

In this worksheet, we will practice defining an addition polymerization and determining the structure of an addition polymer from the monomer reactant.

Q1: Addition polymers may be made from many types of monomer. What is the most common type of monomer used to make addition polymers?

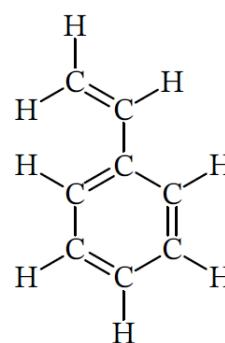
- A Alcohols
- B Carboxylic acids
- C Alkanes
- D Alkenes
- E Alkynes

Q2: Which of the following is the best description of an addition polymer?

- A A polymer that can be easily added to other polymers
- B A polymer made by linking monomers together, without forming by-products
- C A polymer made by linking different monomers in a well-defined sequence
- D A polymer made by linking monomers together and releasing water or other small molecules
- E A polymer that can be linked to itself to form a longer polymer

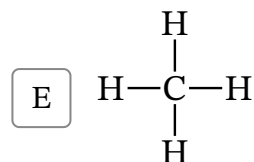
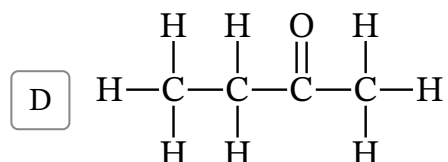
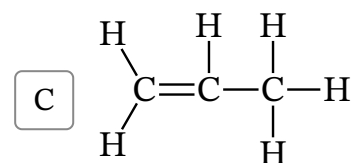
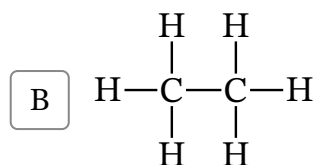
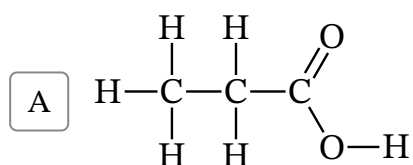
Q3: Poly(styrene) is an addition polymer made from the monomer styrene.

If 100 kg of styrene reacts completely to form polystyrene, what mass of polystyrene is produced?

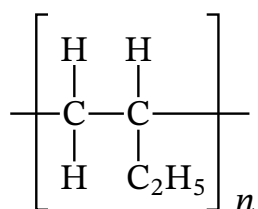


Styrene

Q4: Which of the following molecules can be polymerized?

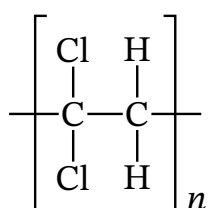


Q5: Which of the following chemicals is used as a monomer for the following polymer?



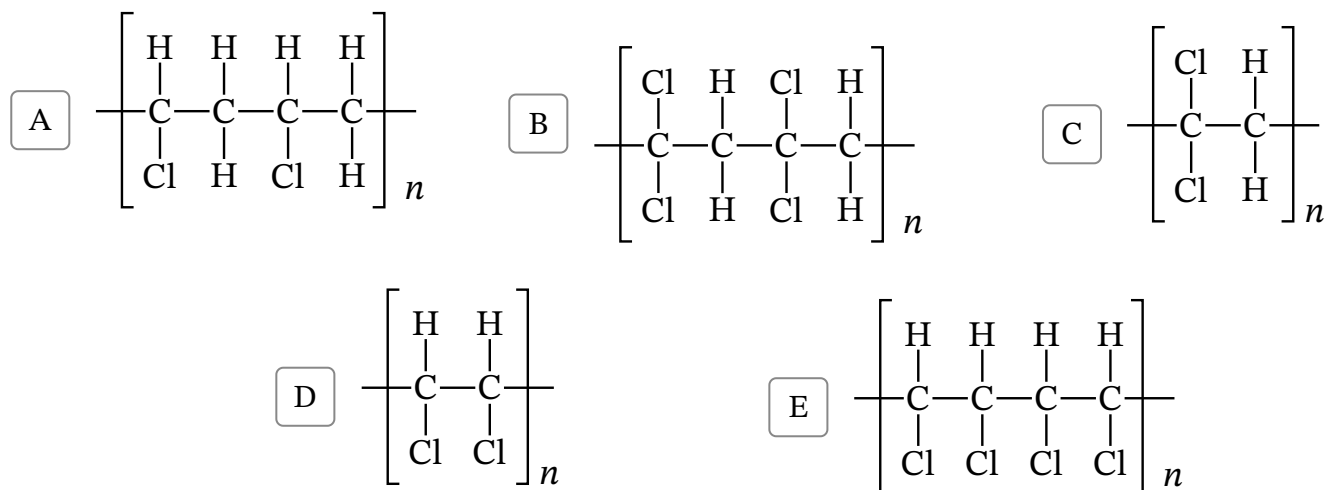
- A** Butanol
- B** But-1-ene
- C** Butane
- D** Butanoic acid
- E** But-2-ene

Q6: Which of the following chemicals is used as a monomer for the following polymer?

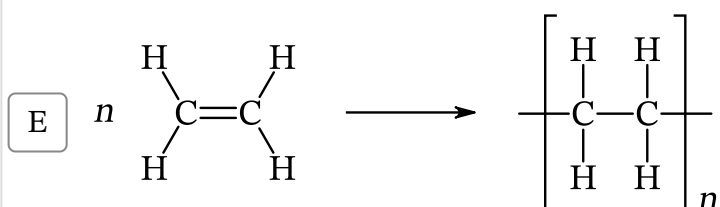
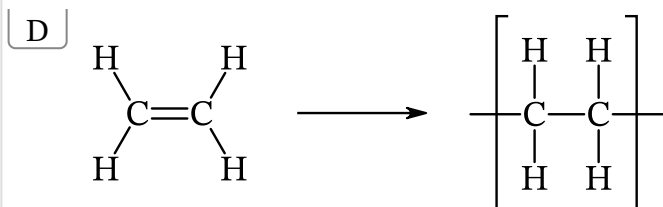
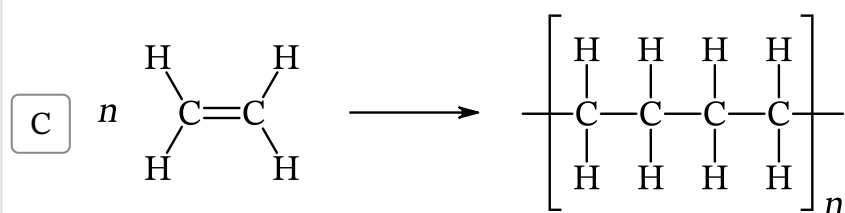
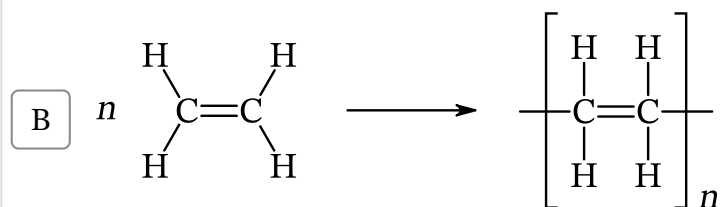
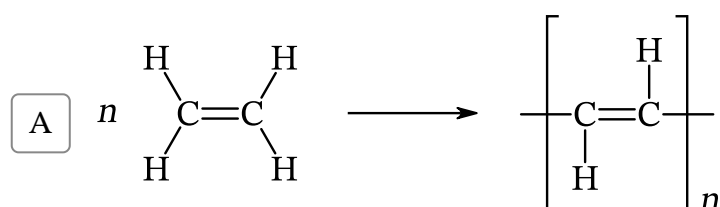


- A** 1, 1, 2-Trichloroethene
- B** 1, 1, 1-Trichloroethene
- C** 1, 2-Dichloroethene
- D** Chloroethene
- E** 1, 1-Dichloroethene

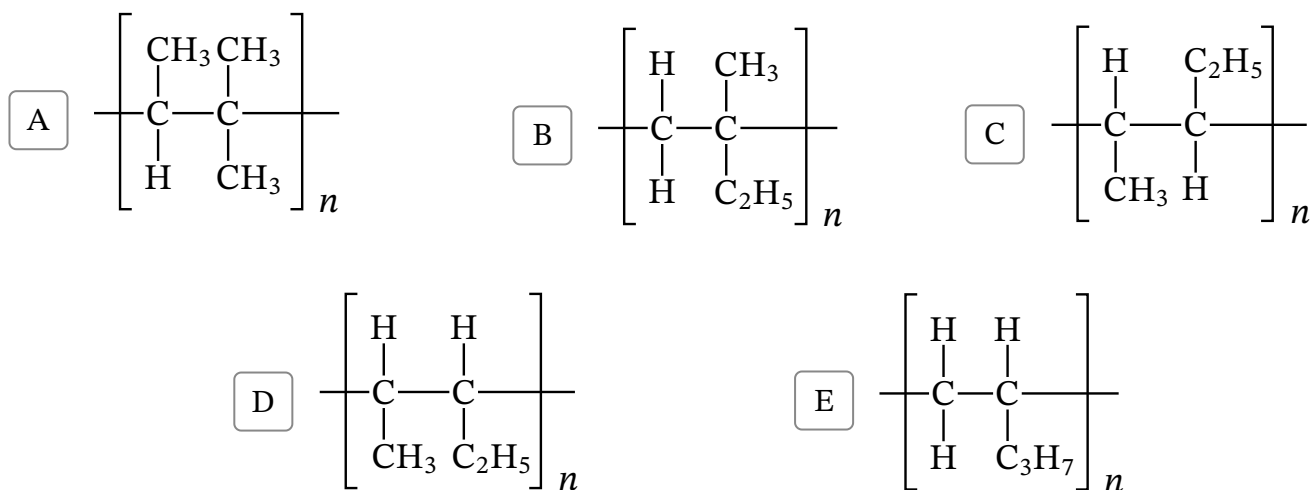
Q7: Which of the following diagrams shows two repeat units of the polymer created by 1,2-dichloroethane?



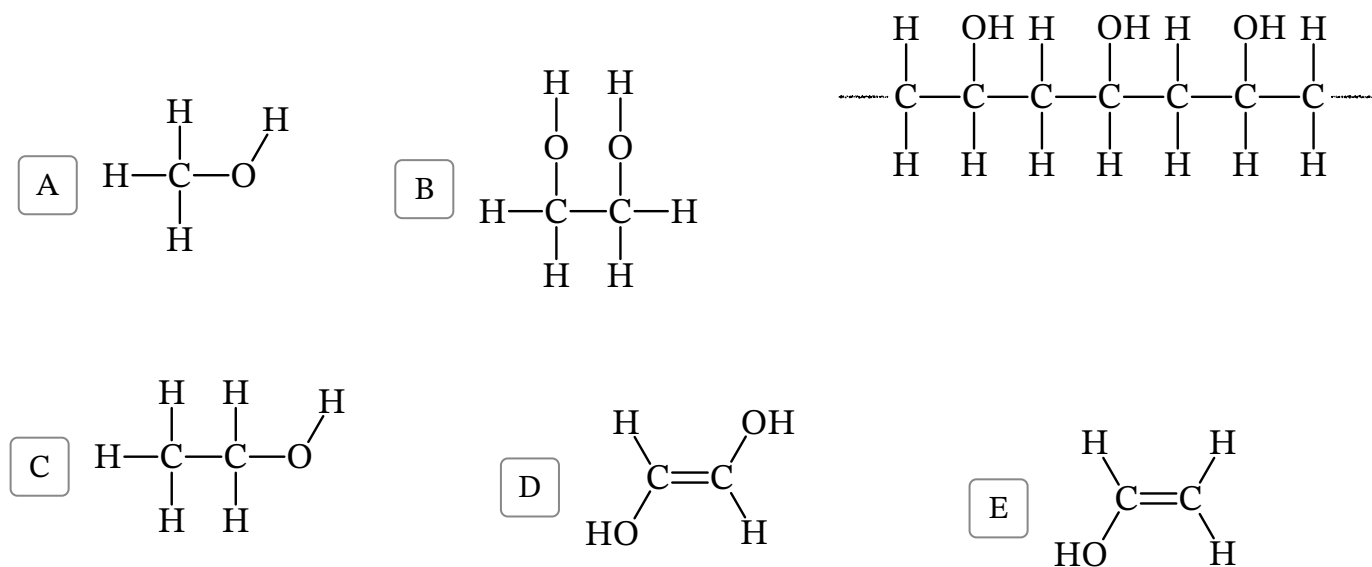
Q8: Which diagram correctly depicts the formation of polyethene from ethene?



Q9: Which diagram represents the polymer made from $\text{CH}_2\text{CHCH}_2\text{CH}_2\text{CH}_3$?



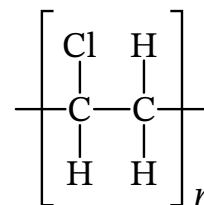
Q10: Which monomer is used to create the following polymer?



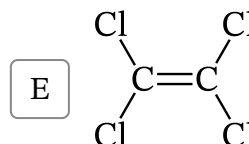
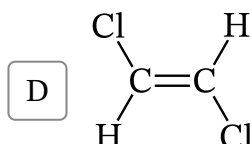
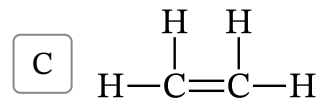
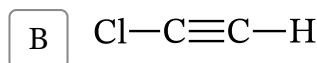
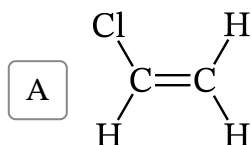
Q11: Fill in the blank: Addition polymers are formed by the joining together of many smaller units called _____.

- A entities
 B divisions
 C components
 D polys
 E monomers

Q12: The polymer poly(vinyl chloride) has the structure:

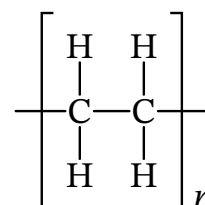


What is the structure of the monomer vinyl chloride?

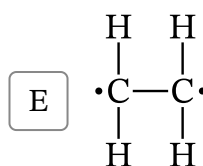
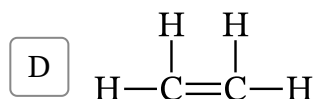
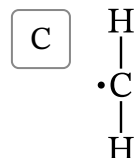
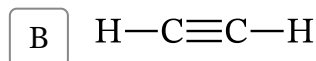
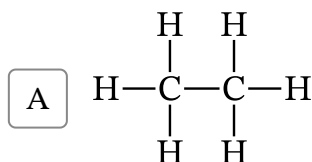


Q13: Polyethene is one of the common names for a polymer used to make plastic bags.

The repeat unit of this polymer has the structural formula:



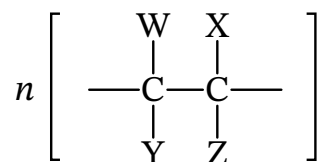
(a) What is the structural formula of the monomer from which polyethene is made?



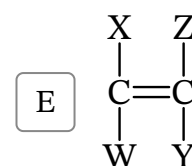
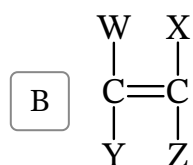
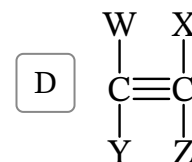
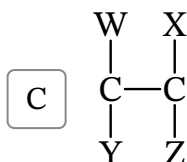
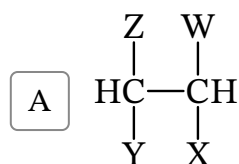
Q14 What is the name of the monomer from which polyethene is made?

- A** Methane
- B** Ethyne
- C** Ethane
- D** Ethanol
- E** Ethene

Q15: The following polymer is the product of an addition polymerization reaction.



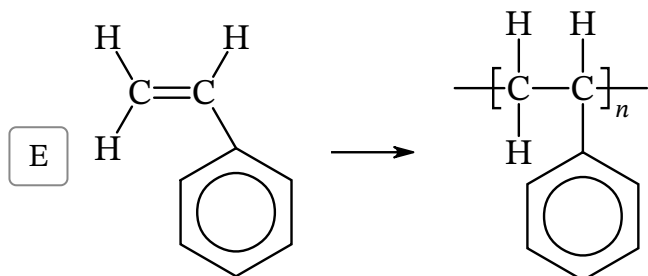
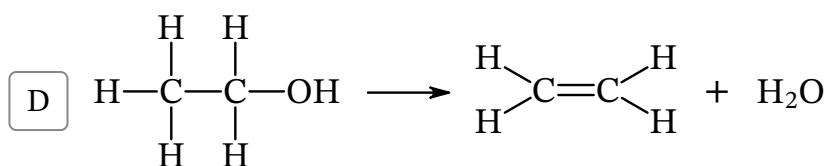
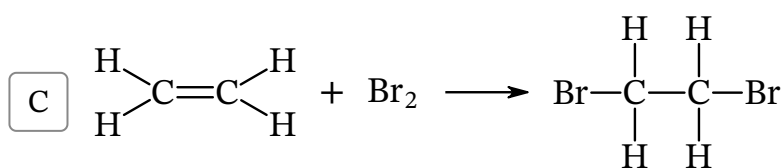
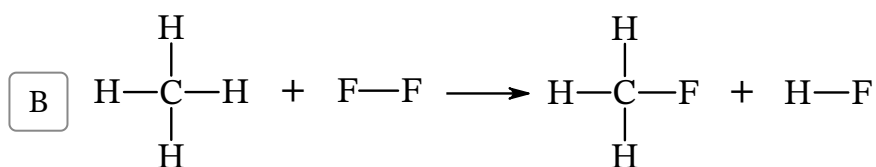
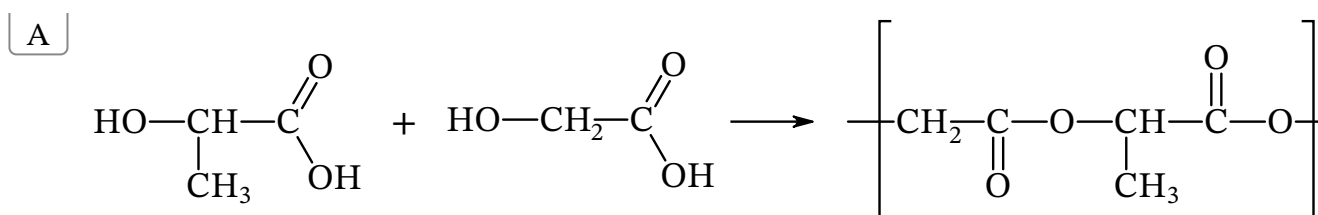
Which of the following is the correct formula for the monomer of this polymer?



Q16: Which of the following statements best describes polymers?

- A** Polymers are ionically bonded macromolecules of high molecular weight, composed of many different subunits.
- B** Polymers are covalently bonded macromolecules of high molecular weight that can be composed of many repeated subunits.
- C** Polymers are covalently bonded atoms of low molecular weight and different subunits.
- D** Polymers are repeated subunits of low molecular weight, bonded together by hydrogen bonds.

Q18: Which of the following reactions represents an addition polymerization reaction?



Q19: Which of the following applications is the most common for Teflon?

- A** Coating nonstick cookware
- B** Manufacturing of plastic bags
- C** Manufacturing of water pipes
- D** Manufacturing of textiles
- E** Manufacturing of rubber