

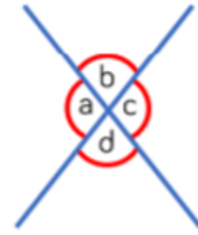
Use the letters from the diagram to complete the boxes.

$$a = c$$

$$b = d$$

$$a + c = 180^\circ$$

$$b + d = 180^\circ$$



2. What's the value of angle x?

<del><math>50^\circ</math> <math>x^\circ</math> <math>50</math></del>	<del><math>155</math> <math>x^\circ</math> <math>155^\circ</math></del>
<del><math>34x^\circ</math> <math>34^\circ</math></del>	<del><math>171^\circ</math> <math>x^\circ</math> <math>171</math></del>

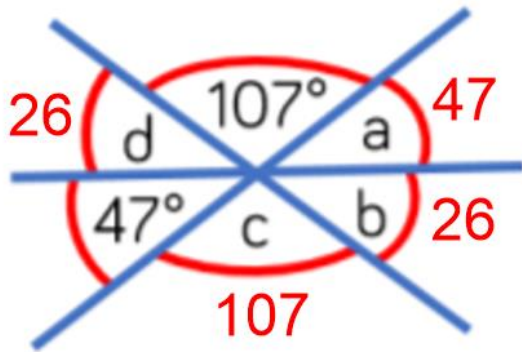
3. What's the value of each missing angle?

<del><math>150</math> <math>30^\circ</math> <math>30</math> <math>150</math></del>	<del><math>135</math> <math>45</math> <math>45</math> <math>135^\circ</math></del>
<del><math>146</math> <math>34</math> <math>34^\circ</math> <math>146</math></del>	<del><math>173^\circ</math> <math>7</math> <math>7</math> <math>173</math></del>

4. What's the value of angle x?

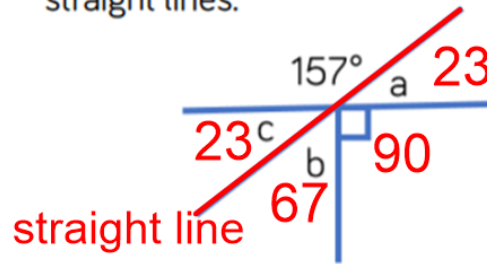
<del><math>140</math> <math>x^\circ</math> <math>40^\circ</math></del>	<del><math>35x^\circ</math> <math>145^\circ</math></del>
<del><math>156</math> <math>x^\circ</math> <math>24^\circ</math></del>	<del><math>161^\circ</math> <math>x^\circ</math> <math>19</math></del>

### Challenge 1



### Challenge 2

The diagram below is drawn using three straight lines.



Whitney says that it's not possible to calculate all of the missing angles.

Do you agree? Explain why.

No because...

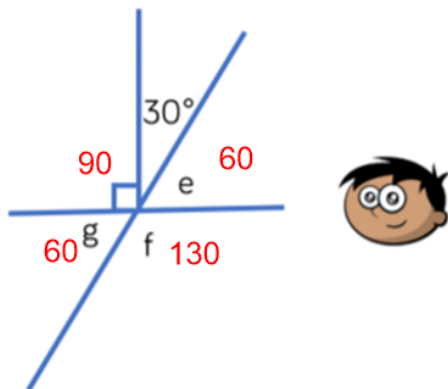
Angles on a straight line total 180 so c must be 23.

a is 23 because it's vertically opposite c.

b is 67 because c and b form a right angle

### Challenge 3

The diagram below is drawn using three straight lines.



Amir says that angle g is equal to  $30^\circ$  because vertically opposite angles are equal.

Do you agree? Explain your answer.

No. Angle g is vertically opposite angle e.

Find the size of all missing angles.  
Is there more than one way to find the size of each angle?