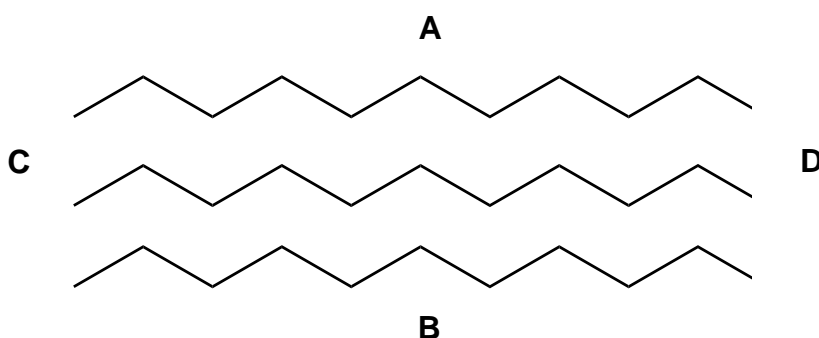


Polythene bags

In this activity you are going to look closely at a common item: a supermarket carrier bag.

Remember

Polythene or poly(ethene) molecules are like very long chains. They are arranged in rows like this:



The rows are held together by intermolecular forces but can slide over each other.

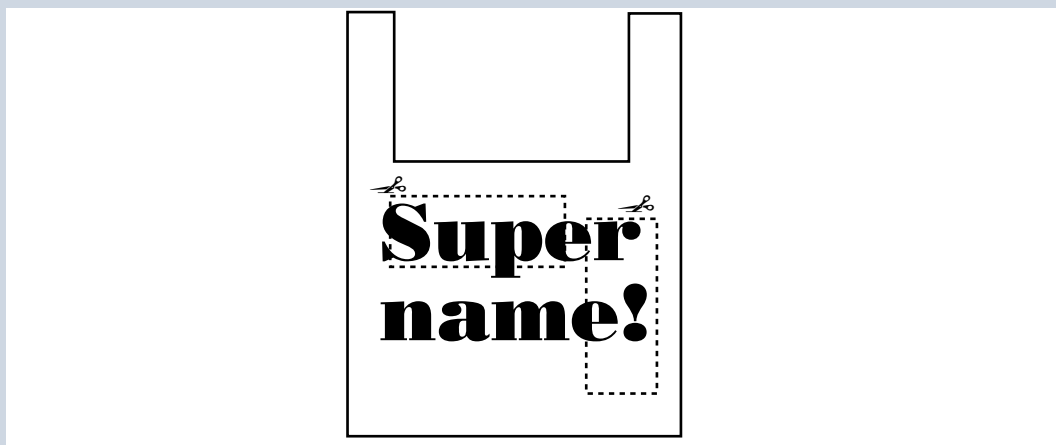
Think

Would it be easier to pull the plastic apart holding it at A and B or at C and D? What would happen in each case?

What to do

Collect a plastic supermarket bag. Cut two pieces from the bag – one vertical (up and down) and one horizontal (left to right). If you use pieces with writing on them it is easy to remember which is which. The pieces should be approximately 10 cm x 3 cm and roughly the same size as each other. You do not need to measure them exactly.

Pull each piece of plastic that you have cut out, holding the two short sides. Pull gently to start with and then harder until something happens.



Record what you see for the vertical and for the horizontal piece.

Look at the diagram at the top of the page and try to work out when you were pulling the chains over each other and in when you were pulling the chains apart.

Questions

1. When you pull the chains over each other are you likely to stretch or break the plastic?

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2. In which piece of plastic could the chains have been moving over each other when you pulled?

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3. Look at the diagram at the top of the page overleaf. Does the plastic stretch from A to B or C to D?

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4. Do you think the polymer molecules are the same way round in all carrier bags? Explain your answer. What could you do to test your ideas?

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