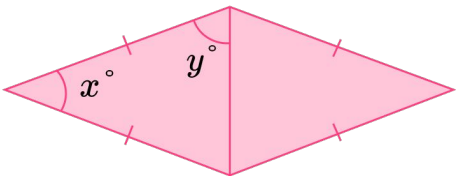
THIRD SPACE LEARNING

GCSE Exam Questions

Angles in a Quadrilateral | Geometry & Measure

GCSE Exam Questions: Angles in a Quadrilateral

1) **(a)** Two isosceles triangles are placed next to each other so that they share 1 edge of the same length. Below is a sketch of one orientation of the two triangles.



In the space below, sketch the two other possible orientations. Label all the angles.

(4)

(b) If $x + y = 105°$ and $2y + x = 180°$, calculate the values of x and y.

(3)

(7 marks)

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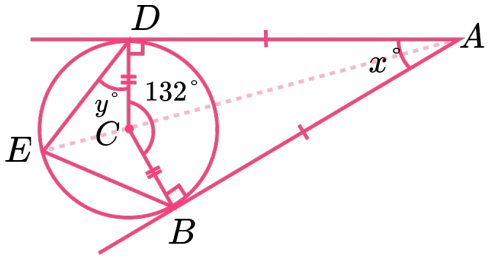
2) **(a)** Two tangents of a circle with centre C meet at point A. Calculate the angle BAD, labelled x. Explain your answer.



(2)

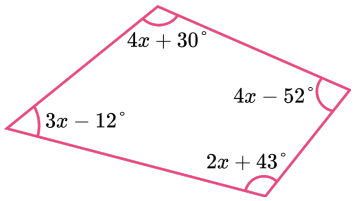
(b) The line EA is a straight line that goes through the centre of the circle. Calculate the value of the angle CDE, labelled y.

(4)

(6 marks)

GCSE Exam Questions: Angles in a Quadrilateral

3) **(a)** Use the information in the diagram to calculate the value of x.



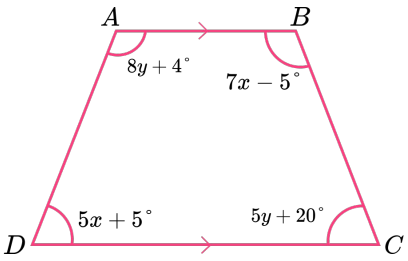
(3)

(b) Is the quadrilateral in part A a cyclic quadrilateral? Explain your answer.

(3)

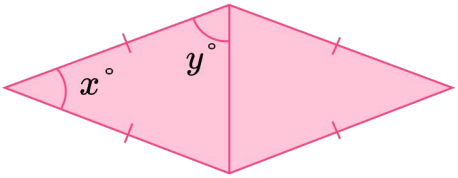
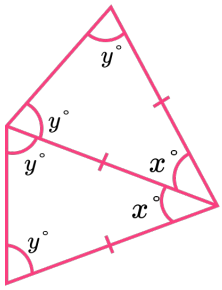
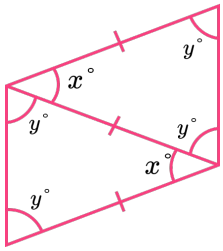
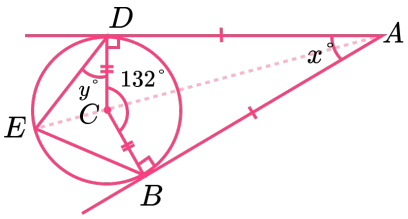
(6 marks)

4) Show that $ABCD$ is an isosceles trapezium.

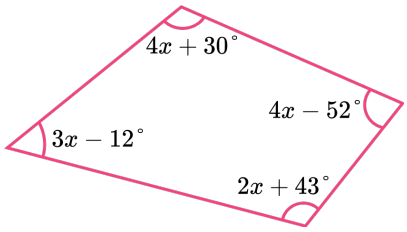
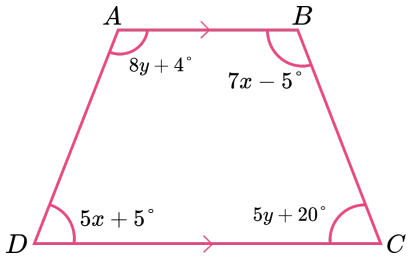


(7 marks)

GCSE Exam Questions: Angles in a Quadrilateral Answers

	Question	Answer	Marks
1) (a)	Two isosceles triangles are placed next to each other so that they share 1 edge of the same length. Below is a sketch of one orientation of the two triangles.  In the space below, sketch the two other possible orientations. Label all the angles.	**(a)**   	**(1)** **(1)** **(1)** **(1)**
(b)	If $x + y = 105°$ and $2y + x = 180°$, calculate the values of x and y.	**(b)** $x + y = 105$ **(A)** $2y + x = 180$ **(B)** **(A - B):** $y = 75°$ $x + 75 = 105$ $x = 30°$	 **(1)** **(1)** **(1)**
2) (a)	Two tangents of a circle with centre C meet at point A. Calculate the angle BAD, labelled x. Explain your answer.  	**(a)** $180 - 132 = 48°$ Angles in a quadrilateral total 360°.	**(1)** **(1)**
(b)	The line EA is a straight line that goes through the centre of the circle. Calculate the value of the angle CDE, labelled y.	**(b)** CDE is isosceles as CD=CE= radius $CED = CDE$ $360 - 132 = 228$ $ECD = 228 \div 2 = 114$ $\frac{180 - 114}{2}$ $y = 33°$	**(1)** **(1)** **(1)** **(1)**

GCSE Exam Questions: Angles in a Quadrilateral Answers

	Question	Answer	Marks
3) (a)	Use the information in the diagram to calculate the value for x.  	**(a)** $(4x + 30) + (4x - 52) +$ $(2x + 43) + (3x - 12) = 360$ **oe** $13x + 9 = 360$ $13x = 351$ $x = 27°$	**(1)** **(1)** **(1)**
(b)	Is the quadrilateral in part A a cyclic quadrilateral? Explain your answer.	**(b)** No Opposite angle pairs in the quadrilateral are: 138° and 97°, 69° and 56° which do not sum to 180°.	**(1)** **(1)** **(1)**
4)	Show that ABCD is an isosceles trapezium.  	$8y + 5x = 171$ $7x + 5y = 165$ $35x + 56y = 1197$ **(A)** $35x + 25y = 825$ **(B)** $31y = 372$ **(A - B)** $y = 12°$ $8 \times 12 + 5x = 171$ $5x = 75$ $x = 15°$	**(1)** **(1)** **(1)** **(1)** **(1)** **(1)** **(1)**

Where to go next?

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