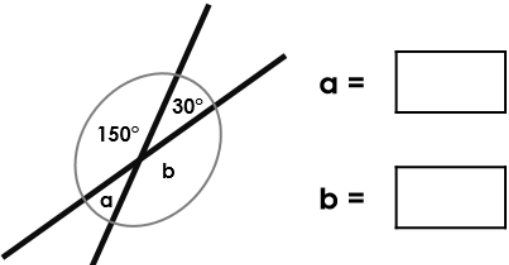
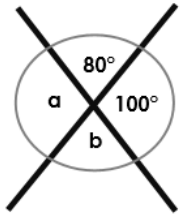
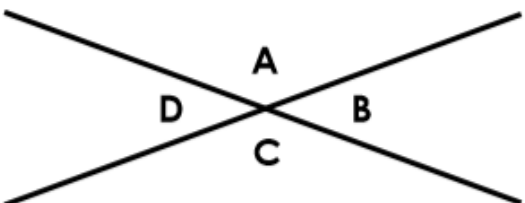
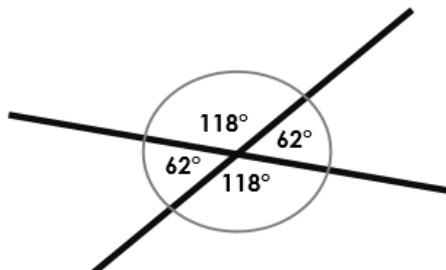


Lesson 4

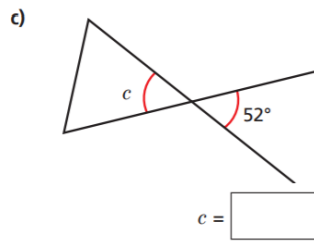
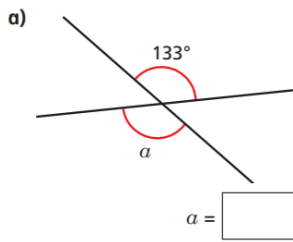
L.0 I am learning to calculate vertically opposite angles.

Fluency

Key vocabulary: Acute, Obtuse, Right, Straight line, Reflex	Your answer
<p>1b. Calculate the missing angles.</p>  <p>$a =$ <input type="text"/></p> <p>$b =$ <input type="text"/></p>	<p>1b. $a = 30^\circ$, $b = 150^\circ$</p>
<p>2b. Complete the statement.</p>  <p>$80^\circ + 100^\circ + a + b =$ <input type="text"/></p>	<p>2b. 360°</p>
<p>Which angles are equal? Which angles total 180 degrees?</p> 	<p>The equal angles are A and C / B and D. The angles that total 180° are A and B / B and C / C and D / D and A.</p>
<p>7a. Which angles total 180°?</p> 	<p>7a. $62^\circ + 118^\circ = 180^\circ$</p>

Week 1_Maths_Lesson 4

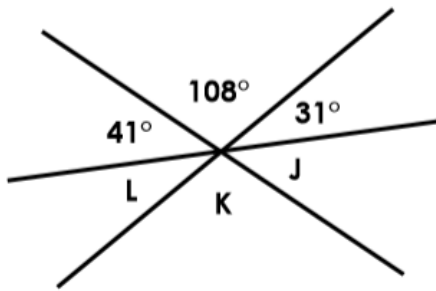
Work out the unknown angles.



$a = 133^\circ$

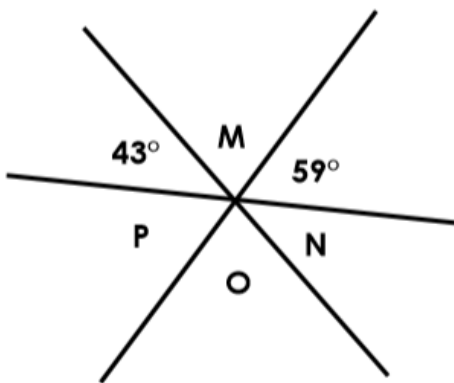
$c = 52^\circ$

Find angles J, K and L.



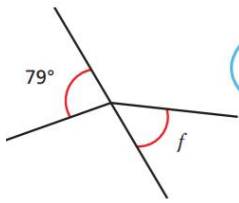


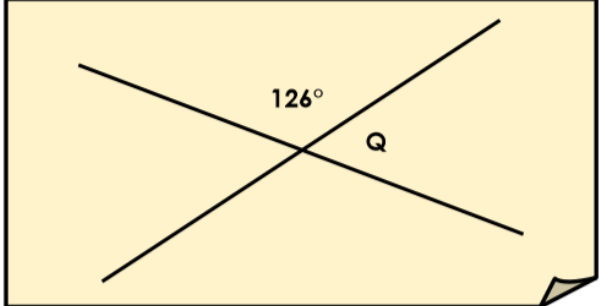
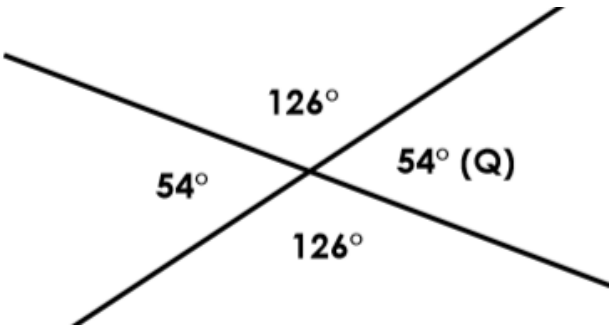

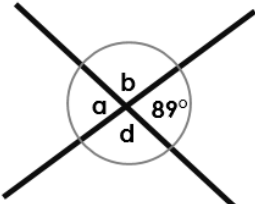
Angle J is **41°**.
 Angle K is **108°**.
 Angle L is **31°**.

Find angles M, N, O and P.

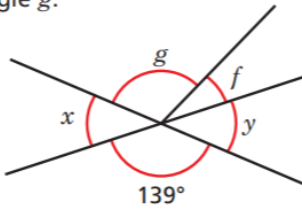
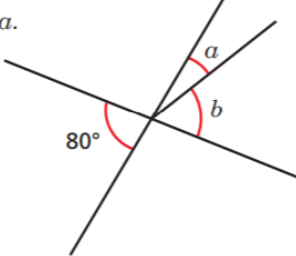
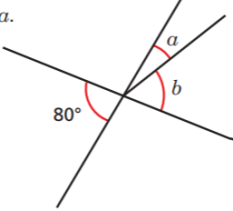


Angle M is **78°**.
 Angle N is **43°**.
 Angle O is **78°**.
 Angle P is **59°**.

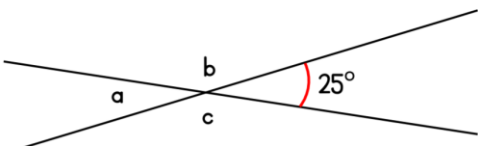

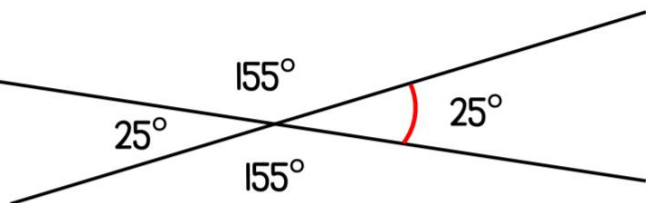
Reasoning

Key vocabulary: Acute, Obtuse, Right, Straight line, Reflex	Your answer
<p>Annie is working out the size of angle f.</p> <div style="display: flex; align-items: center; justify-content: space-around;">  <div style="border: 1px solid blue; border-radius: 50%; padding: 10px; background-color: #e0f0ff;"> <p>Angle f is equal to 79° because vertically opposite angles are equal.</p> </div>  </div> <p>Do you agree with Annie? _____</p> <p>Explain your answer.</p>	<p>Do you agree with Annie? <u>No</u></p> <p>Explain your answer.</p> <p><u>The diagram doesn't show two straight lines crossing so the angles are not vertically opposite.</u></p>
<p style="text-align: center;">Anita says...</p> <div style="display: flex; align-items: center; justify-content: space-around;">  <div style="border: 1px solid black; border-radius: 15px; padding: 10px; background-color: #fff9c4;"> <p style="text-align: center;">The missing angle (Q) measures 108 degrees.</p> </div> </div> <div style="border: 1px solid black; background-color: #fff9c4; padding: 10px; margin: 10px 0;">  </div> <p>Do you agree? _____</p> <p>Explain why / why not!</p>	<p>D – Anita is incorrect.</p> <p>A – The missing angle is not 108°.</p> <p>B – Anita has not divided 108° by two as there are two equal angles. The total number of degrees around a point is 360. If you subtract the pair of known angles ($126^\circ \times 2$), then you are left with the total of the pair of angles where the size is unknown which is 108°. As there are two angles which are equal, we can divide 108° by 2 which means each angle is 54°. All angles (126°, 126°, 54° and 54°) will now have a sum of 360°. Therefore, this proves that $Q = 54^\circ$.</p> <div style="text-align: center; margin-top: 20px;">  </div>
<p>5b. Jack says:</p> <div style="display: flex; align-items: center; justify-content: space-around;">  <div style="border: 1px solid blue; border-radius: 15px; padding: 10px; background-color: #e0f0ff;"> <p style="text-align: center;">I think that angle d measures 90°.</p> </div> </div> <div style="text-align: center; margin: 10px 0;">  </div> <p>Is Jack correct? Explain why.</p>	<p>5b. Jack is not correct as an angle of 90° will mean that all 4 angles total of 358° instead of 360°. Angle d must be 91°.</p>

Problem Solving

Key vocabulary: Acute, Obtuse, Right, Straight line, Reflex	Your answer
<p>Angle f is one quarter of the size of angle g.</p> <p>Angle f is 28°.</p> <div style="text-align: center;">  </div> <p>Are angles x and y vertically opposite? _____</p> <p>Explain your answer.</p>	<p>Are angles x and y vertically opposite? <u>NO</u></p> <p>Explain your answer.</p> <p>$28 \times 4 = 112$ so $g = 112^\circ$</p> <p>$112 + 28 = 140$</p> <p>$139 \neq 140$ therefore the diagram does not show vertically opposite angles.</p>
<p>Angle b is three times the size of angle a.</p> <div style="text-align: center;">  </div> <p>Work out the sizes of angles a and b.</p> <p>$a =$ <input style="width: 50px; height: 20px;" type="text"/> $b =$ <input style="width: 50px; height: 20px;" type="text"/></p>	<p>Angle b is three times the size of angle a.</p> <div style="text-align: center;">  </div> <p>Work out the sizes of angles a and b.</p> <p>$a =$ <input style="width: 50px; height: 20px; border: 1px solid blue;" type="text" value="20°"/> $b =$ <input style="width: 50px; height: 20px; border: 1px solid blue;" type="text" value="60°"/></p>

Extension

Key vocabulary: Acute, Obtuse, Right, Straight line, Reflex	Your answer
<div style="background-color: #008080; color: white; padding: 2px; display: flex; justify-content: space-between; align-items: center;"> True or False? Vertically opposite </div> <div style="text-align: center; margin: 10px 0;">  </div> <div style="display: flex; align-items: center; margin-top: 10px;"> <div style="text-align: center; margin-right: 10px;">  <p>Eva</p> </div> <div style="border: 1px solid #ccc; border-radius: 10px; padding: 5px; background-color: #f0e68c;"> <p>If I know the size of one of the angles I can find the other three.</p> </div> </div>	<div style="text-align: center; font-size: 2em; font-weight: bold; color: green; margin-bottom: 20px;">True</div> <div style="text-align: center;">  </div>