

A-Level Chemistry

Name: _____ Score: _____

1. In addition polymerisation, the monomers must have:
 - ☐ a -COOH group
 - ☐ a $\text{C}=\text{C}$ double bond
 - ☐ an -OH group
 - ☐ a triple bond only
2. To draw the repeat unit from a monomer, you:
 - ☐ remove a hydrogen
 - ☐ add a water molecule
 - ☐ change the $\text{C}=\text{C}$ to a single $\text{C}-\text{C}$ and draw bonds out at each end
 - ☐ add an extra carbon
3. To find the monomer from a polymer's repeat unit, you:
 - ☐ join two repeat units
 - ☐ put the $\text{C}=\text{C}$ double bond back
 - ☐ remove a carbon
 - ☐ add an -OH group
4. Why are poly(alkene)s hard to dispose of?
 - ☐ they evaporate
 - ☐ they react with air quickly
 - ☐ they dissolve in water
 - ☐ they are non-biodegradable, and burning some (like PVC) releases toxic gases
5. Addition polymers are made from monomers containing a $\text{C}=\text{C}$ _____ bond.

6. The repeat unit $\text{-CH}_2\text{-CH}(\text{CH}_3)\text{-}$ comes from the monomer _____.

7. Making poly(ethene) by addition polymerisation also produces water.
 - ☐ True ☐ False
8. The repeat unit $\text{-CH}_2\text{-CH}(\text{CH}_3)\text{-}$ contains how many carbon atoms?
 - ☐ Two
 - ☐ Three
 - ☐ Four

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1. **a C=C double bond**

The C=C double bond opens up to let the monomers link into a long chain, with no other product.

2. **change the C=C to a single C–C and draw bonds out at each end**

Open the double bond ($\text{C}=\text{C} \rightarrow \text{C}-\text{C}$) and put a bond out at each end to show the chain continues.

3. **put the C=C double bond back**

Reversing the process, restore the C=C double bond in one repeat unit to get the monomer.

4. **they are non-biodegradable, and burning some (like PVC) releases toxic gases**

Microbes cannot break them down (non-biodegradable); burning PVC releases toxic hydrogen chloride.

5. **double**

The double bond opens to join the units.

6. **propene**

Restore the C=C between the two backbone carbons: $\text{CH}_2=\text{CHCH}_3$, which is propene.

7. **False**

The monomer atoms all enter the polymer. Addition polymerisation has no small-molecule by-product.

8. **Three**

Two carbons form the backbone and one is in the methyl side group: three in total.