Checking Where Links Join Polymer Chains

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A film exhibit models each polymer chain as a long connected molecule. A link between two chains lets those chains move together as one group. Two links between the same pair make that connection redundant. Each model film contains three chains. The class removes a chain with its entire connected group.

Film	First link	Second link
P	Between chains 1 and 2	Between chains 2 and 3
Q	Between chains 1 and 2	Between chains 1 and 2

1 If the class removes chain 3 with its connected group, in which film does the group include all three chains?

(1) P only

(2) Q only

(3) Both films

(4) Neither film

2 Explain why the same number of links does not give the same number of connected groups in the two films. [1]

Answer and work

A model tool can remove one link between chains without changing any of the bonds along an individual chain.

3 Which film gains a new separate group when either one of its links is removed? Explain why the other film behaves differently. [1]

Answer and work

4 Describe a placement for one additional link in P that keeps all three chains connected if any one link is later removed. [1]

Answer and work