ANGLES AND LINES

CONTENT DOMAIN REFERENCES:
G2, G4

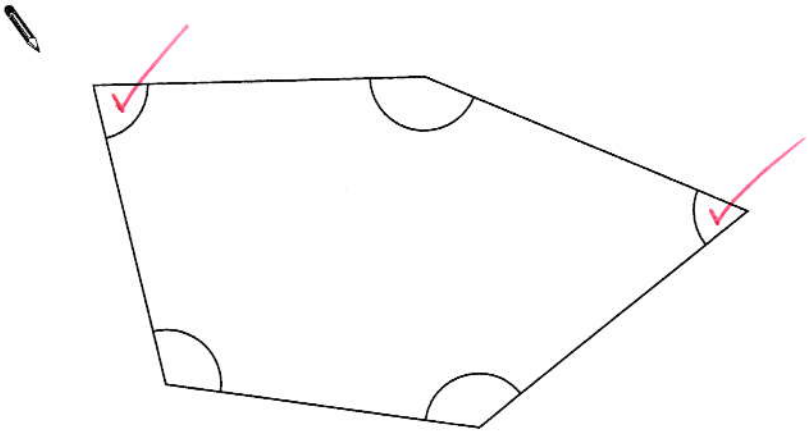
KS2 SATS

PRACTICE QUESTIONS BY TOPIC

1 Look at this shape.

[2009]

Tick (✓) each angle that is **less** than a right angle.

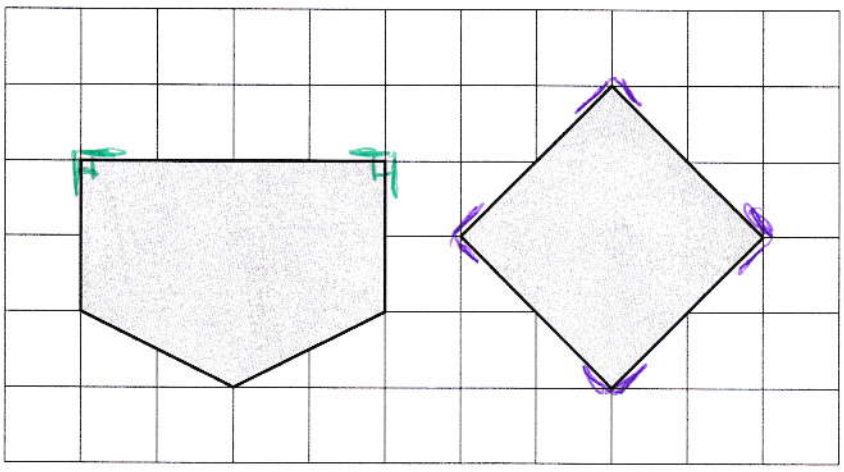


[1 mark]

2 Here are two shapes on a square grid.

[2015]

For each shape, write how many **right angles** it has.



2

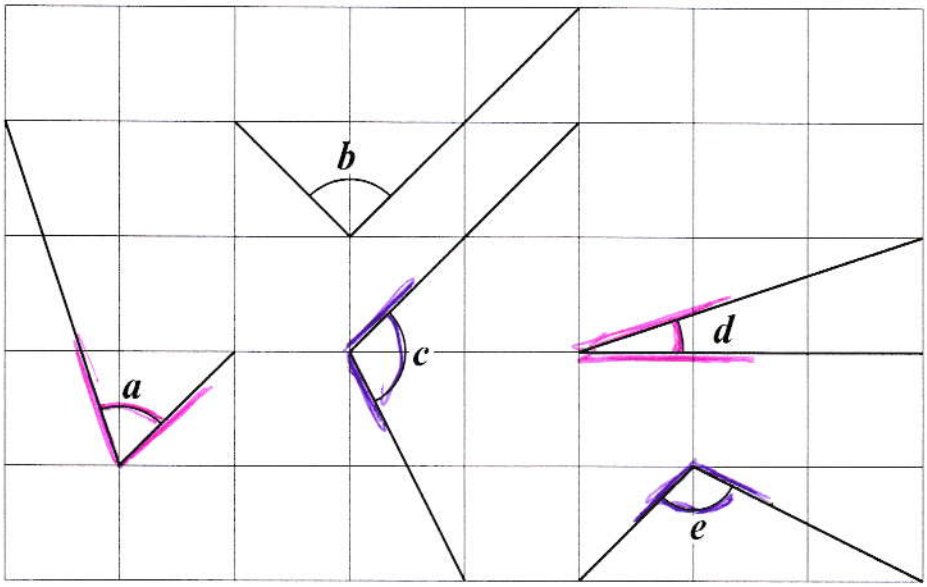
4

[1 mark]

Questions compiled by:
@Maths4Everyone

3 Here are five angles marked on a grid of squares.

[2016]



Write the letters of the angles that are **obtuse**.

C, E

Write the letters of the angles that are **acute**.

A, D

[2 marks]

4 Look at the letters below.

[2017]

Circle the letter below that has both parallel **and** perpendicular lines.

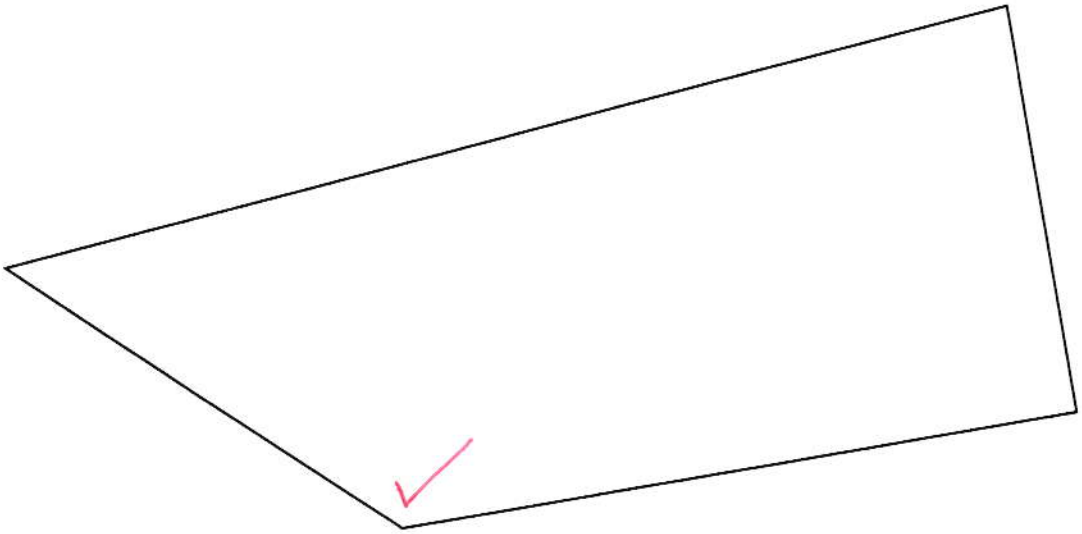
A C E L Z

[1 mark]

5 In this shape, one of the angles is **obtuse**. [MORE THAN 90°]

[2014]

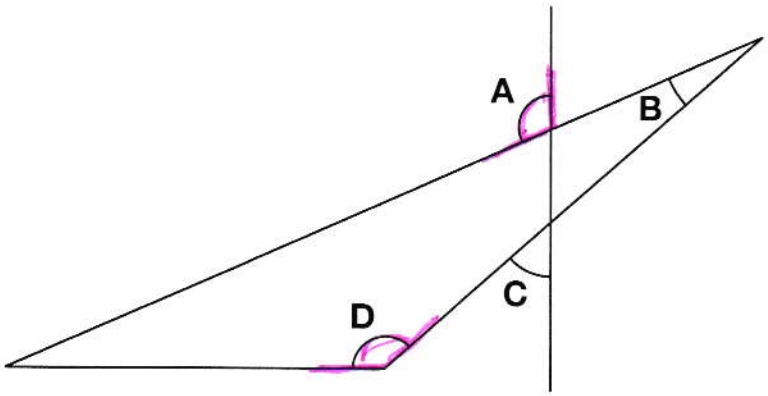
Tick (✓) the obtuse angle.



[1 mark]

6 This diagram has four angles marked **A**, **B**, **C** and **D**.

[2011]



[MORE THAN 90°]

Write the letters of the angles that are **obtuse** angles.

A, D

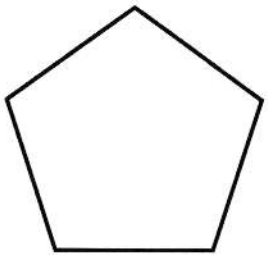
[1 mark]

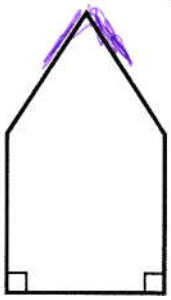
7 Circle the **pentagon** with exactly **four acute angles.**

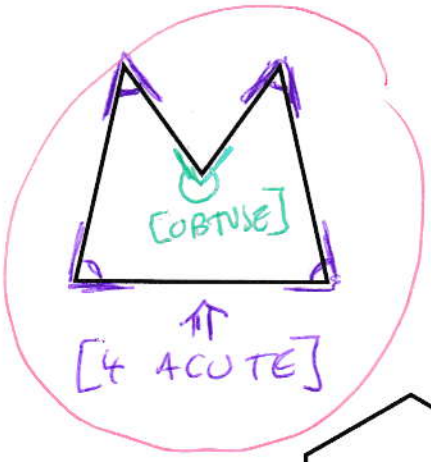
[2017]

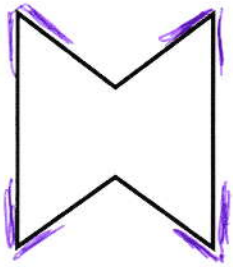
FIVE SIDES

[LESS THAN 90°]

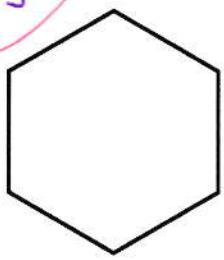








← NOT A PENTAGON!



[1 mark]

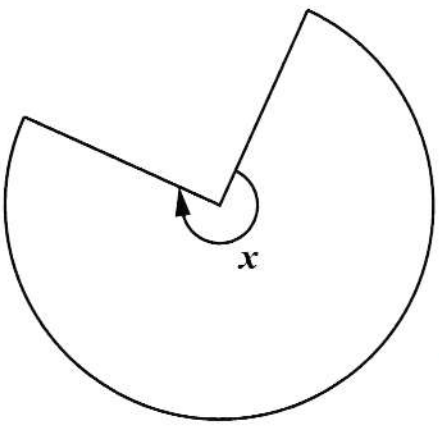
8 This shape is **three-quarters of a circle.**

[2001]

$\frac{3}{4}$ OF 360

$\frac{1}{4}$ OF 360 = 90

SO, $\frac{3}{4}$ IS 3×90



How many degrees is **angle x**?

270 °

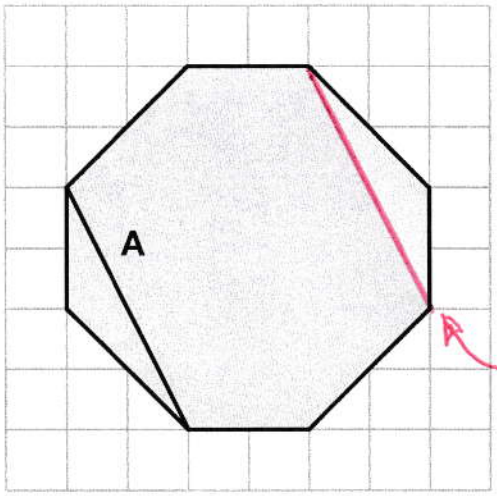
[1 mark]

9 The diagram shows a shaded octagon on a square grid.

[2016S] Line **A** joins two vertices of the octagon.

Join two other vertices to draw a line **parallel** to line **A**.

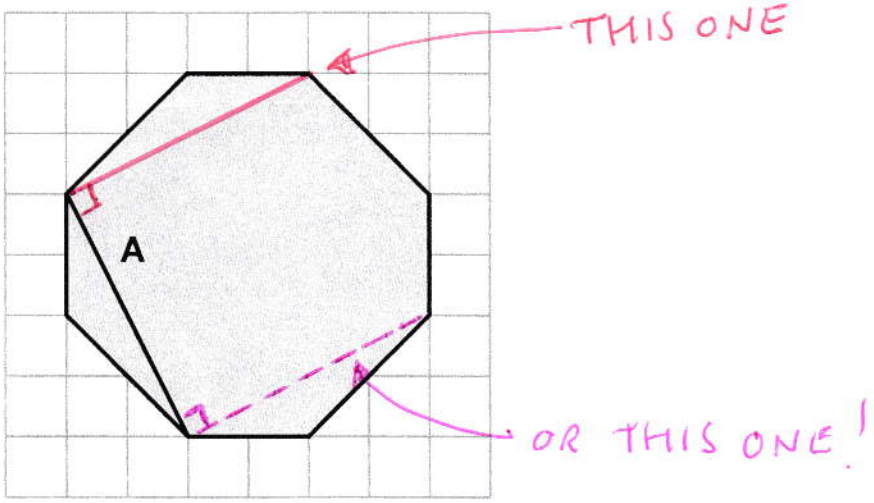
Use a ruler.



Join two vertices to draw a line **perpendicular** to line **A**.

[AT RIGHT ANGLES]

Use a ruler.

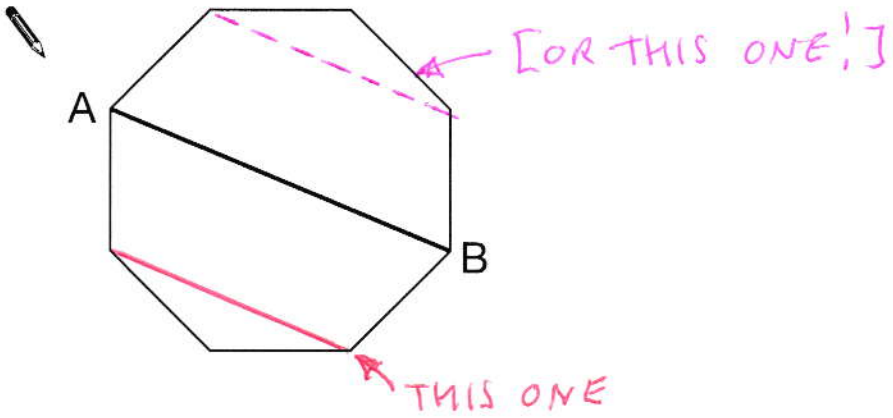


[2 marks]

10 Here is a regular octagon with two vertices joined to make the line AB.

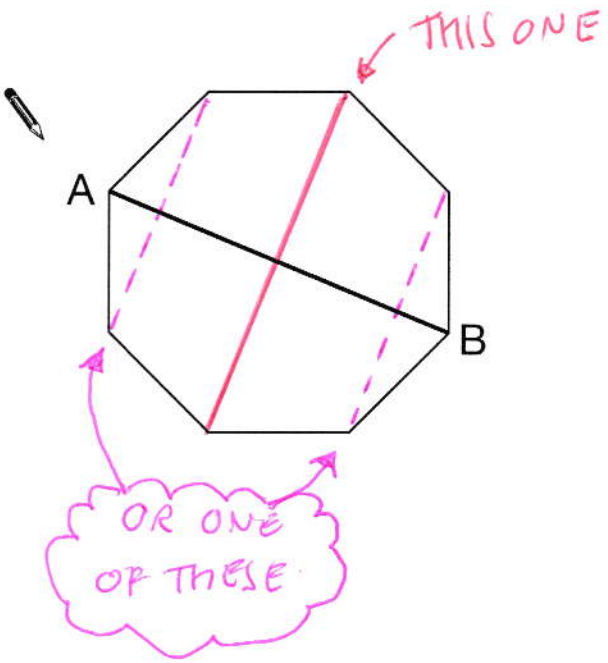
[2008]

Join two other vertices to draw **one** line that is **parallel** to the line AB.



Here is the octagon again.

Join two vertices to draw **one** line that is **perpendicular** to the line AB.

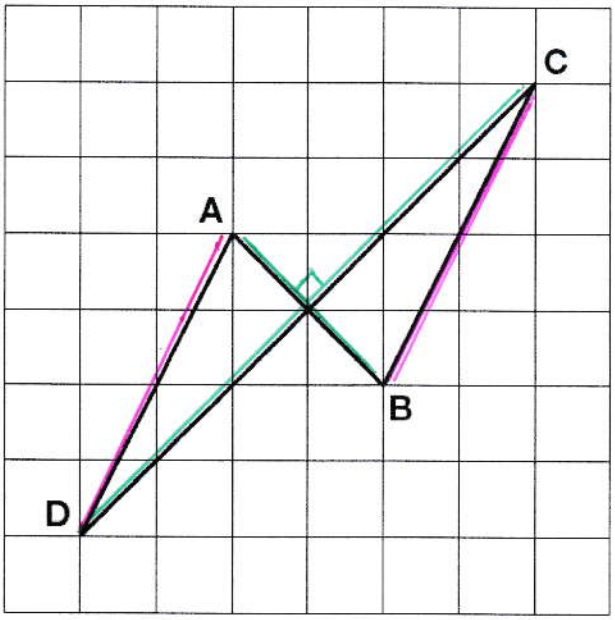


[2 marks]

11 The diagram shows four lines drawn on a square grid.

[2012]

The lines are **AB**, **BC**, **CD** and **DA**.



Which two of the lines are **parallel**?
Circle them in the list below.

AB BC CD DA

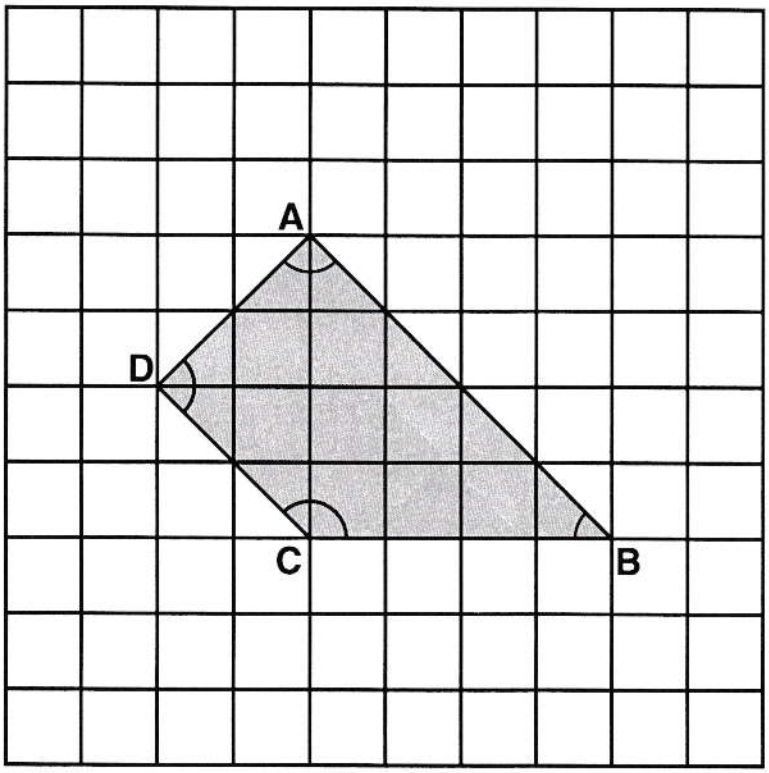
Which two of the lines are **perpendicular**?
Circle them in the list below.

AB BC CD DA

[2 marks]

12 Here is a shape on a square grid.

[2000]



For each sentence, put a tick (✓) if it is true.
Put a cross (✗) if it is not true.

Angle **C** is an **obtuse** angle. ✓

Angle **D** is an **acute** angle. ✗ [IT'S A RIGHT-ANGLE]

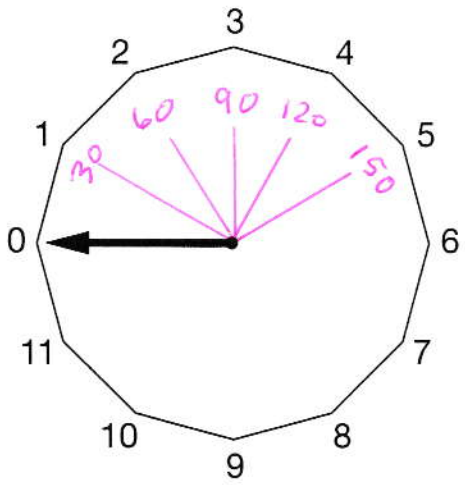
Line **AD** is **parallel** to line **BC**. ✗

Line **AB** is **perpendicular** to line **AD**. ✓

[2 marks]

13 This regular 12-sided shape has a number at each vertex.

[2008]



Ben turns the pointer from zero, clockwise through 150°

Which number will the pointer now be at?

5

Nisha turns the pointer clockwise from number 2 to number 11

Through how many degrees does the pointer turn?

TURNS 9 'UNITS'

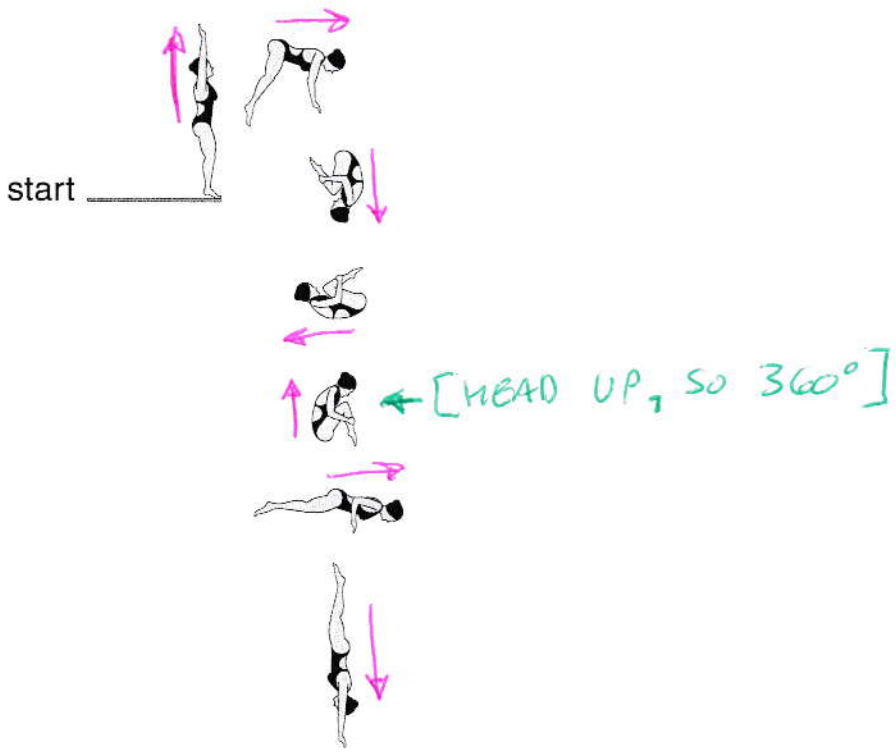
270 °

9 x 30 = 270°

[2 marks]

14 Layla completes one-and-a-half somersaults in a dive.

[2017]



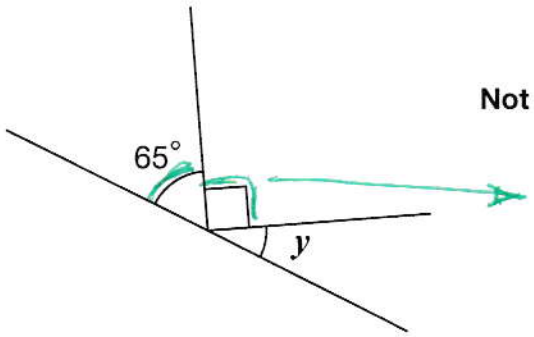
How many **degrees** does Layla turn through in her dive?

540 °

[1 mark]

15

[2009]



Not to scale

65 + 90 = 155

180 - 155

Calculate the size of angle y in this diagram.

Do **not** use a protractor (angle measurer).

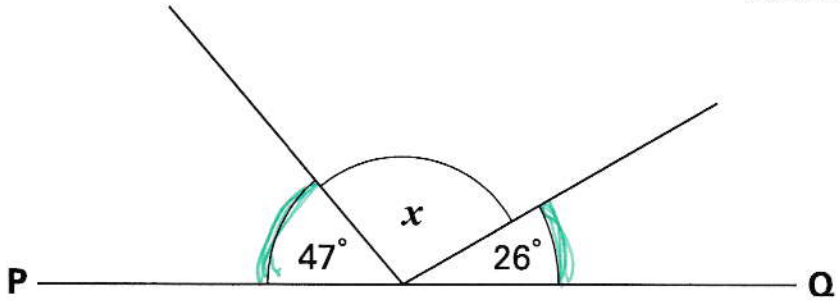
$y =$ 25 °

[1 mark]

16 **PQ** is a straight line.

[Extra]

Not drawn accurately



1ST 47+26 = 73

Calculate the size of angle x.

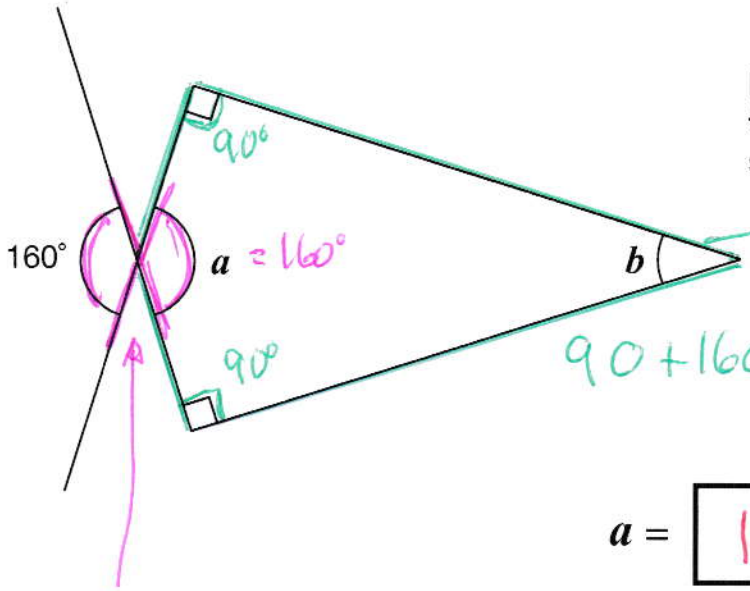
Do **not** use a protractor (angle measurer).

2ND 180 - 73 → 107 °

[1 mark]

17 Calculate the size of angles a and b in this diagram.

[2016]



Not to scale

ANGLES IN A QUADRILATERAL ADD TO 360°

90+160+90 = 340

360 - 340 = 20

a = 160 °

b = 20 °

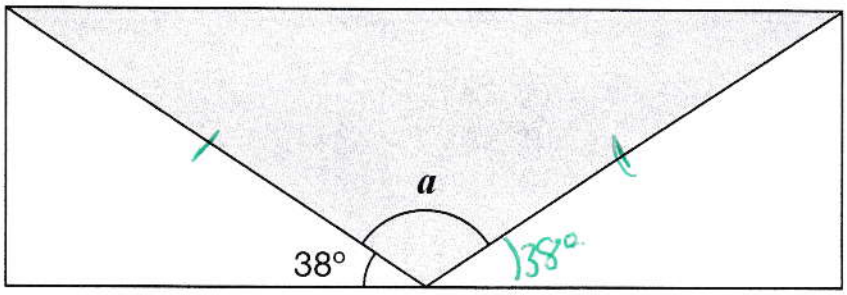
[VERTICALLY OPPOSITE ANGLES ARE EQUAL]

[2 marks]

18 [2016S]

A shaded **isosceles** triangle is drawn inside a rectangle.

SYMMETRICAL



Not to scale

Calculate the size of angle ***a***.

Show your method

$38 + 38 = 76$

$a = 180 - 76$

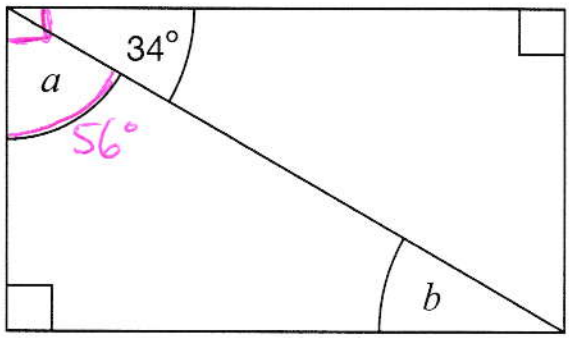
$= 104°$

104°

[2 marks]

19 [2015]

Here is a rectangle.



Not to scale

Calculate the size of angles ***a*** and ***b***.

Do not measure the angles.

$a = 90 - 34$

a = 56 °

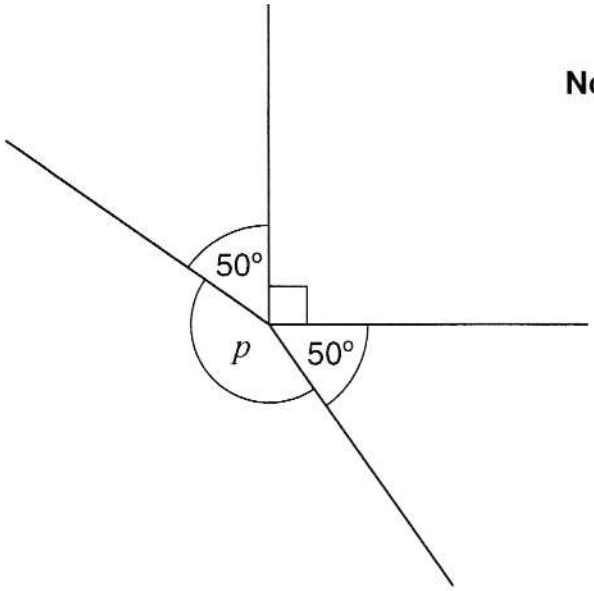
$b = 180 - (90 + 56)$

b = 34 °

[1 mark]

20

[2013]



Not to scale

Calculate the size of angle ***p*** in the diagram.

Do **not** use a protractor (angle measurer).

$50 + 90 + 50 = 190$

$360 - 190 = 170°$

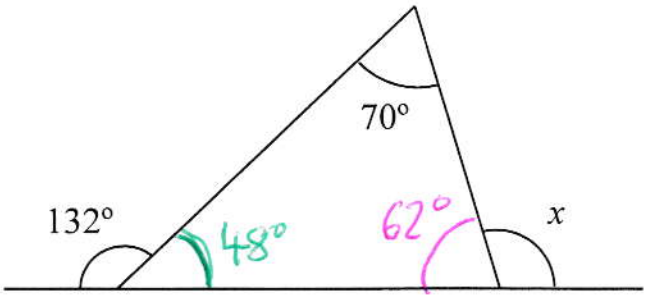
170°

[1 mark]

21

Calculate the size of angle x

[Extra]



Show your method

[1] $180 - 132 = 48°$

[2] $180 - (48 + 70) = 62°$

[3] $x = 180 - 62 = 118°$

118°

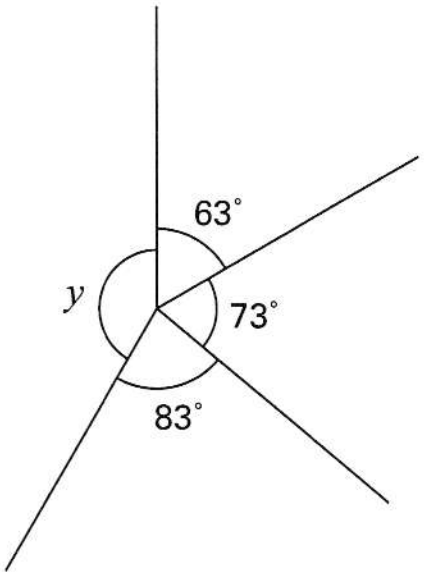
[THERE ARE QUICKER WAYS TO DO THIS!]

[2 marks]

22 Calculate the size of angle y

[Extra]

1ST 63 + 73 + 83 = 219



Not drawn accurately

2ND 360 − 219 = 141°

141 °

[2 marks]

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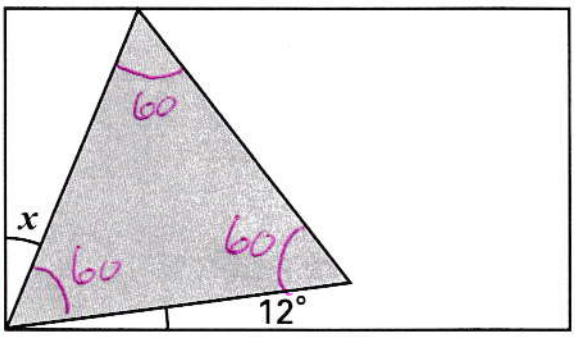
23 Here is an **equilateral triangle** inside a **rectangle.**

90° ANGLES!

60° ANGLES!

[2001]



Not to scale

Calculate the value of angle x.

Do **not** use a protractor (angle measurer).

Show your method

60 + 12 = 72

$x = 90 - 72$

$= 18°$

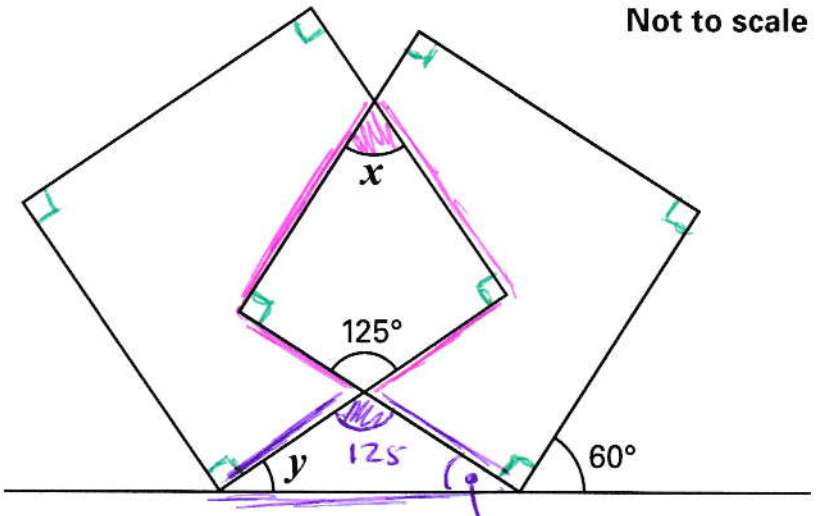
18

[2 marks]

24 The diagram shows two overlapping squares and a straight line.

[2000]

90°



Not to scale

180 − (90 + 60) = 30°

Calculate the value of **angle** x and the value of **angle** y.

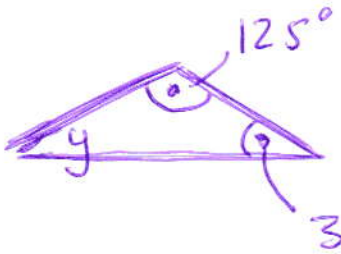
Do **not** use a protractor (angle measurer).

$x = 360 - (90 + 125 + 90)$

$= 360 - 305$

$x =$ 55 °

$y =$ 25 °



$y = 180 - (125 + 30)$

$= 180 - 155$

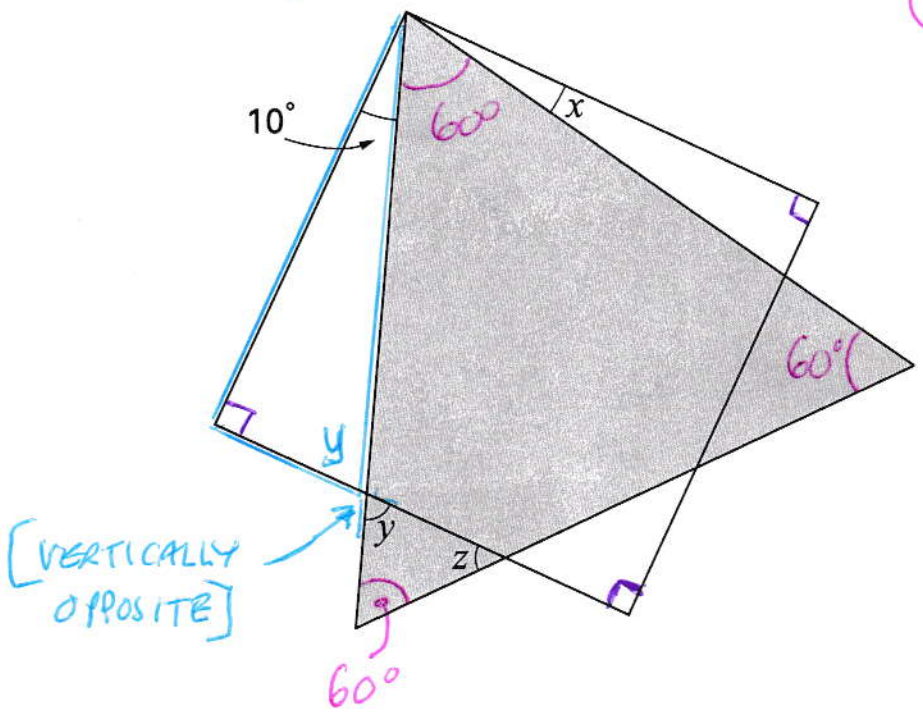
[2 marks]

25 The diagram shows a **square** and an **equilateral triangle**.

[Extra]

90° ANGLES

60° ANGLES



[VERTICALLY OPPOSITE]

Not drawn accurately

Calculate the sizes of angles x, y and z

1ST $x = 180 - (10 + 60)$

$= 110°$

2ND $y = 180 - (90 + 10)$

$= 80°$

3RD $z = 180 - (60 + 80)$

$x =$ 110 ° $y =$ 80 ° $z =$ 40 °

[3 marks]