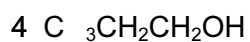
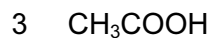
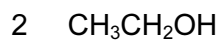
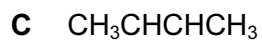
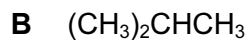


1 Which of the compounds shown are in the same homologous series?

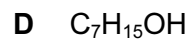
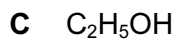
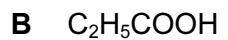
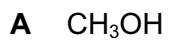


**A** 1, 2 and 3      **B** 1, 2 and 4      **C** 1, 3 and 4      **D** 2, 3 and 4

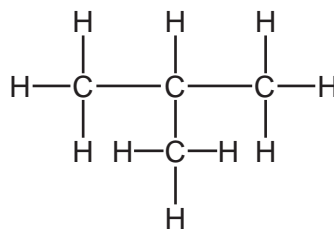
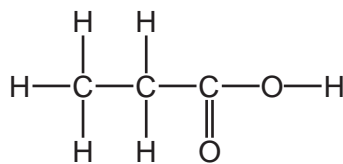
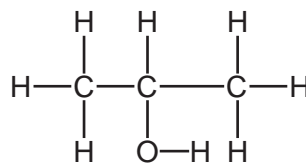
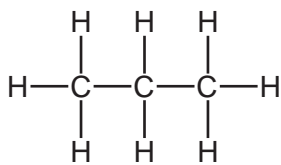
2 Which compound is **not** an alkane,  $\text{C}_n\text{H}_{2n+2}$ ?



3 Which compound does **not** belong to the same homologous series as the other three compounds?

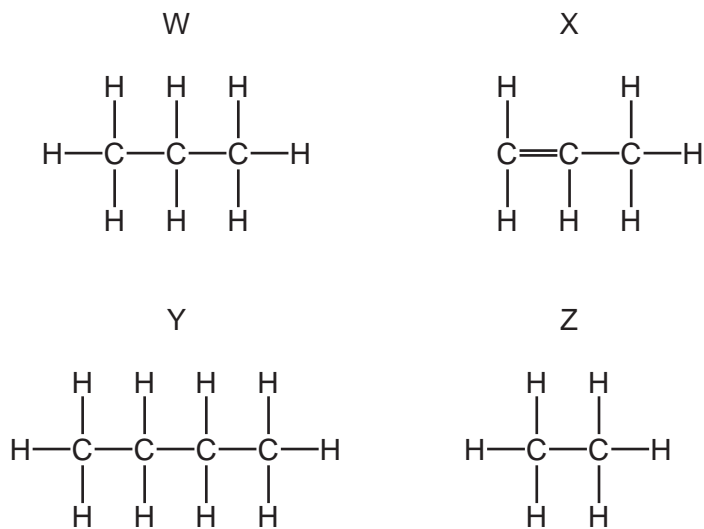


4 Which homologous series is **not** represented in the compounds shown below?



- A alcohols
- B alkanes
- C alkenes
- D carboxylic acids

5 The structures of four compounds are shown.



Which are members of the same homologous series?

- A** W, X, Y and Z
- B** W and X only
- C** W, Y and Z only
- D** X and Z only

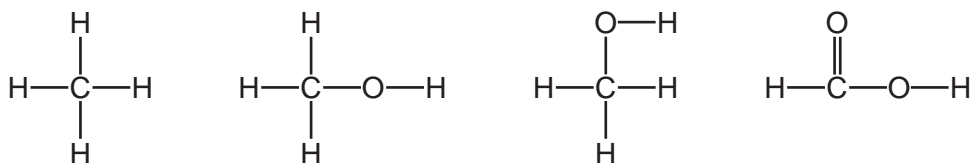
6 A hydrocarbon A is cracked to make B and hydrogen.

Compound C is formed by the addition polymerisation of B.

To which homologous series do A, B and C belong?

	alkene	alkane
<b>A</b>	A	B and C
<b>B</b>	B	A and C
<b>C</b>	C	A and B
<b>D</b>	–	A and C

7 The structures of four different organic compounds are shown.



How many different homologous series are represented by these compounds?

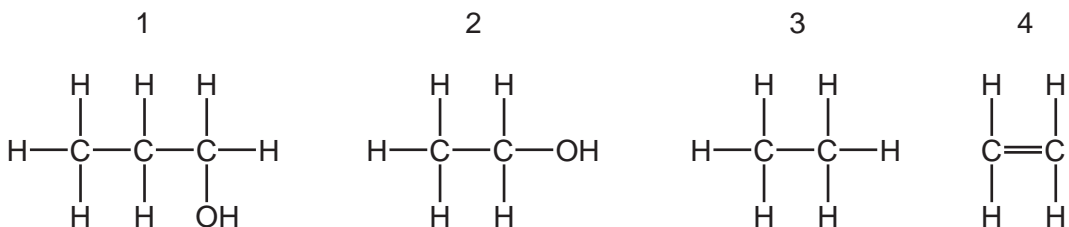
- A** 1                      **B** 2                      **C** 3                      **D** 4

8 Ethene, propene and butene are all members of the same homologous series.

Which statement explains why ethene, propene and butene have similar chemical properties?

- A** They all have the same functional group.  
**B** They are all gases at room temperature.  
**C** They are all hydrocarbons.  
**D** They are all organic.

9 The structures of four molecules are shown.



Which molecules belong to the same homologous series?

- A** 1 and 2                      **B** 1 and 3                      **C** 2 and 4                      **D** 3 and 4

10 The main constituent of natural gas is hydrocarbon X.

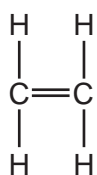
To which homologous series does X belong and how many **atoms** are in one molecule of X?

	homologous series	number of atoms in one molecule
<b>A</b>	alkane	1
<b>B</b>	alkane	5
<b>C</b>	alkene	1
<b>D</b>	alkene	5

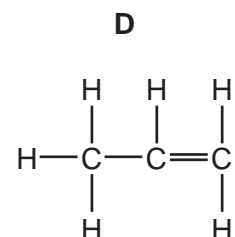
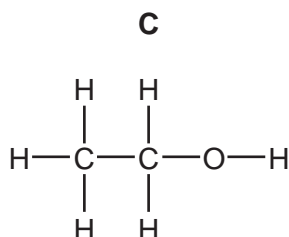
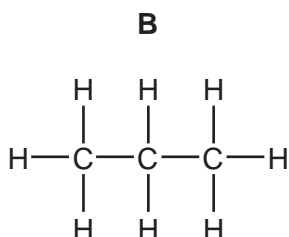
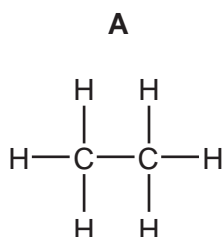
11 In which reaction could one of the products belong to the same homologous series as the organic reactant?

- A** addition of steam to ethene
- B** combustion of an alkane
- C** cracking of an alkane
- D** polymerisation of ethene

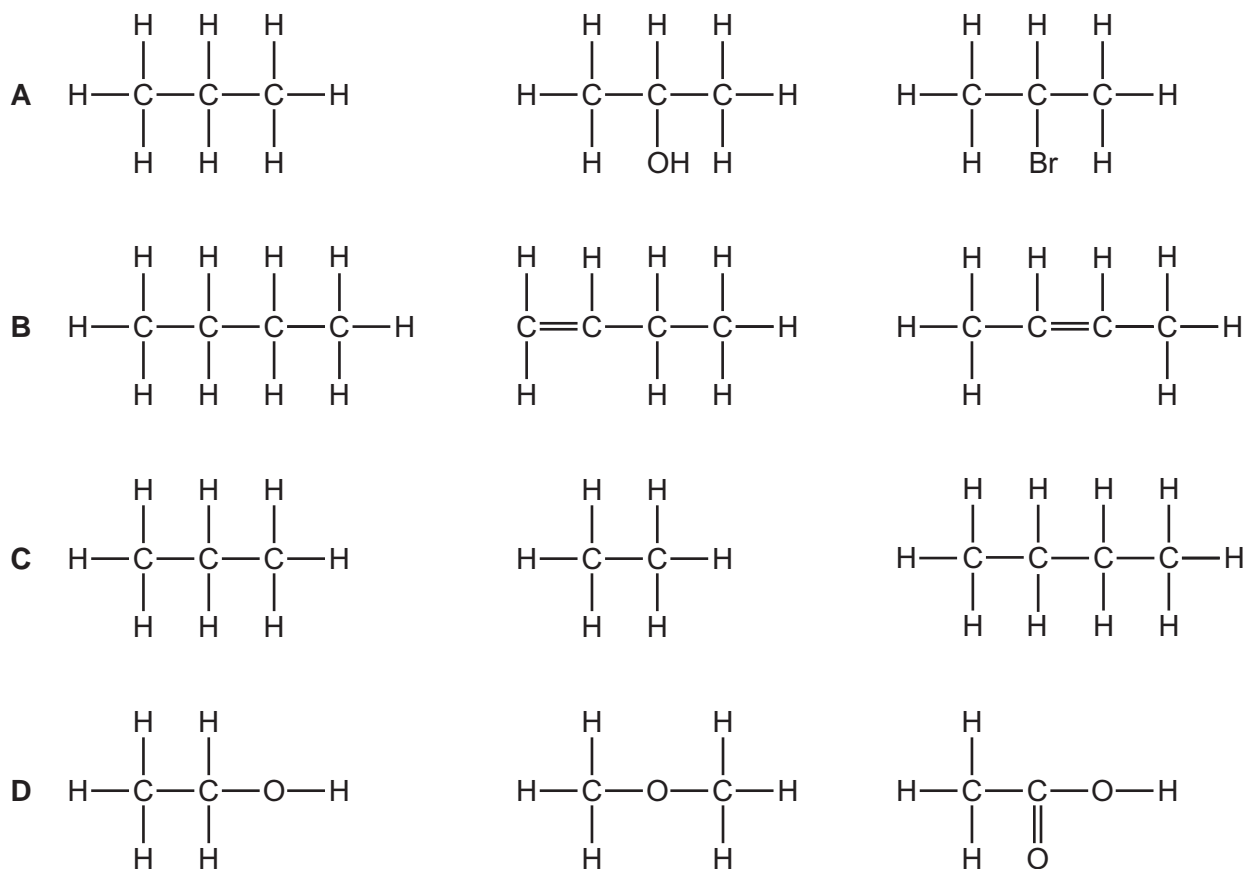
12 The diagram represents ethene.



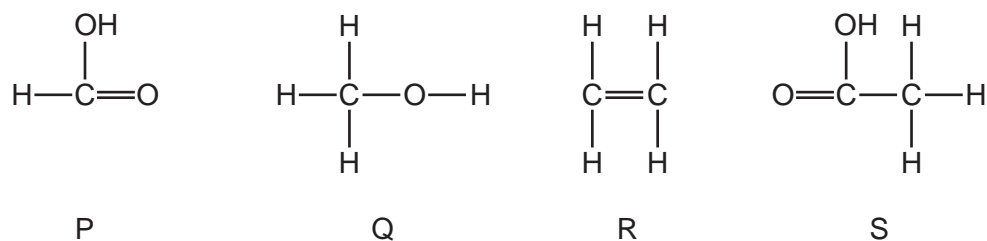
Which compound has chemical properties similar to those of ethene?



13 Which row represents compounds in the same homologous series?



14 The structures of four molecules are shown.



Which two molecules belong to the same homologous series?

- A** P and Q      **B** P and S      **C** Q and R      **D** R and S

15 A hydrocarbon X is cracked to make Y and hydrogen.

Compound Z is formed by the addition polymerisation of Y.

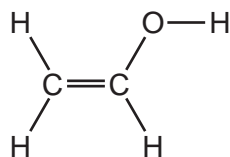
To which homologous series do X, Y and Z belong?

	alkane	alkene
<b>A</b>	X, Y and Z	–
<b>B</b>	X and Y	Z
<b>C</b>	X and Z	Y
<b>D</b>	Y and Z	X

16 Which group of compounds is part of a homologous series?

- A** CH<sub>4</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>3</sub>H<sub>8</sub>
- B** C<sub>3</sub>H<sub>6</sub>, C<sub>3</sub>H<sub>8</sub>, C<sub>3</sub>H<sub>7</sub>OH
- C** CH<sub>3</sub>OH, C<sub>2</sub>H<sub>5</sub>OH, C<sub>3</sub>H<sub>7</sub>OH
- D** CH<sub>3</sub>CO<sub>2</sub>H, CH<sub>3</sub>CH<sub>2</sub>OH, HCO<sub>2</sub>H

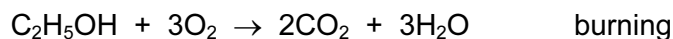
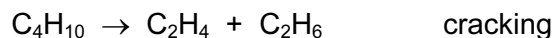
17 PVA is a polymer. The monomer has the structure shown.



To which homologous series does this compound belong?

	alcohols	alkenes
<b>A</b>	✓	✓
<b>B</b>	✓	x
<b>C</b>	x	✓
<b>D</b>	x	x

18 Ethanol is a fuel used in cars. It can be made from petroleum.

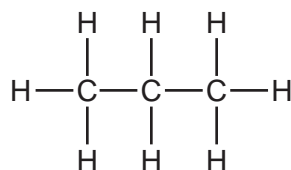
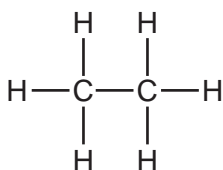


Compounds of how many homologous series appear in these equations?

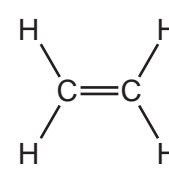
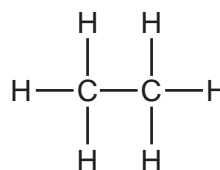
- A** 1                      **B** 2                      **C** 3                      **D** 4

19 Which pair of compounds are members of the same homologous series?

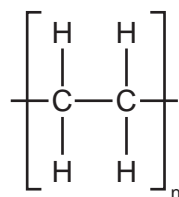
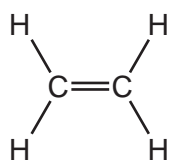
**A**



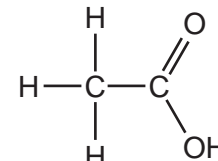
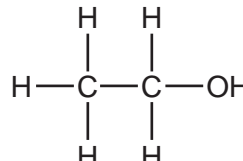
**B**



**C**

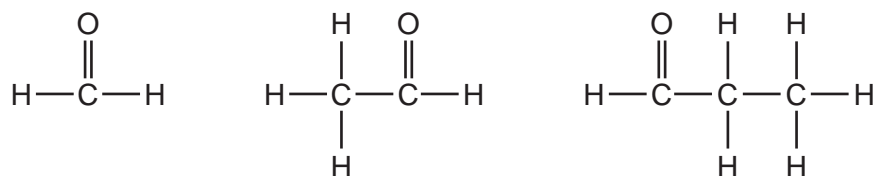


**D**





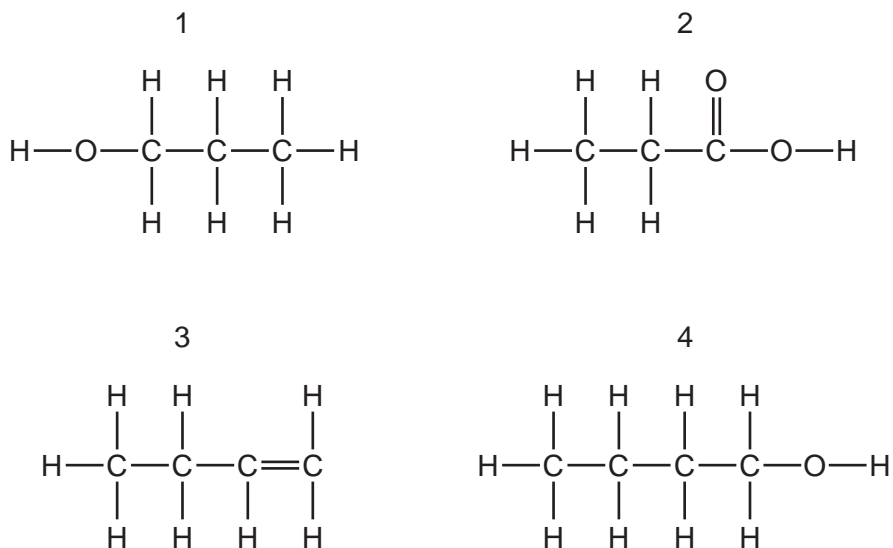
20 The diagram shows the structures of three compounds.



Why do these three compounds belong to the same homologous series?

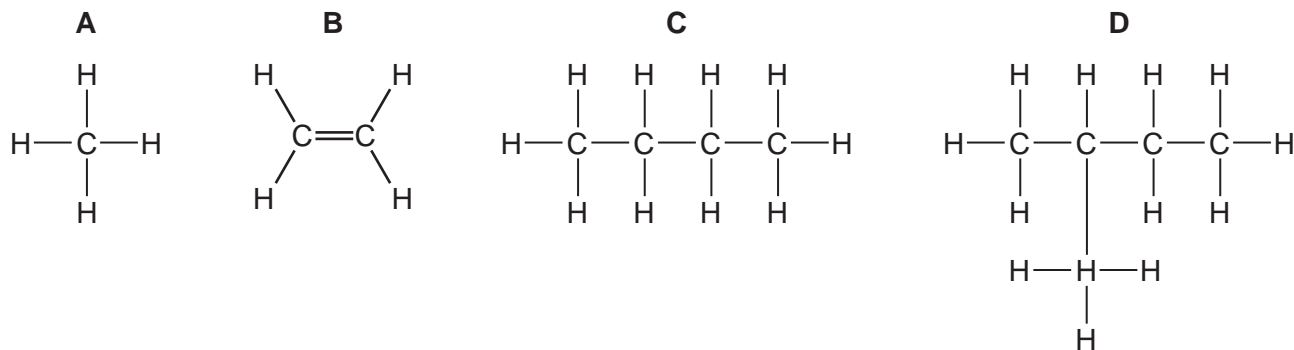
- A** They all contain carbon, hydrogen and oxygen.
- B** They all contain the same functional group.
- C** They are all carbon based molecules.
- D** They are all flammable liquids.

21 Which structures show compounds that are members of the same homologous series?



- A** 1 and 2
- B** 1 and 3
- C** 2 and 4
- D** 3 and 4

22 Which structure shows a compound that belongs to a **different** homologous series to propane?



23 Butene and hexene belong to the same homologous series.

What is the same for butene and hexene?

- A** boiling point
- B** functional group
- C** number of hydrogen atoms per molecule
- D** relative molecular mass

24 Which bond is **not** in a molecule of ethanoic acid?

- A** C–O
- B** C=O
- C** C=C
- D** O–H