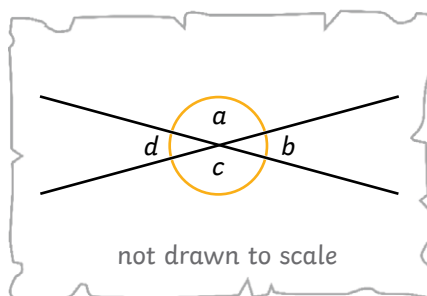




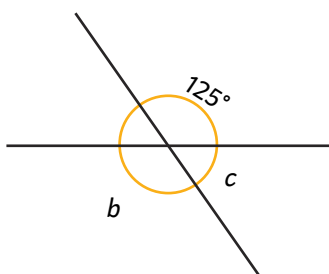
1) True or false? Tick the box next to each statement if it is true or cross it if it is false.

- ☐ Angles  $a$  and  $b$  are equal.
- ☐  $d + a = 180^\circ$
- ☐ Angles  $b$  and  $d$  are equal.
- ☐  $c + a = 180^\circ$
- ☐ Angles  $a$  and  $c$  are equal.
- ☐  $a + b + c + d = 360^\circ$



2) Use what you know about vertically opposite angles, angles on a straight line and angles around a point to help you calculate each angle represented by a letter.

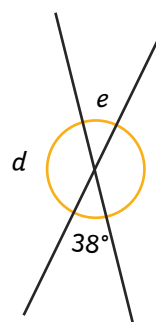
a) not drawn to scale



$b =$  \_\_\_\_\_

$c =$  \_\_\_\_\_

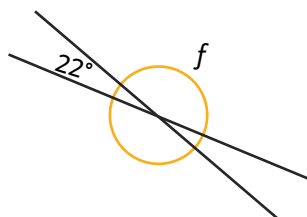
b) not drawn to scale



$d =$  \_\_\_\_\_

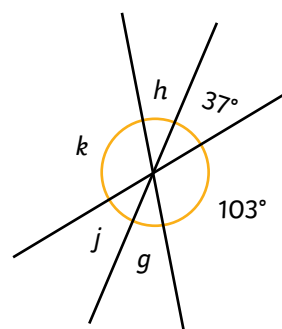
$e =$  \_\_\_\_\_

c) not drawn to scale



$f =$  \_\_\_\_\_

d) not drawn to scale



$g =$  \_\_\_\_\_

$j =$  \_\_\_\_\_

$h =$  \_\_\_\_\_

$k =$  \_\_\_\_\_

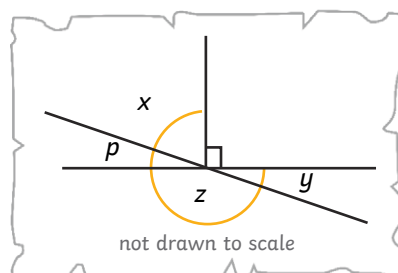


- 1) Angle  $y$  is  $42^\circ$ . Use this fact to work out all the remaining angles.

$p =$  \_\_\_\_\_

$x =$  \_\_\_\_\_

$z =$  \_\_\_\_\_



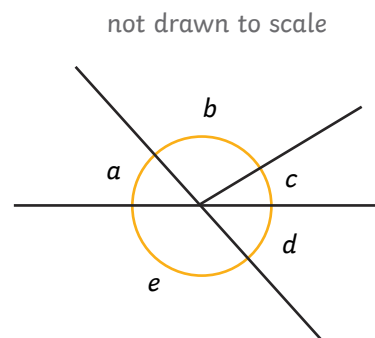
- 2) Mia and Surinder are given a challenge by their teacher. One at a time, choose to reveal the size of one angle until you are able to calculate the value of all of the remaining angles in the diagram.



Mia, "I would only need to know the sizes of angles  $a$  and then  $d$  to calculate all of the other angles in the shape."



Surinder, "If I know the size of angle  $d$  followed by angle  $c$ , I will be able to calculate all of the other angles in the shape."



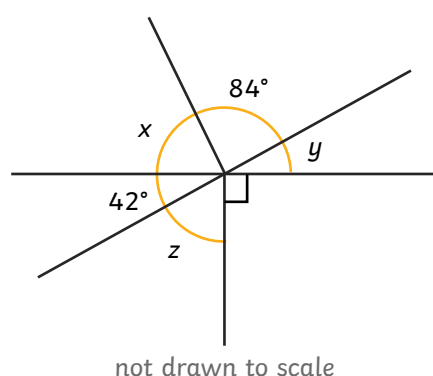
Is either child correct? Explain your answer below. If you would like to explain using a diagram, please use an additional sheet of paper.

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- 3) Dara and Conor each think of a different strategy to find angle  $z$ . Whose strategy will work? Whose won't? Explain your answer fully.



Dara, "As I know that vertically opposite angles are equal, I think that angle  $z$  must equal  $84^\circ$ ."



Conor, "I disagree with Dara. I think that because angles on a straight line measure  $180^\circ$ , angle  $z$  measures  $48^\circ$ ."

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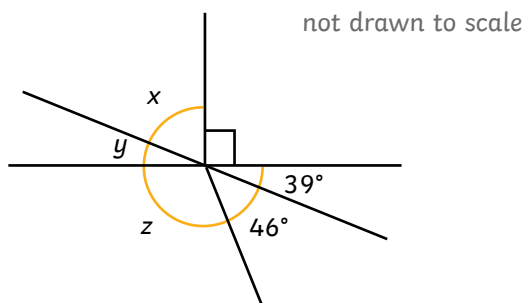


1) Calculate the missing angles.

$x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_

$z =$  \_\_\_\_\_



2) Calculate the value of each angle represented by a letter.

$a =$  \_\_\_\_\_

$b =$  \_\_\_\_\_

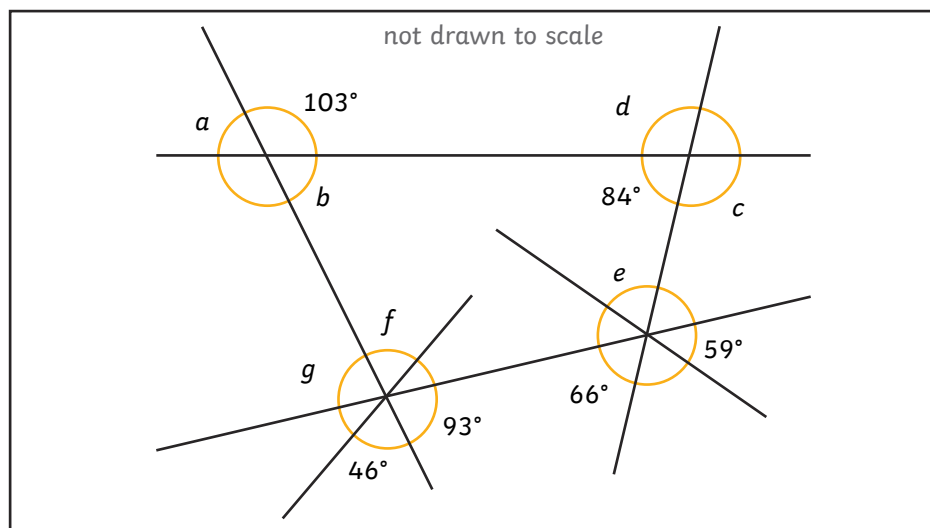
$c =$  \_\_\_\_\_

$d =$  \_\_\_\_\_

$e =$  \_\_\_\_\_

$f =$  \_\_\_\_\_

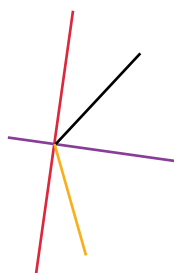
$g =$  \_\_\_\_\_



3) In each drawing below, there are four straight lines that meet at a point.

For each drawing, what is the fewest number of angles you need to measure with a protractor before you are able to use what you know about vertically opposite angles, angles on a straight line and angles around a point to help you calculate the value of the remaining angles? Prove it!

a) not drawn to scale



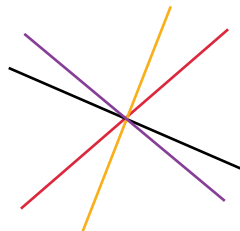
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b) not drawn to scale



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