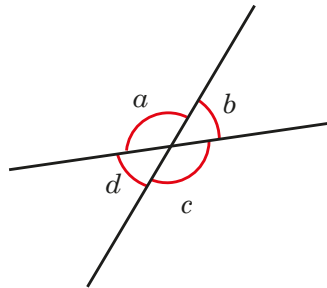


**1** The diagram shows four angles formed by two straight lines.



- a) Measure the sizes of the angles.
- b) What is the total of angles  $a$  and  $b$ ?

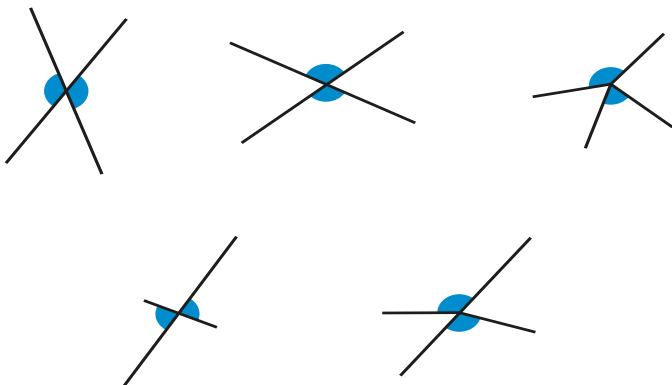
Explain why.

Do any other pairs of angles have this same total?

- c) Angles  $a$  and  $c$  are vertically opposite angles.  
What do you notice about the sizes of angles  $a$  and  $c$ ?
- d) Angles  $b$  and  $d$  are also vertically opposite angles.  
What do you notice about the sizes of angles  $b$  and  $d$ ?

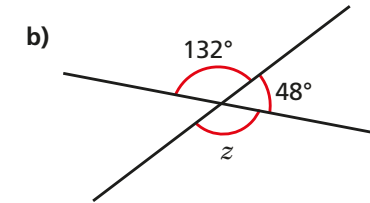
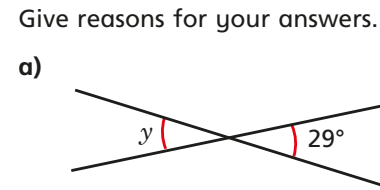
e) Complete the sentence.  
Vertically opposite angles \_\_\_\_\_

**2** Which pairs of angles are vertically opposite?

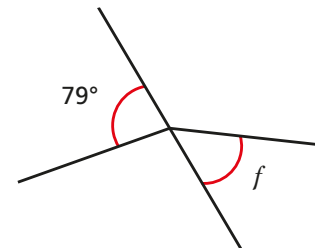


Compare answers with a partner.

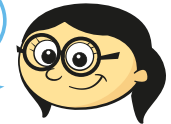
**3** Work out the sizes of the unknown angles.



**4** Annie is working out the size of angle  $f$ .

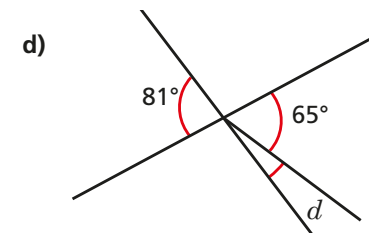
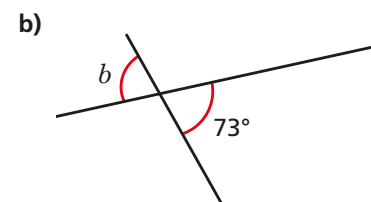
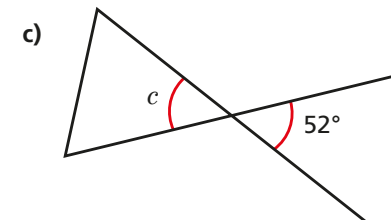
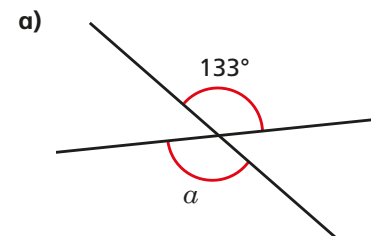


Angle  $f$  is equal to  $79^\circ$  because vertically opposite angles are equal.



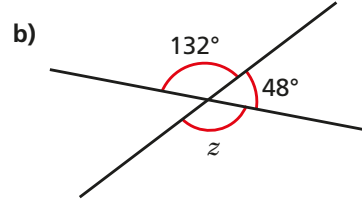
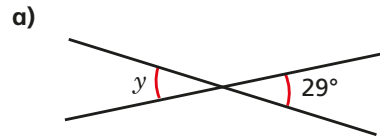
Do you agree with Annie?  
Explain your answer.

**5** Work out the unknown angles.

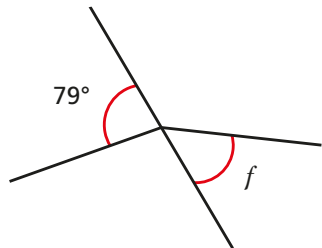


**3** Work out the sizes of the unknown angles.

Give reasons for your answers.



**4** Annie is working out the size of angle  $f$ .

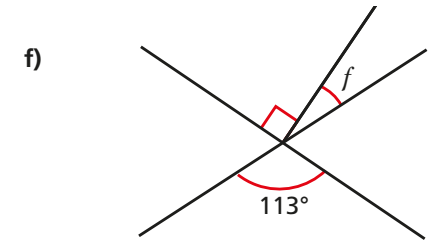
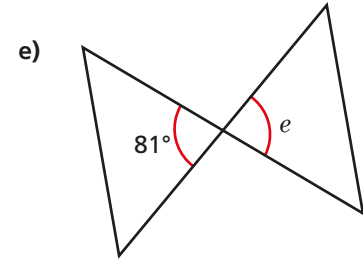
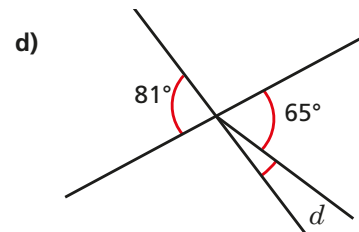
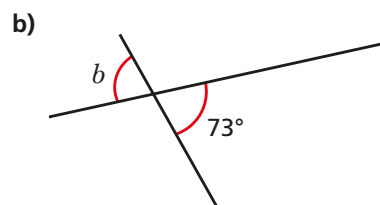
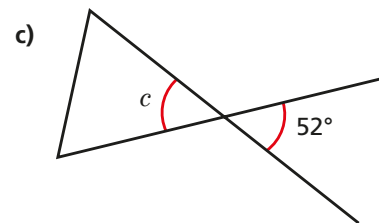
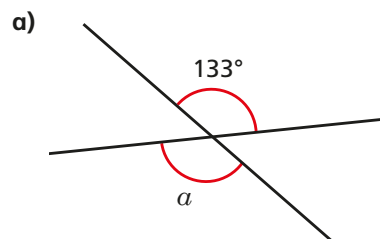


Angle  $f$  is equal to  $79^\circ$  because vertically opposite angles are equal.



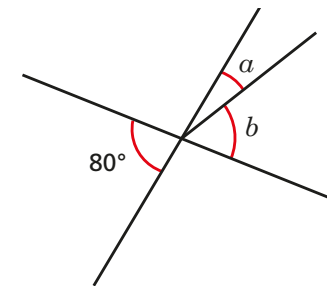
Do you agree with Annie?  
Explain your answer.

**5** Work out the unknown angles.



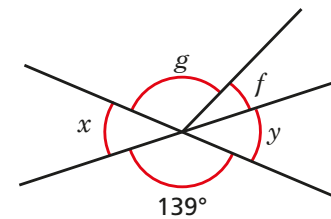
Talk about your reasons with a partner.

**6** Angle  $b$  is three times the size of angle  $a$ .



Work out the sizes of angles  $a$  and  $b$ .

**7** Angle  $f$  is one quarter of the size of angle  $g$ .  
Angle  $f$  is  $28^\circ$ .



Are angles  $x$  and  $y$  vertically opposite?  
Explain your answer.