GCSE Mathematics

Geometric Reasoning

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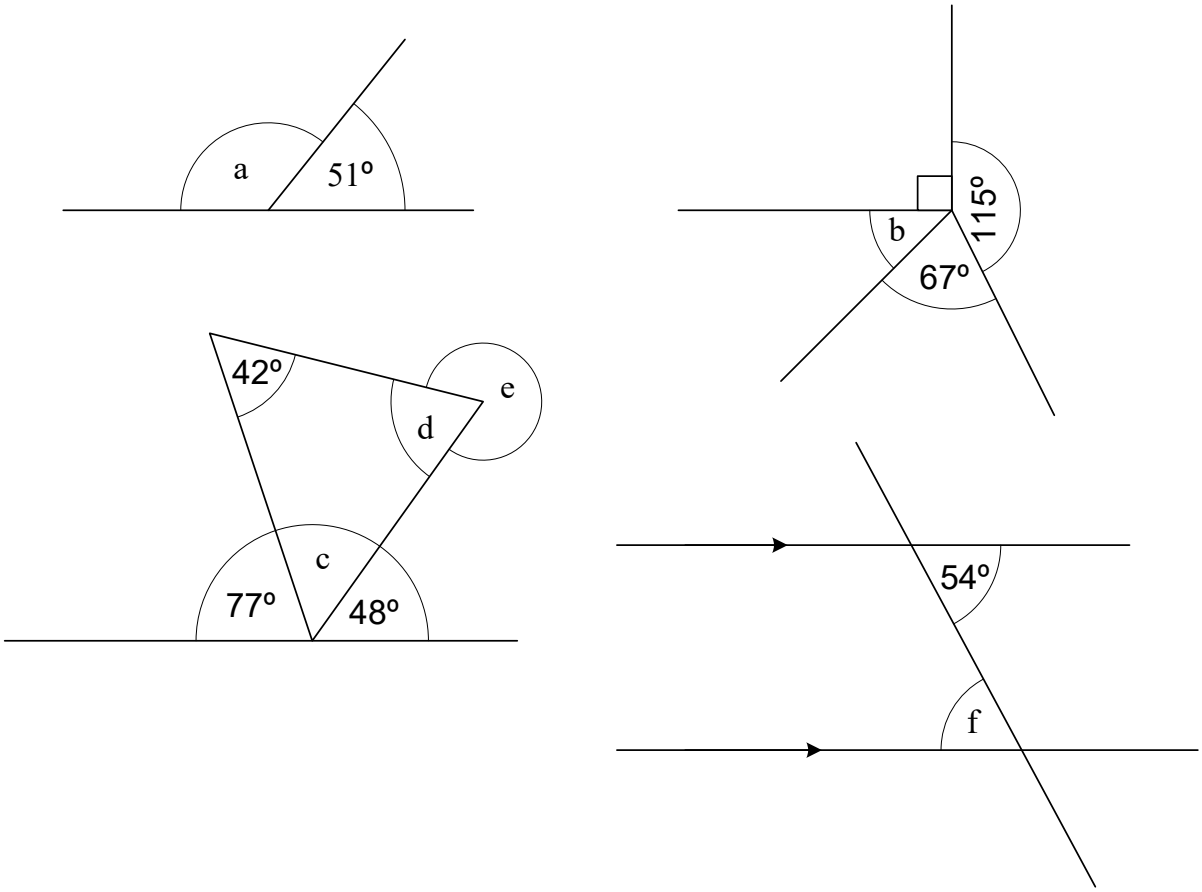
Q1 Find the size of the missing angles. Show your reasoning.



a ……

b ……

c ……

d ……

e ……

f ……

Q2 What type of angle is described below?

a An angle of 65°.

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b An angle of 180°.

.....

c An angle of 145°.

.....

d An angle of 12°.

.....

e An angle of 213°.

.....

f An angle of 90°.

.....

g An angle of 112°.

.....

h An angle of 270°.

.....

i An angle of 94°.

.....

j An angle of 183°.

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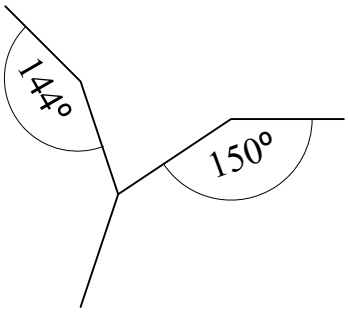
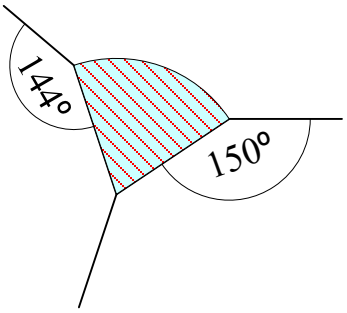
Q3 The diagram below shows a partial view of two regular polygons.

The length of each side is 2cm.

a Name the shapes. Show how you know.



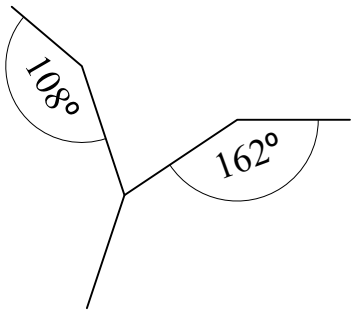
b What is the area of the shaded sector?



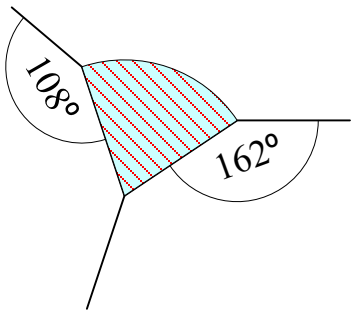
Q4 Below is a partial diagram of two regular polygons.

The length of each side is 5cm.

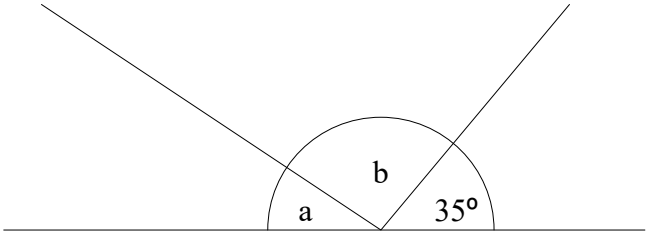
a How many sides has each polygon. Show how you know.



b What is the area of the shaded sector?



Q5 Explain why a+b=145°.



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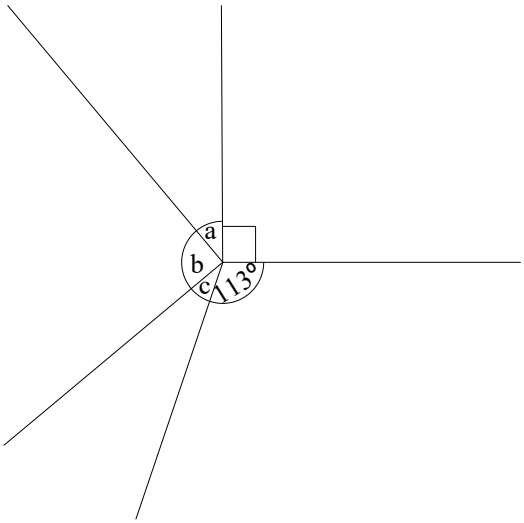
Q6 Explain why a+b+c=157°



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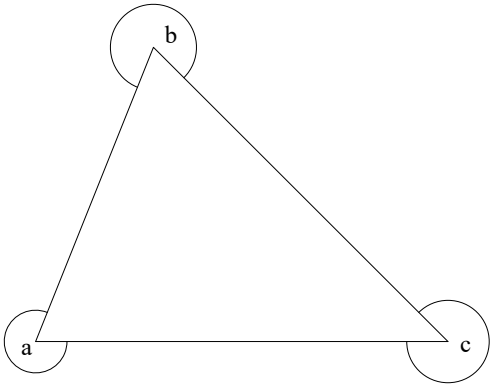
Q7 Explain why a+b+c=900°



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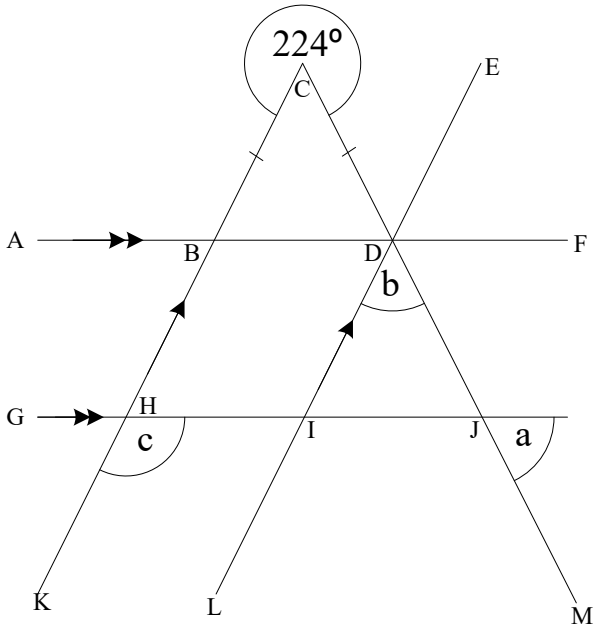
Q8 Find the values of a, b and c. Give reasons.

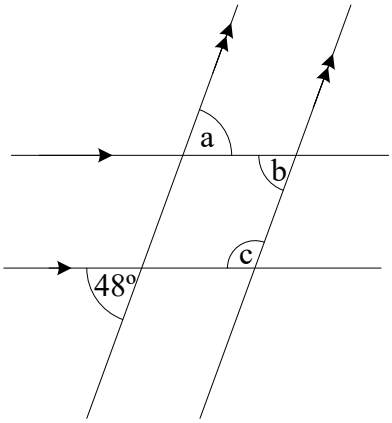


a= ……

b= ……..

c= ……..……..

Q9 Without using, "Angles on a straight line," explain how angles a, b and c are related to the given angle on the diagram below.



a = …….

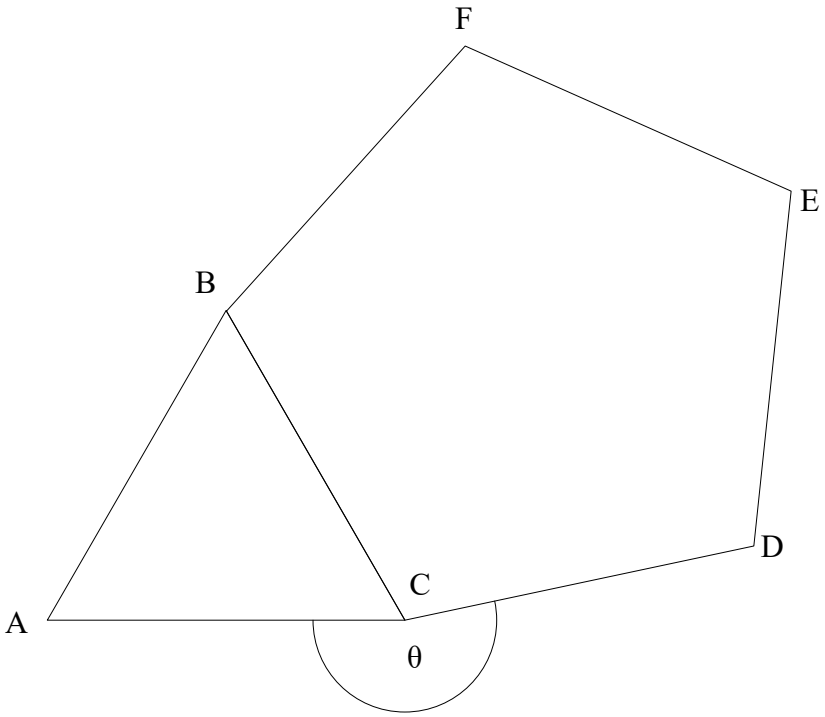
b= …….

c= …….

Q10 ABC is an equilateral triangle. BCDEF is a regular pentagon.

Find the size of angle θ.

Show your working.



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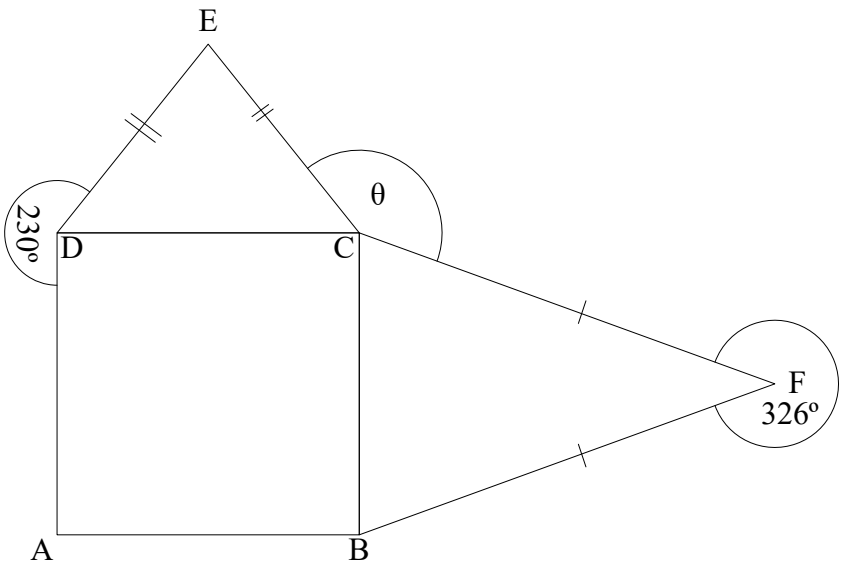
Q11 ABCD is a square.

DCE and BCF are both isosceles triangles.

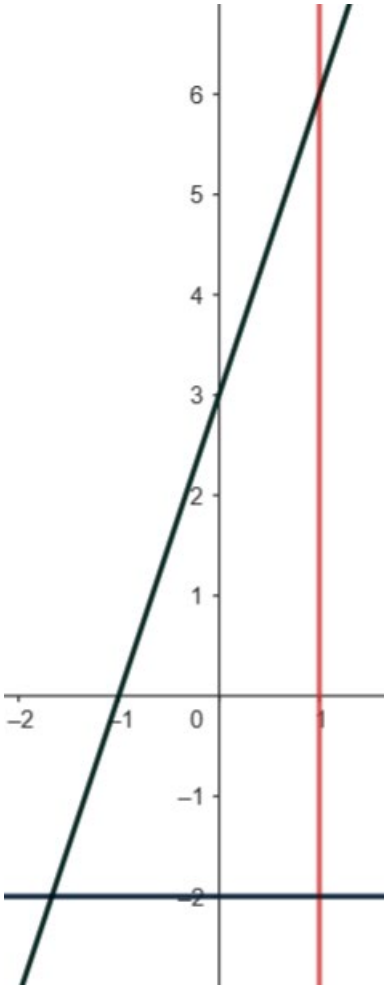
Find the value of θ.

Give reasons.



Q12 The lines y=3x+3, y=-2 and x=1 form a triangle.

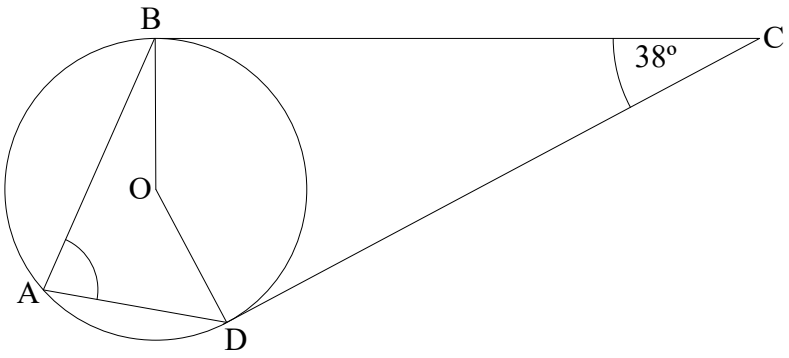
What is the area of the triangle?



Q13 BC and CD are tangents to the circle centred at O.

Angle BCD = 38°.

Giving reasons for each stage of your calculation, find angle DAB.



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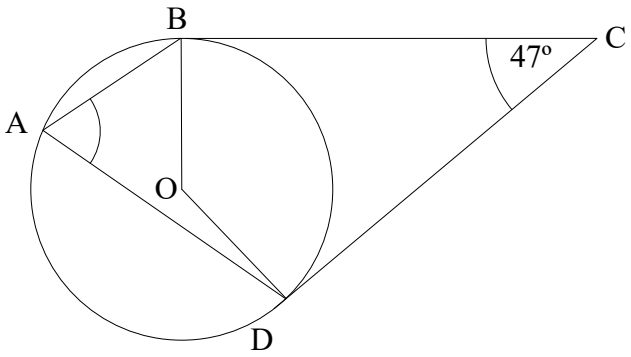
Q14 BC and CD are tangents to the circle centred at O.

Angle BCD = 47°.

Giving reasons for each stage of your calculation, find angle DAB.



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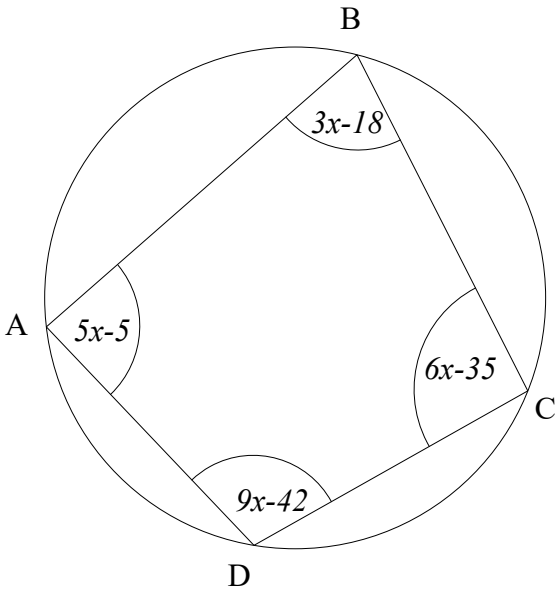
Q15 Find the value of x and hence, the size of each angle in the quadrilateral below.

Give reasons where required.



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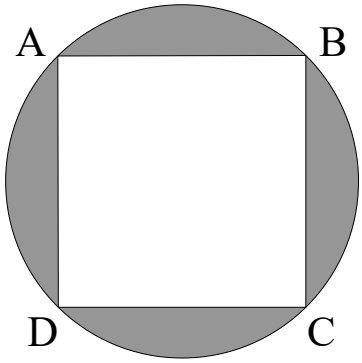
Q16 ABCD is a square whose sides are 5cm long.

Calculate the area of the shaded part of the circle.

Give your answer correct to four significant figures.



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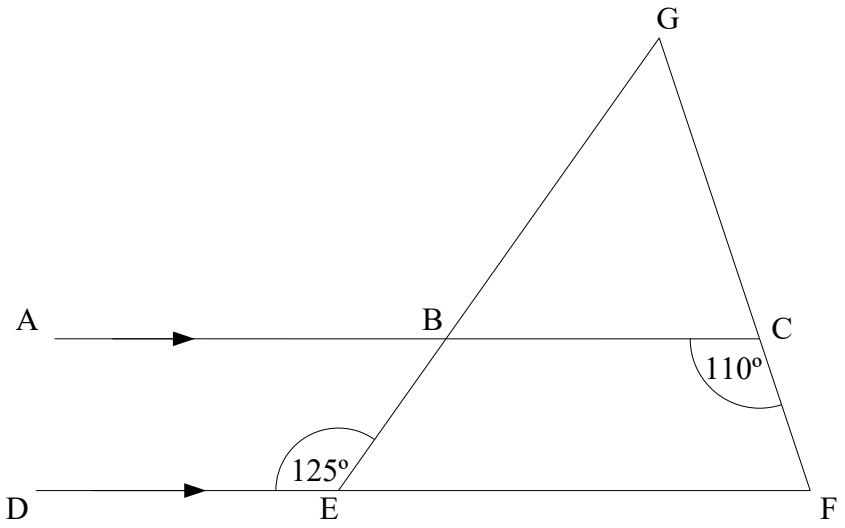
Q17 GBE and GCF are straight lines.

AC and DF are parallel straight lines.

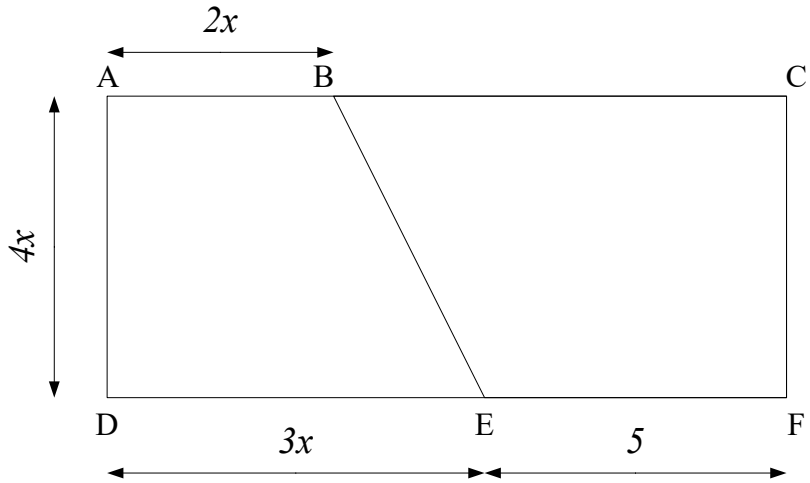
Show that triangle BGC is isosceles.



Q18 ACDF is an oblong.

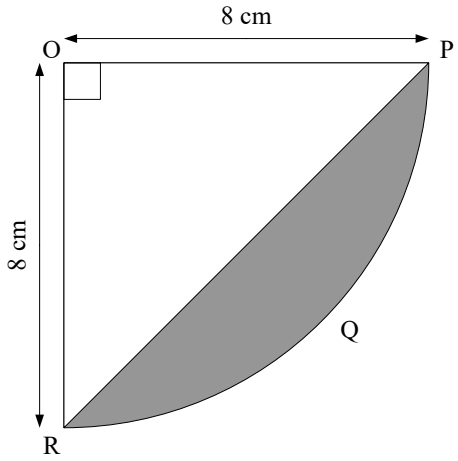
BE is a straight line.

CBEF is a trapezium with area A.



Show that $A = 2x^2 + 20x$

Q19 The diagram shows a sector OPQR of a circle, centre O and radius 8cm.



OPR is a triangle.

Work out the area of the shaded segment, PQR.

Give your answer to 3 significant figures.