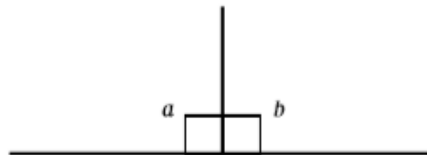




Important note: these diagrams are not to scale, do not use a protractor.

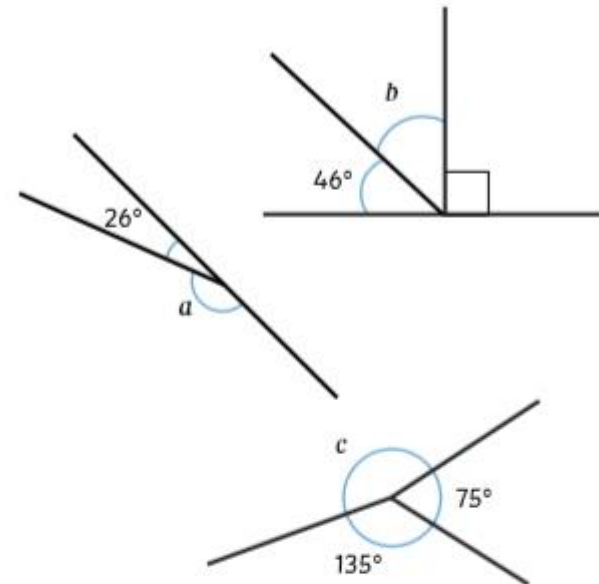


- 1) Two straight lines are drawn in order to make angles a and b . Tick the statements that are true. Correct any incorrect statements.

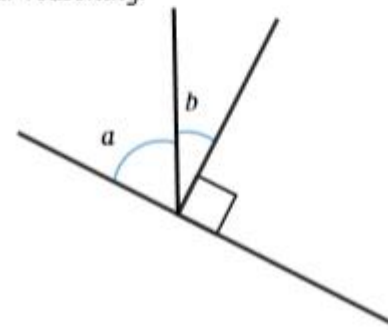


- ☐ $a + b = 180^\circ$
- ☐ If angle a was increased by 50° , then it would equal 140° .
- ☐ If angle a was decreased by 75° , then it would equal 10° .
- ☐ If angle b was increased by 30° , then angle a would now equal 50° .

- 2) Calculate the missing angles.



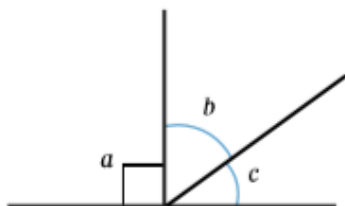
- 3) What could angles a and b measure? Give two different possibilities for each angle. and explain your reasoning.



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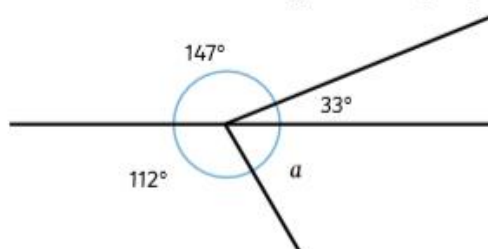


- 1) Which of these sets of angles could be angles a , b and c ? Explain why.



Set 1:	Set 2:	Set 3:	Set 4:
$a = 90^\circ$	$a = 90^\circ$	$a = 89^\circ$	$a = 90^\circ$
$b = 71^\circ$	$b = 45^\circ$	$b = 61^\circ$	$b = 64$
$c = 22^\circ$	$c = 45^\circ$	$c = 30^\circ$	$c = 26^\circ$

- 2) Two children are calculating the value of angle a .



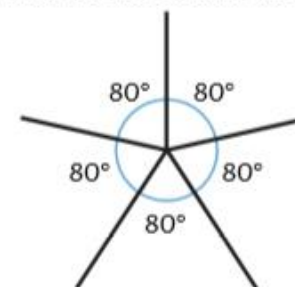
I calculated that angle a has a value of 66° .



I do not agree with Layla. I think angle a has a value of 68° .

Who is correct? Explain your reasoning.

- 3) There are five equal angles around a point. Each angle measures 80° . Nizar thinks each angle measures 80° . Prove why Nizar is incorrect and calculate the correct answer.

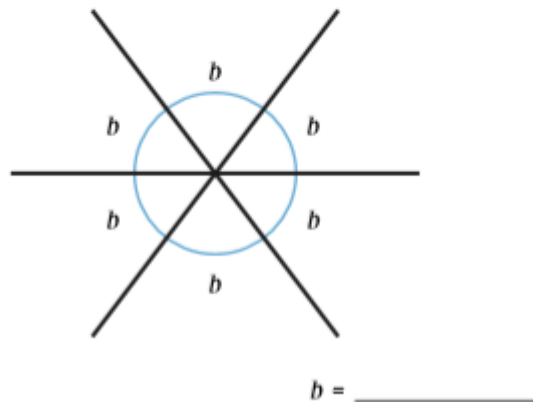
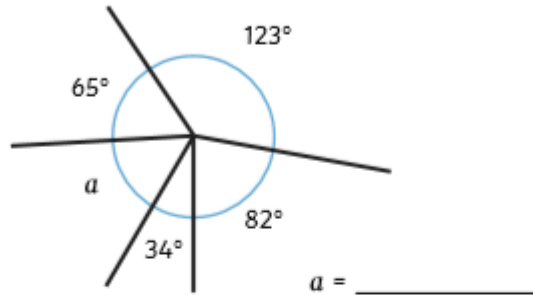




Important note: these diagrams are not to scale, do not use a protractor.

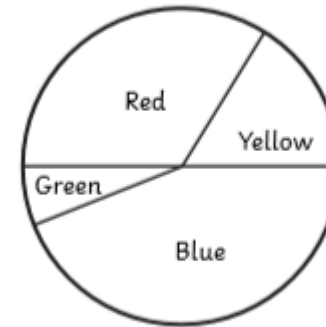


- 1) Calculate the value of each angle.



Angles $a + b + c =$ a straight line. Now you know the values of a and b , calculate the value of c .

- 2) In the question above, angle b is one of 6 equal angles formed around a point. How many other whole-number equal angles around a point can be formed?
- 3) This pie chart shows the favourite colour of each member of a class.



$\frac{1}{3}$ of children have red as their favourite colour.
Nine times as many children prefer blue to green.

Give the number of degrees represented by each colour on the pie chart.

ANSWERS

1) $a + b = 180^\circ$

True

If angle a was increased by 50° , then it would equal 40°

True

If angle a was decreased by 75° , then it would equal 10°

False. It would equal 15° .

If angle b was increased by 30° , then angle a would equal 50°

False. If b was increased by 30° , it would equal 120° .

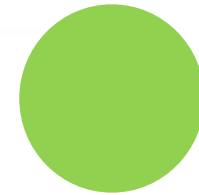
This would mean angle a would equal 60° .

2) Angle $a = 154^\circ$

Angle $b = 44^\circ$

Angle $c = 150^\circ$

- 3) Answers will vary. Both angles should be acute angles. Angle b should be smaller than angle a . Both angles should sum together to make 90° , e.g. $a = 60^\circ$ and $b = 30^\circ$.



1) Could be angles a , b and c :

Set 4: all angles add to make 180°

Could not be angles a , b and c :

Set 1: angles add to make 183°

Set 2: angles add to make 180° , however, angle b and angle c can not both be 45° as angle b is larger than angle c .

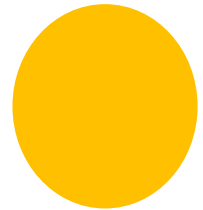
Set 3: angles add to make 180° , however, angle a is given as 89° , which is not a right angle.

2) Nizar is correct. When all given angles are added together the sum is 292° .

$$360^\circ - 292^\circ = 68^\circ$$

3) False. Five 80° angles around a point can not sum to make 360° (five multiplied by 80° would equal 400°).

If there were 5 equal angles around a point they would need to each measure 72° .



1) Angle a:

All given angles add to 304° .

Angle a ($360^\circ - 304^\circ$) = 56°

Angle b:

$360^\circ \div 6 = 60^\circ$

Angle c:

$a + b = 116^\circ$

$180 - 116^\circ = 64^\circ$

Angle c = 64°

2) When investigating angles around a point, the following whole-number equal angles can be formed:

2 equal angles: $360^\circ \div 2 = 180^\circ$

5 equal angles: $360^\circ \div 5 = 72^\circ$

9 equal angles: $360^\circ \div 9 = 40^\circ$

3 equal angles: $360^\circ \div 3 = 120^\circ$

6 equal angles: $360^\circ \div 6 = 60^\circ$

10 equal angles: $360^\circ \div 10 = 36^\circ$

4 equal angles: $360^\circ \div 4 = 90^\circ$

8 equal angles: $360^\circ \div 8 = 45^\circ$

3) Red: 120°

Green: 18°

Yellow: 60°

Blue: 162°

