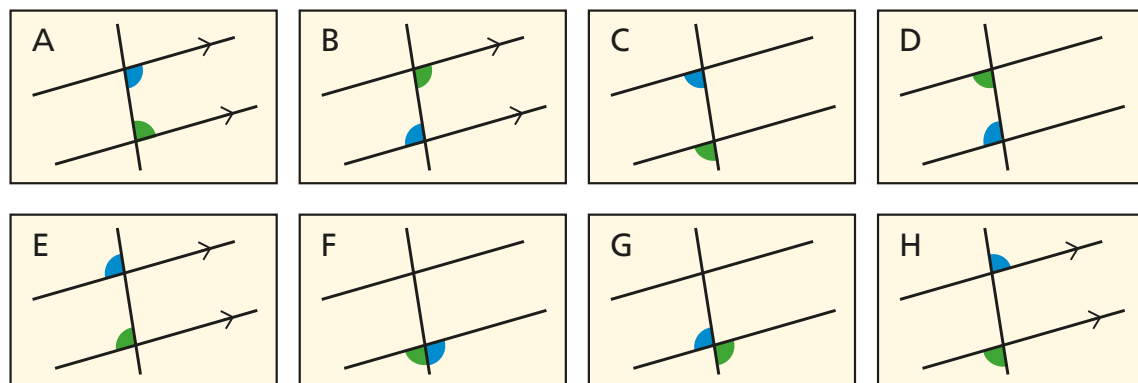


# Solve complex problems with parallel line angles

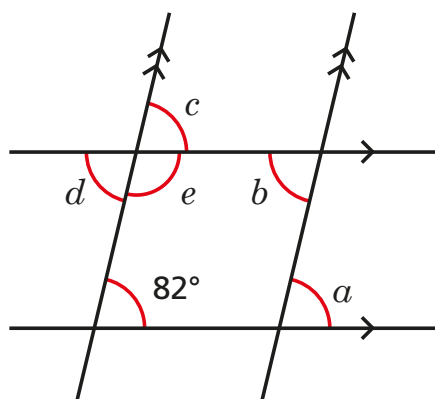
1 Sort the cards into the table.



| Angles are equal | Angles sum to $180^\circ$ | Not enough information |
|------------------|---------------------------|------------------------|
| B E G H          | A F                       | C D                    |

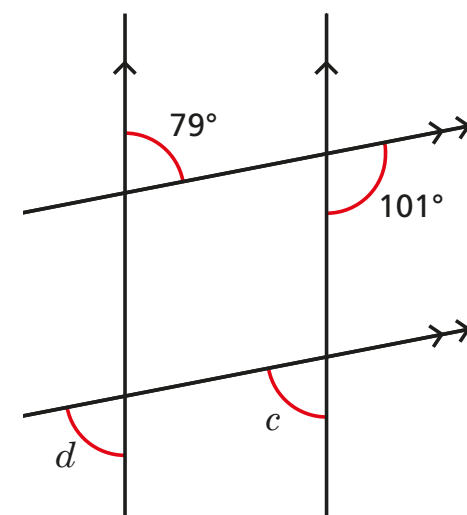
2 Work out the sizes of the unknown angles.

a)



$$\begin{aligned} a &= 82^\circ \\ b &= 82^\circ \\ c &= 82^\circ \\ d &= 82^\circ \\ e &= 98^\circ \end{aligned}$$

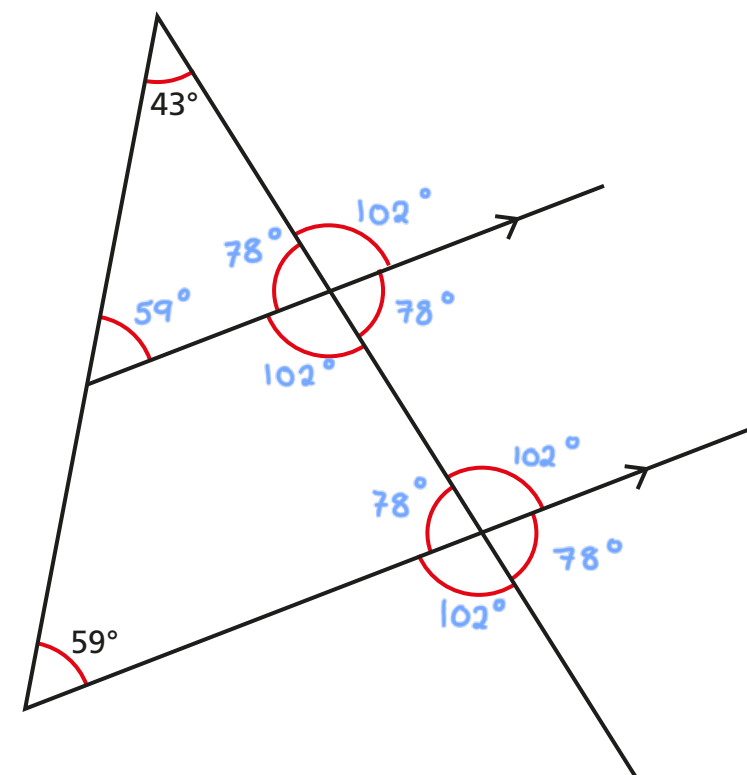
b)



$$\begin{aligned} c &= 79^\circ \\ d &= 79^\circ \end{aligned}$$

Compare your method with a partner. Which angle rules did you use?

3 Work out the sizes of the unknown angles and label them on the diagram.



Discuss your reasons for each angle with a partner.

Did you work them out the same way?

4



$$x = 101^{\circ}$$



$$x = 50^\circ$$



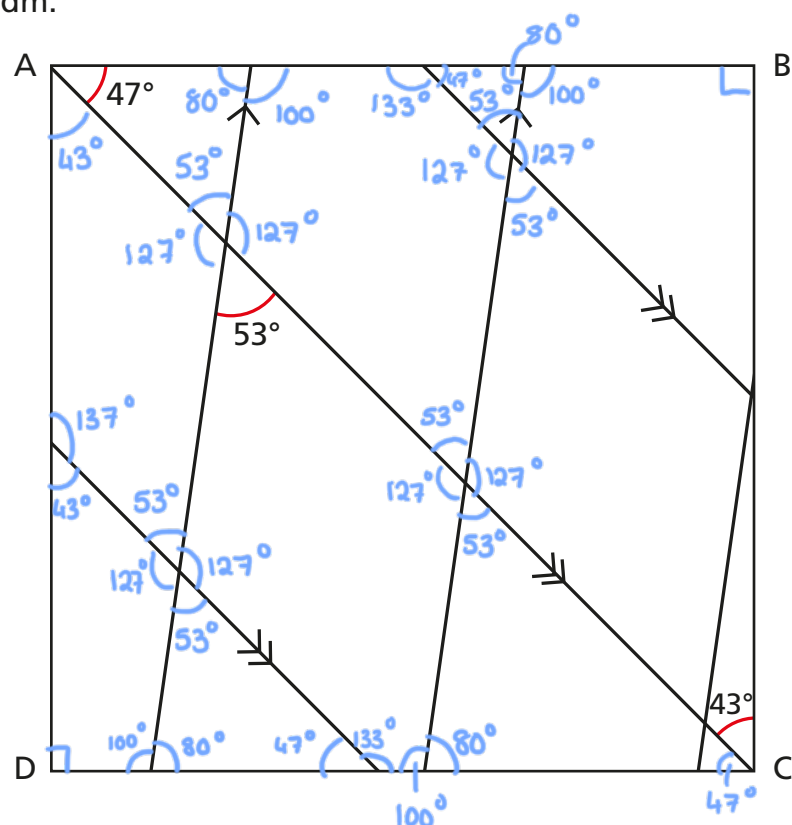
$$x = 61^\circ$$



$$x = 18^\circ$$

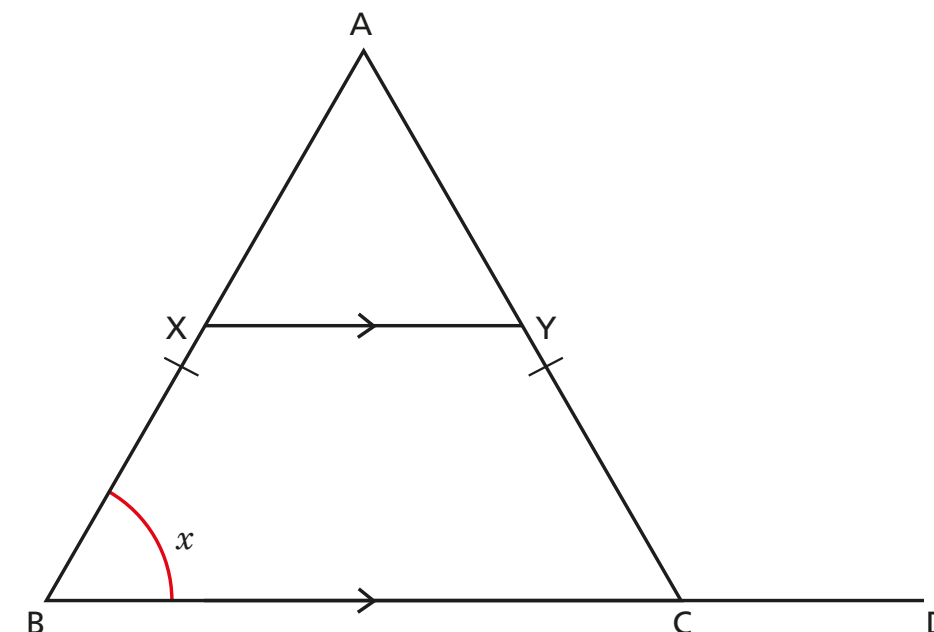
5

Work out as many of the unknown angles as possible and label them on the diagram.



6

Line segments  $XY$  and  $BD$  are parallel.



**a)** Write an expression in terms of  $x$  for the size of each angle.

$$\angle ACB = x$$

$$\angle ACD = 180 - x$$

$$\angle AYX = x$$

$$\angle BXY = 180 - x$$

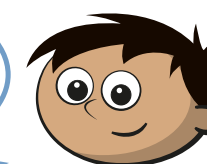
$$\angle AXY = x$$

$$\angle XYC = 180 - x$$

$$\angle BAC = 180 - 2x$$

**b)**

$x$  can take any value.  
I'm going to use  $x = 93^\circ$  to  
work out the size of  
each angle.



Explain why Amir's value for  $x$  is not suitable.

E.g.  $x$  is acute.

or  $93 + 93 > 180$

What would be a more suitable value for  $x$ ?

e.g. 62°