			Phenylethene (styrene)	Phenylethene (styrene)
Poly(ethene) (polythene)			Ethene	Poly(chloroethene) (PVC)
Poly(ethene) (polythene)			Chloroethene (vinylchloride)	
Propene			Poly(propene)	
Rope and carpet			Insulation for electrical cable	