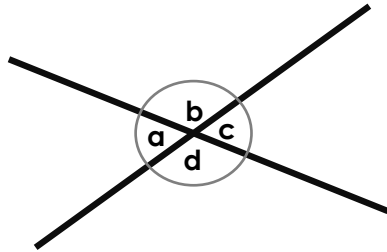


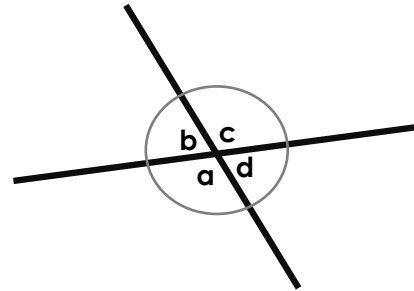
Vertically Opposite Angles

Vertically Opposite Angles

1a. If angle a measures 50° , what is the size of angle b?



1b. If angle b measures 70° , what is the size of angle c?



Not to scale

PS



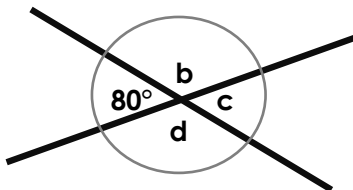
Not to scale

PS

2a. Oscar says:



I think that angle b measures 80° .



Is Oscar correct? Explain why.



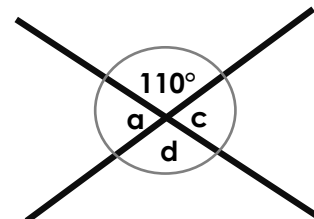
Not to scale

R

2b. Anna says:



I think that angle c measures 140° .



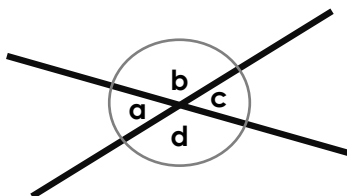
Is Anna correct? Explain why.



Not to scale

R

3a. Knowing that a measures 40° , identify whether these statements are true or false:



a. Angle c measures 80° .

b. Angles a and c total 80° .

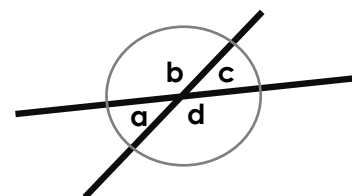
c. Angle b measures 140° .



Not to scale

PS

3b. Knowing that b measures 120° , identify whether these statements are true or false:



a. Angles b and d total 240° .

b. Angle a measures 50° .

c. Angles c and d total 180° .



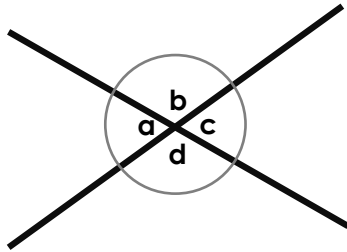
Not to scale

PS

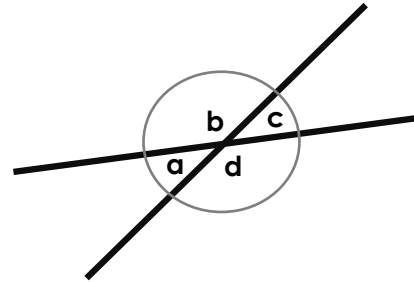
Vertically Opposite Angles

Vertically Opposite Angles

4a. If angle a measures 86° , what is the size of angle b?



4b. If angle c measures 47° , what is the size of angle d?



Not to scale

PS



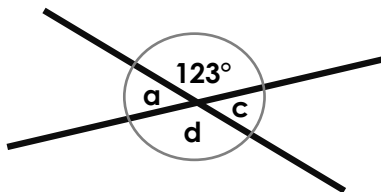
Not to scale

PS

5a. Sandy says:



I think that angle c measures 114° .



Is Sandy correct? Explain why.



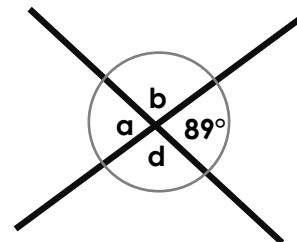
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R

5b. Jack says:



I think that angle d measures 90° .



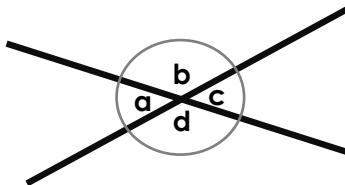
Is Jack correct? Explain why.



Not to scale

R

6a. Knowing that d measures 131° , identify whether these statements are true or false:



a. Angle c measures 49° .

b. Angles b and d total 180° .

c. Angles a, b and c total 229° .

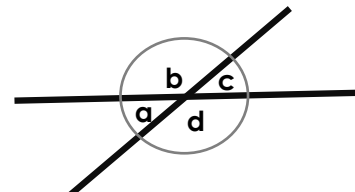
d. Angles a and c total 100° .



Not to scale

PS

6b. Knowing that c measures 74° , identify whether these statements are true or false:



a. Angles a and c total 146° .

b. Angle b measures 106° .

c. Angles b and d total 212° .

d. Angles a, b, c and d total 180° .



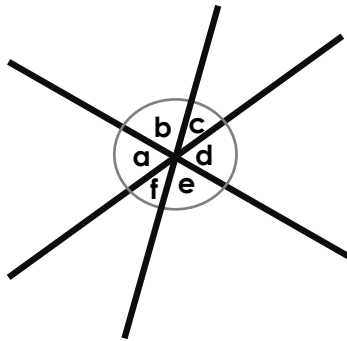
Not to scale

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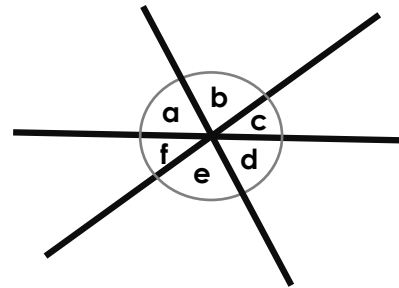
Vertically Opposite Angles

Vertically Opposite Angles

7a. If angle b measures 79° and angle c measures 48° , what is the size of angle d?



7b. If angle a measures 81° and angle b measures 84° , what is the size of angle c?



Not to scale

PS



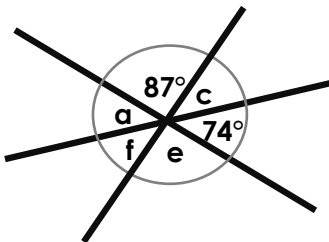
Not to scale

PS

8a. Barney says:



I think that angle c measures 29° .

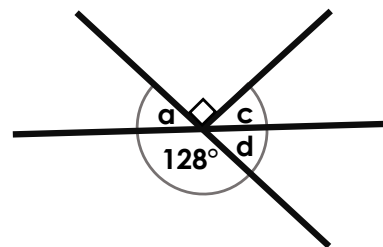


Is Barney correct? Explain why.

8b. Shona says:



I think that angle c measures 48° .



Is Shona correct? Explain why.



Not to scale

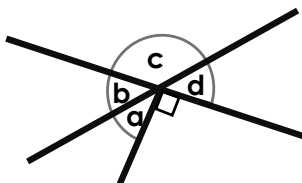
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9a. Knowing that d measures 75° , identify whether these statements are true or false:



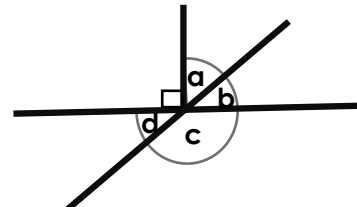
a. Angles c and d total 180° .

b. Angles b and d total 150° .

c. Angles a, b, c and d total 340° .

d. Angle a measures 25° .

9b. Knowing that c measures 137° , identify whether these statements are true or false:



a. Angles b and d total 88° .

b. Angle a measures 47° .

c. Angles a and b total 90° .

d. Angles b, c and d total 220° .



Not to scale

PS



Not to scale

PS

Reasoning and Problem Solving Vertically Opposite Angles

Developing

1a. Angle $b = 130^\circ$

2a. Oscar is not correct as angle b is not vertically opposite. Angle b measures 100° .

3a. $a = \text{false}$, it measures 40° ; $b = \text{true}$ and $c = \text{true}$.

Expected

4a. Angle $b = 94^\circ$.

5a. Sandy is not correct as she has calculated the size of angle a and angle c together. She needs to divide the answer by 2 to give her 57° .

6a. $a = \text{true}$; $b = \text{false}$, they total 262° ; $c = \text{true}$ and $d = \text{false}$, they total 98° .

Greater Depth

7a. Angle $d = 53^\circ$.

8a. Barney is not correct because 87° and 74° total 161° . This means that angle c must measure 19° .

9a. $a = \text{true}$; $b = \text{true}$; $c = \text{false}$, they total 270° and $d = \text{false}$, it measures 15° .

Reasoning and Problem Solving Vertically Opposite Angles

Developing

1b. Angle $c = 110^\circ$.

2b. Anna is not correct as angle a and c both total 140° . Angle c on its own measures 70° .

3b. $a = \text{true}$, $b = \text{false}$, it measures 60° and $c = \text{true}$.

Expected

4b. Angle $d = 133^\circ$.

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° .

6b. $a = \text{false}$, they total 148° ; $b = \text{true}$; $c = \text{true}$ and $d = \text{false}$, they total 360° .

Greater Depth

7b. Angle $c = 15^\circ$.

8b. Shona is not correct. Angles on a straight line equal 180° so angle d must be 52° . Angle a must also be 52° . $52^\circ + 90^\circ = 142^\circ$. $180^\circ - 142^\circ = 38^\circ$. Angle c is 38° .

9b. $a = \text{false}$, they total 86° ; $b = \text{true}$; $c = \text{true}$ and $d = \text{false}$, they total 223° .