

8300

GCSE MATHEMATICS

Foundation and Higher tier – Questions by Topic

Geometry

Angles – Angles on a straight line and about a point &

Vertically opposite angles

v1.0

Name _____

Materials

For this paper you must have:

- Mathematical instruments

Information

- The marks for questions are shown in brackets

Advice

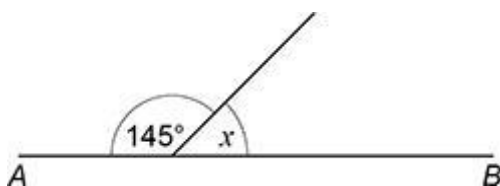
- In all calculations, show clearly how you work out your answer

For questions 1 to 13, you may use a calculator.



Q1.

AB is a straight line.

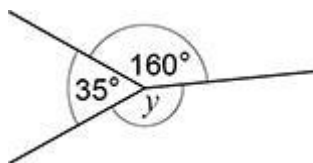


Not drawn
accurately

Work out the size of angle x .

(Total 1 mark)

Q2.



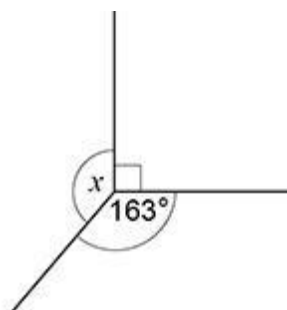
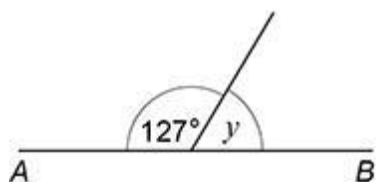
Not drawn
accurately

Work out the size of angle y .

(Total 2 marks)

Q3.

AB is a straight line.



Not drawn
accurately

Is y half of x ?
Tick **one** box.

Yes

☐

No

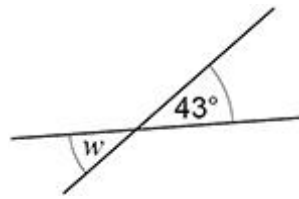
☐

Show working to support your answer.

(Total 3 marks)

Q4.

Here are two straight lines.



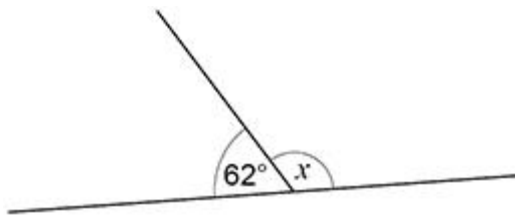
Not drawn
accurately

Write down the size of angle w .

(Total 1 mark)

Q5.

Here are two different straight lines.



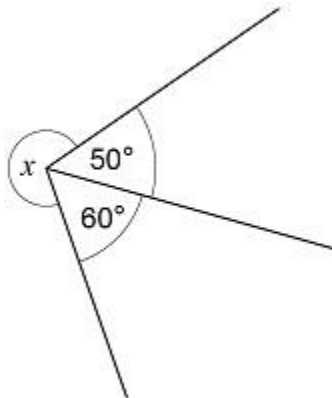
Not drawn
accurately

Work out the size of angle x .

(Total 1 mark)

Q6.

Not drawn accurately



Circle the size of angle x .

70°

110°

250°

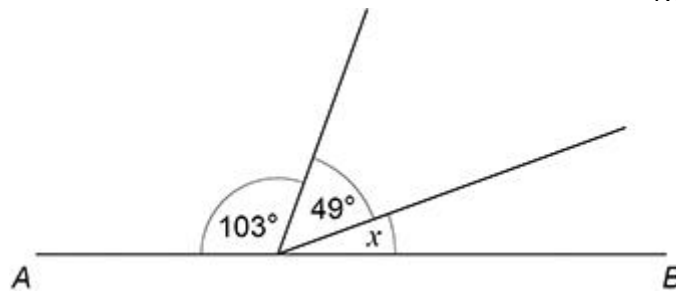
270°

(Total 1 mark)

Q7.

AB is a straight line.

Not drawn accurately

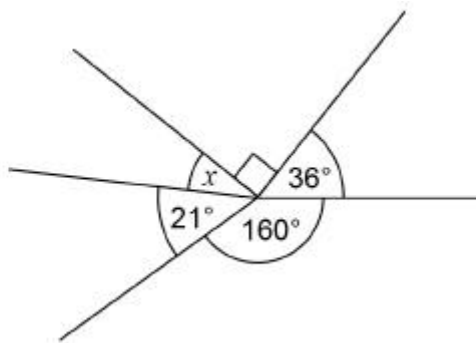


Work out the size of angle x .

(Total 2 marks)

Q8.

Not drawn accurately



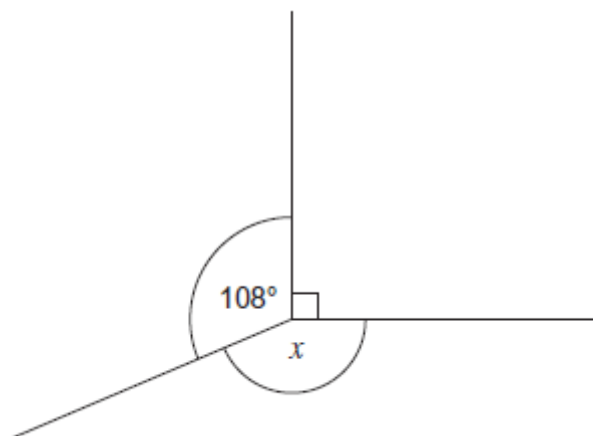
Work out the size of angle x .

(Total 2 marks)

Q9.

- (a) Work out the size of angle x

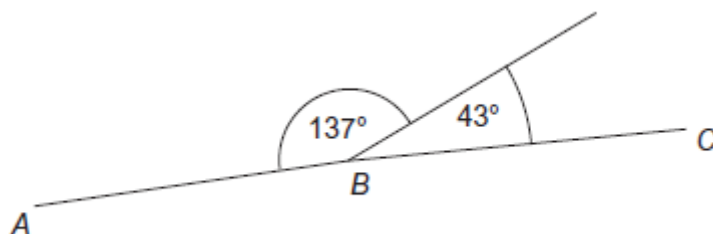
Not drawn accurately



(2)

- (b)

Not drawn accurately



Give a reason why, if drawn accurately, ABC would be a straight line.

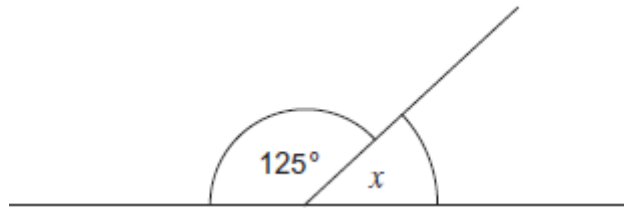
(1)

(Total 3 marks)

Q10.

- (a) Work out the size of angle x .

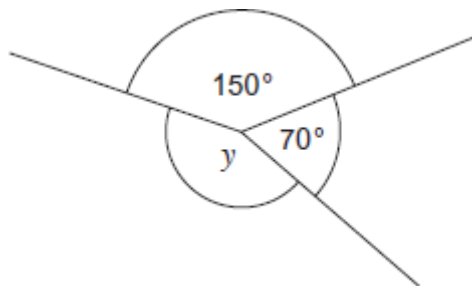
Not drawn accurately



(1)

- (b) Work out the size of angle y .

Not drawn accurately



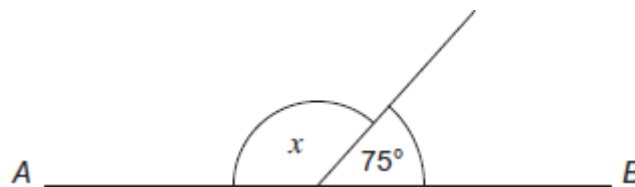
(2)

(Total 3 marks)

Q11.

- (a) AB is a straight line.
Work out the size of angle x .

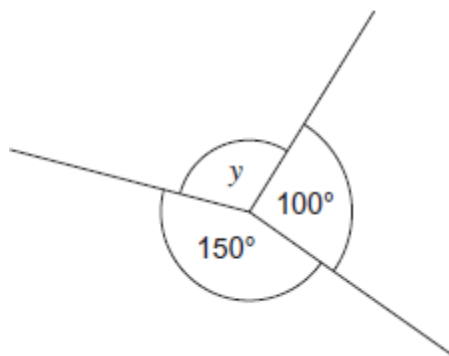
Not drawn accurately



(1)

- (b) Work out the size of angle y .

Not drawn accurately



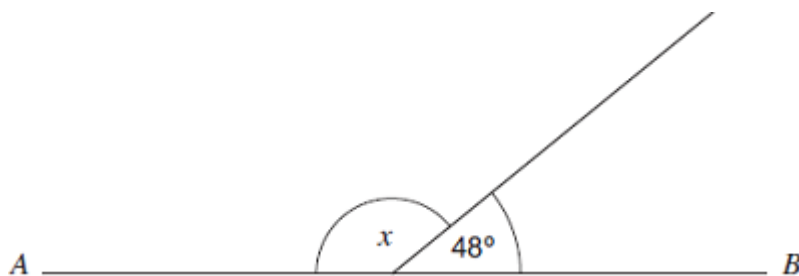
(2)

(Total 3 marks)

Q12.

- (a) AB is a straight line.

Not drawn
accurately

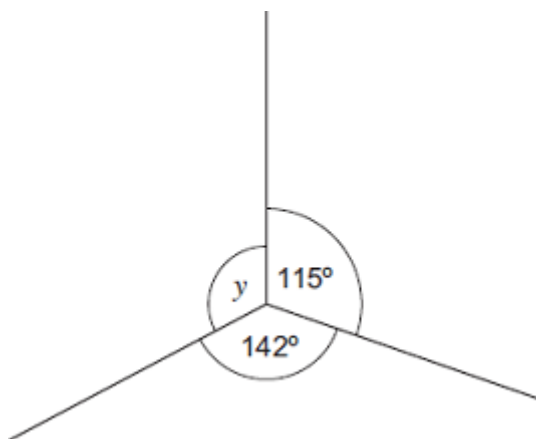


Work out the value of x .

(1)

- (b) The diagram shows three angles at a point.

Not drawn
accurately



Work out the value of y .

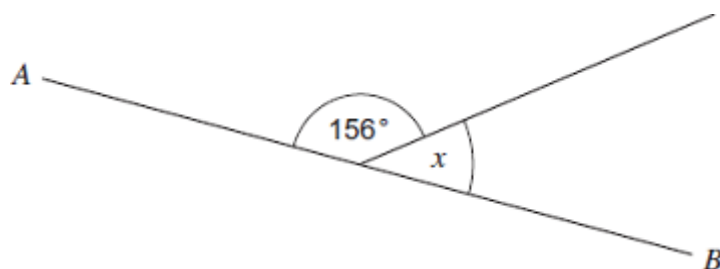
(2)

(Total 3 marks)

Q13.

- (a) AB is a straight line.

Not drawn
accurately

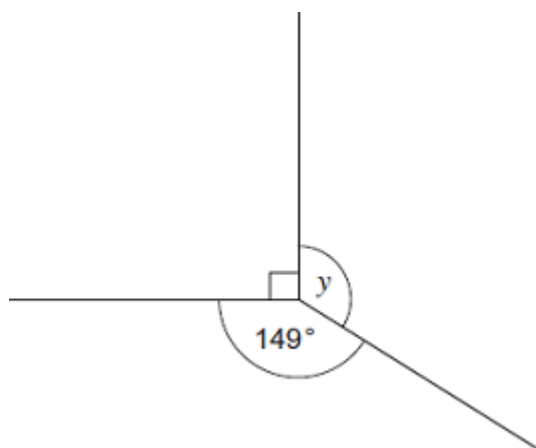


Work out the size of angle x .

(2)

- (b) Work out the size of angle y .

Not drawn
accurately



(2)

(Total 4 marks)

Angles – Angles on a straight line and about a point, and vertically opposite angles – Cross topic questions

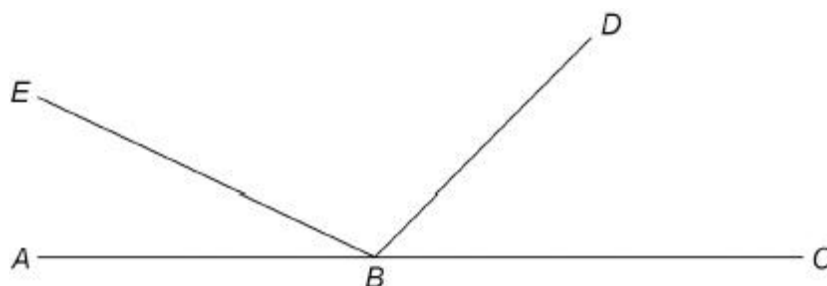
For questions 14 and 15 you must **NOT** use a calculator.



Q14.

ABC , BD and BE are straight lines.

Not drawn
accurately



angle $EBD = 5 \times$ angle ABE

angle $DBC = 3 \times$ angle ABE

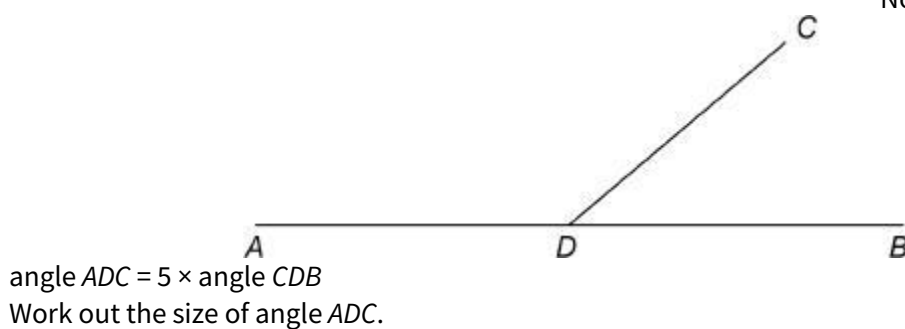
Work out the size of angle EBD .

(Total 3 marks)

Q15.

ADB and CD are straight lines.

Not drawn accurately



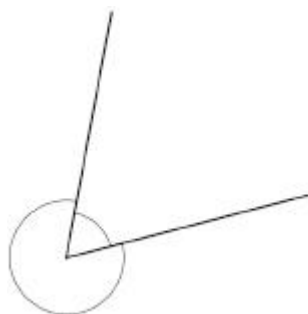
(Total 3 marks)

For the rest of the questions, you may use a calculator.



Q16.

Two angles around a point are shown.



Not drawn
accurately

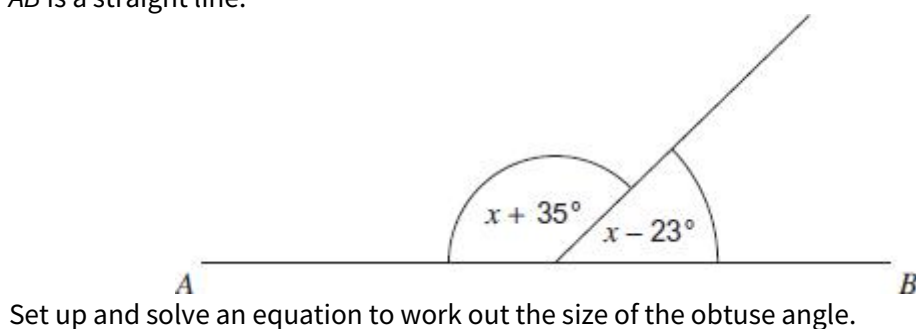
The angles are in the ratio $2 : 7$
Show that the larger angle is 280°

(Total 2 marks)

Q17.

AB is a straight line.

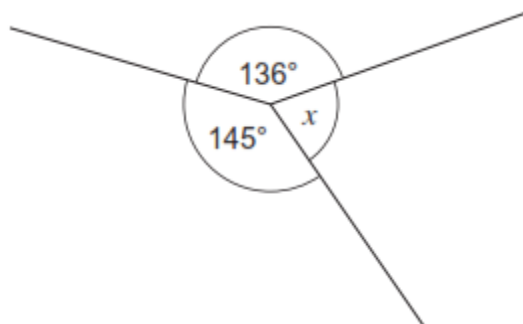
Not drawn
accurately



(Total 4 marks)

Q18.

- (a) The diagram shows three angles at a point.

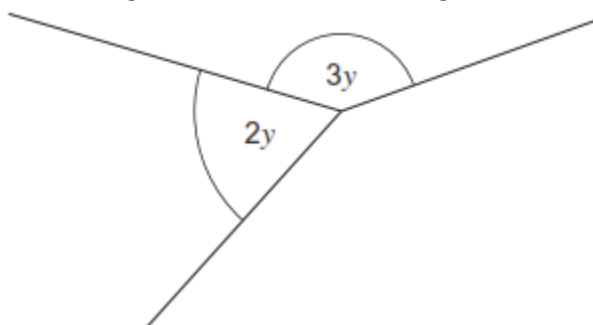


Not drawn accurately

Work out the value of x

(2)

- (b) This diagram also shows three angles at a point.



Not drawn accurately

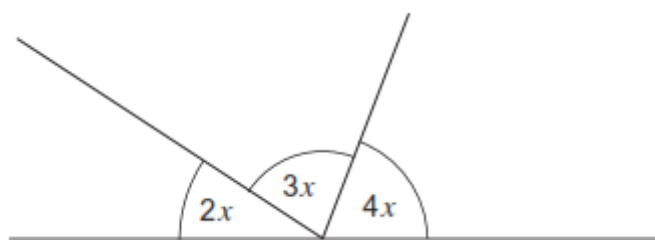
Work out the missing angle in terms of y .
Give your answer in its simplest form.

(2)

(Total 4 marks)

Q19.

The diagram shows three angles on a straight line.



Not drawn accurately

Set up and solve an equation in x to help you work out the size of the smallest angle.

(Total 4 marks)

Q20.

- (a) Three angles are in the ratio 2 : 3 : 7

The smallest angle is 60° .

Show that these three angles will fit together at a point with no gaps.

(3)

- (b) Two angles form a straight line.

One of the angles is $(x + 30)$ degrees.

Write down an expression for the size of the other angle.

Give your answer in its simplest form.

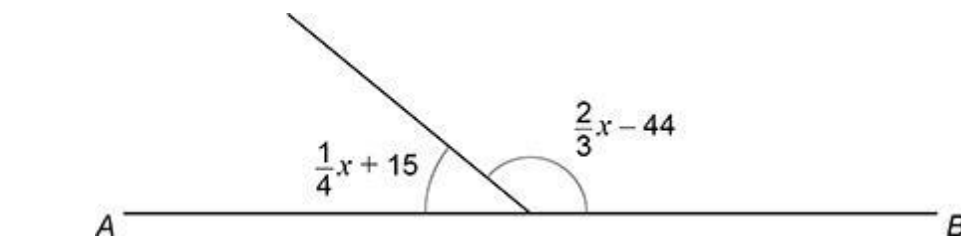
(2)

(Total 5 marks)

Q21. (H)

AB is a straight line.

Both angles are given in degrees.



Not drawn
accurately

By working out the value of x ,

work out the ratio

smaller angle : larger angle

(Total 4 marks)