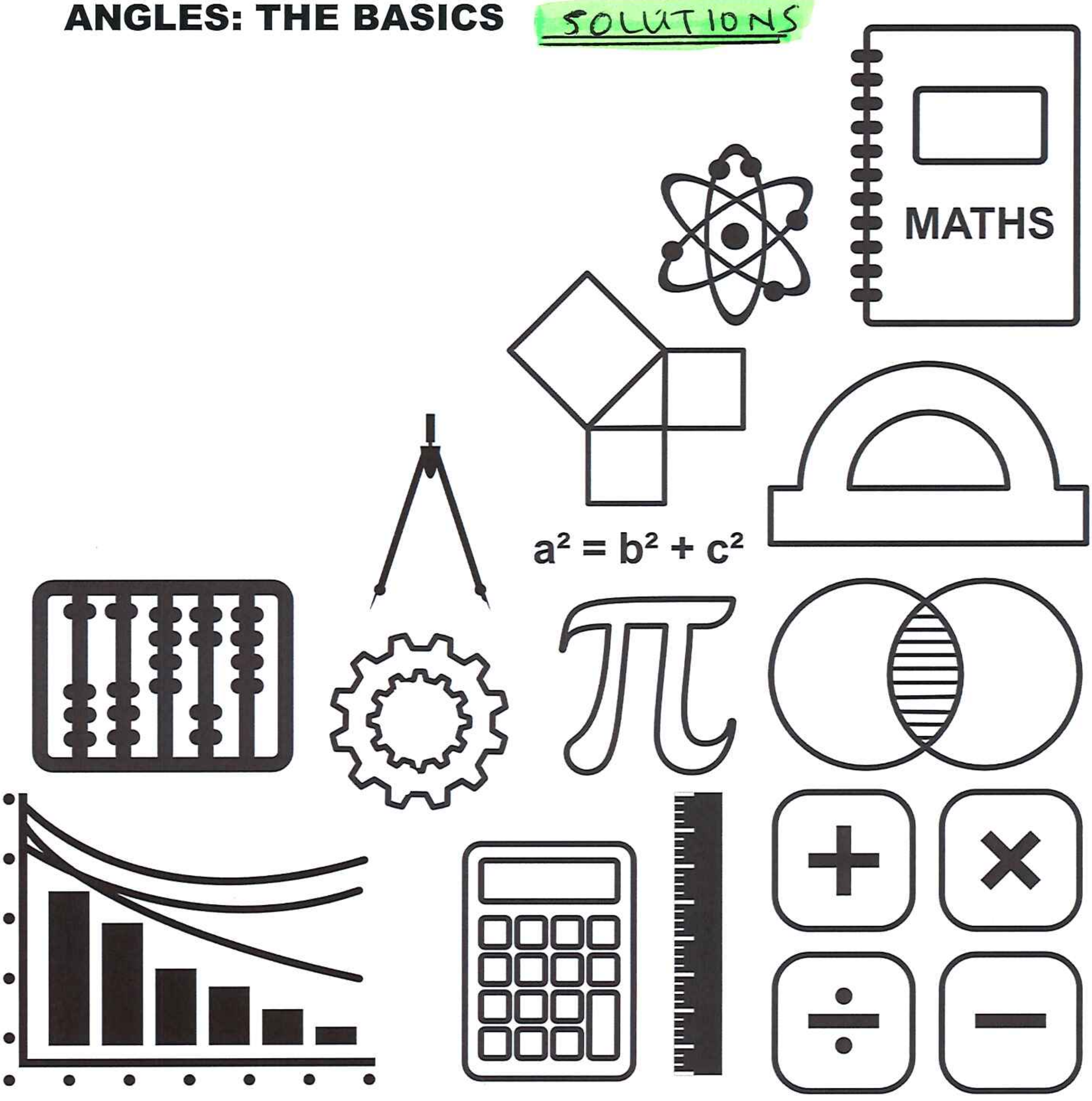
MATHSDIY

GCSE TOPIC BOOKLET

ANGLES: THE BASICS SOLUTIONS



1. *(a)* Calculate the size of the angle marked x.

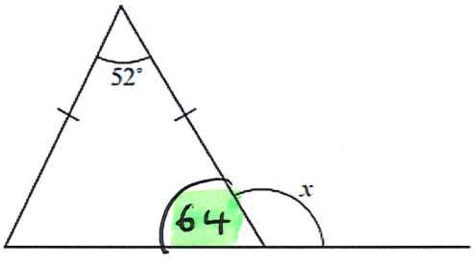


Diagram not drawn to scale

180 − 52 = 128 , 128 ÷ 2 = 64 (isosceles triangle)

x + 64 = 180 (angles on a straight line)

$x =$ 116 °

[3]

(b) Calculate the size of the angle marked y.

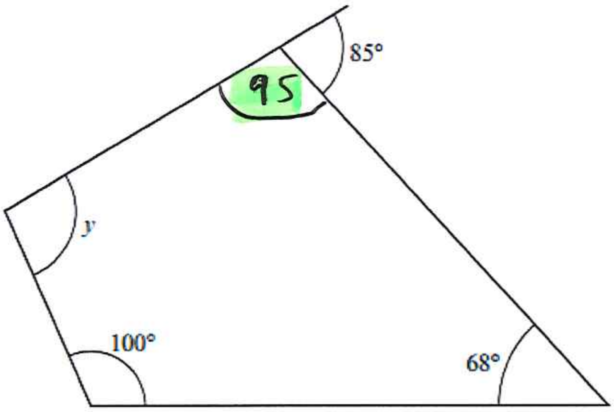


Diagram not drawn to scale

95° angle because of angles on a straight line.

Angles in a quadrilateral total 360°

y = 360 − (100 + 68 + 95)

$y =$ 97 °

[3]

2.

(a) Find the size of angle x.

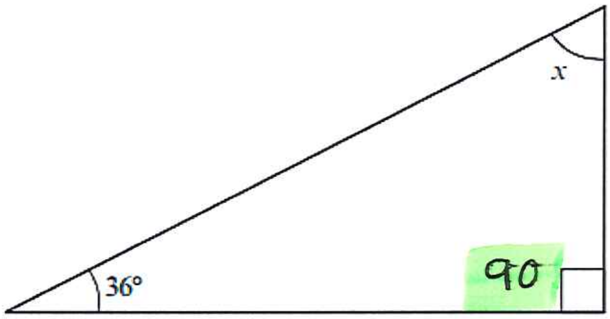


Diagram not drawn to scale

$x = 180 - (90 + 36)$

$x = 180 - 126$ (angles in a triangle total 180°)

$x =$ 54 °

[2]

(b) Find the size of angle y.

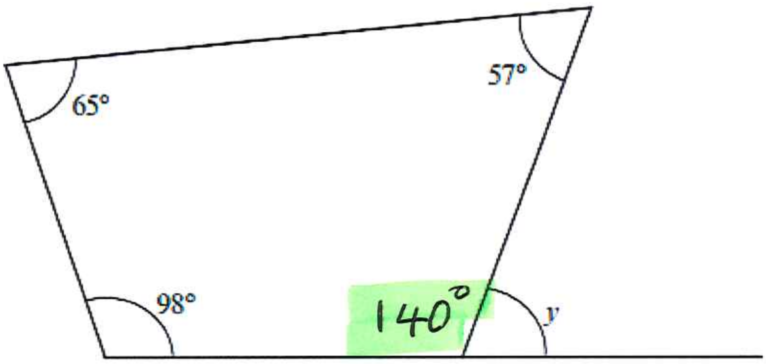


Diagram not drawn to scale

Angles in a quadrilateral total 360°

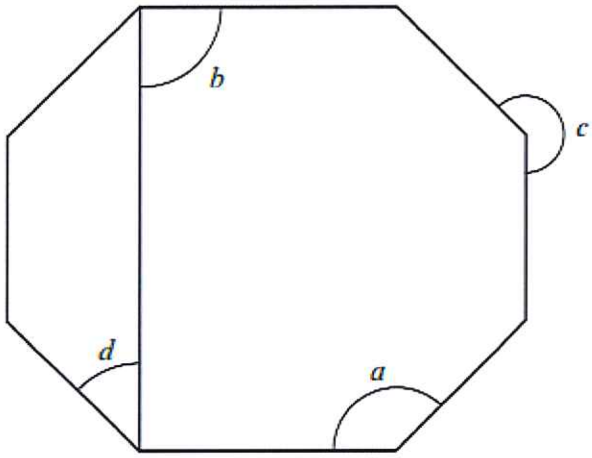
$360 - (65 + 98 + 57) = 140°$

$y = 180 - 140$ (angles on a straight line)

$y =$ 40 °

[3]

3.



Look at the angles marked *a, b, c* and *d*.
Write the letter of the angle alongside its special name.

acute angle ....d..........

reflex angle ....c..........

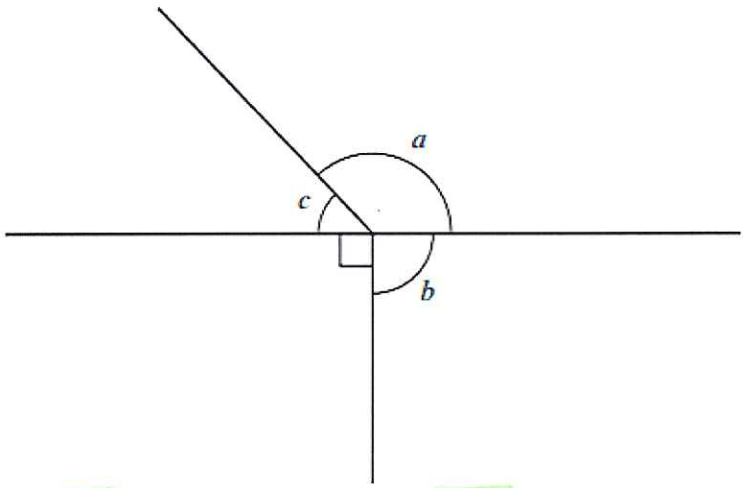
right angle ....b..........

obtuse angle ....a..........

[4]

4.

Look at the angles *a*, *b* and *c*.
Write the letter of the angle alongside its special name.



acute angle ....c.......... obtuse angle ....a.......... right angle ....b..........

[3]

5. Find the size of the angle marked y.

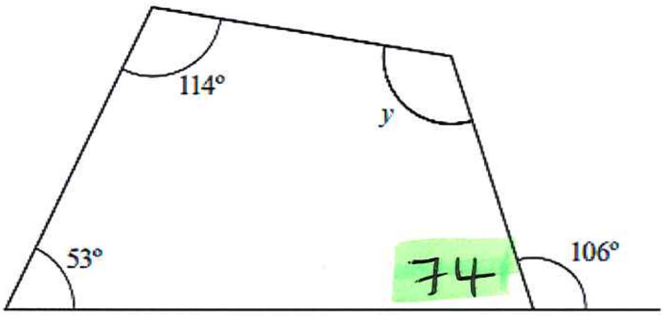


Diagram not drawn to scale

74° as shown because of angles on a straight line.

$360 - (114 + 53 + 74) = y$ angles in a quadrilateral total 360°

$y =$ 119 °

[3]

6.

(a) Find the size of angle x. [2]

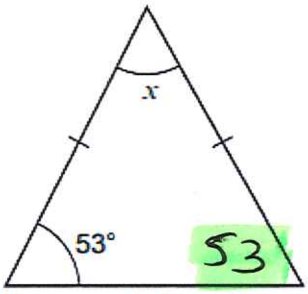


Diagram not drawn to scale

$x = 180 - (53 + 53)$ isosceles triangle

$x =$ 74 °

(b) Find the size of angle y. [3]

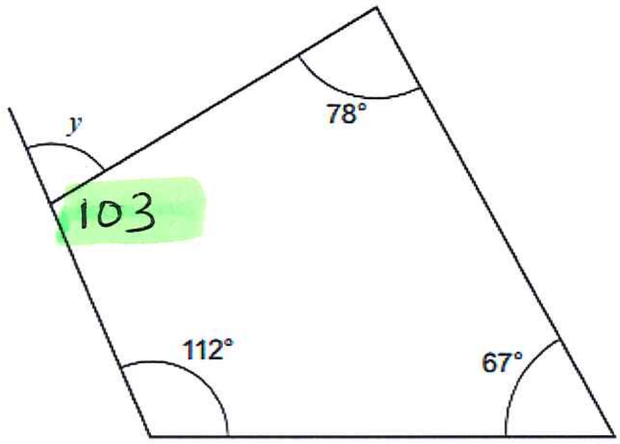


Diagram not drawn to scale

103 as shown because angles in a quadrilateral add up to 360°

$y = 180 - 103$ angles on a straight line

$y =$ 77 °

7.

You will be assessed on the quality of your written communication in this question.

ABC is an equilateral triangle and *BCDE* is a square.

explain carefully

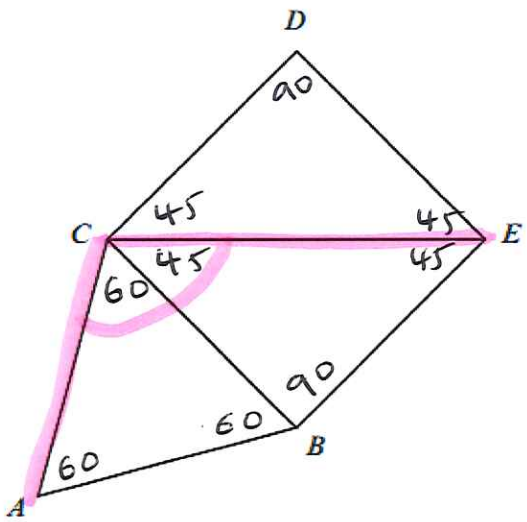


Diagram not drawn to scale

Find the size of $A\hat{C}E$.
You must explain each step of your calculation and show all your working.

All of the angles in triangle ABC are 60°
because it is equilateral
CE is a diagonal of the square so it bisects
angle $B\hat{C}D$ in half. $B\hat{C}D$ = 90° because all
the angles in a square are 90°. Therefore
$B\hat{C}E$ and $E\hat{C}D$ are both 45°
$A\hat{C}E = 60+45$

$A\hat{C}E$ = 105 °

[5]

8.

(a) In the diagram, *PS*, *QT* and *RU* are straight lines.
Find the size of angle x. [2]

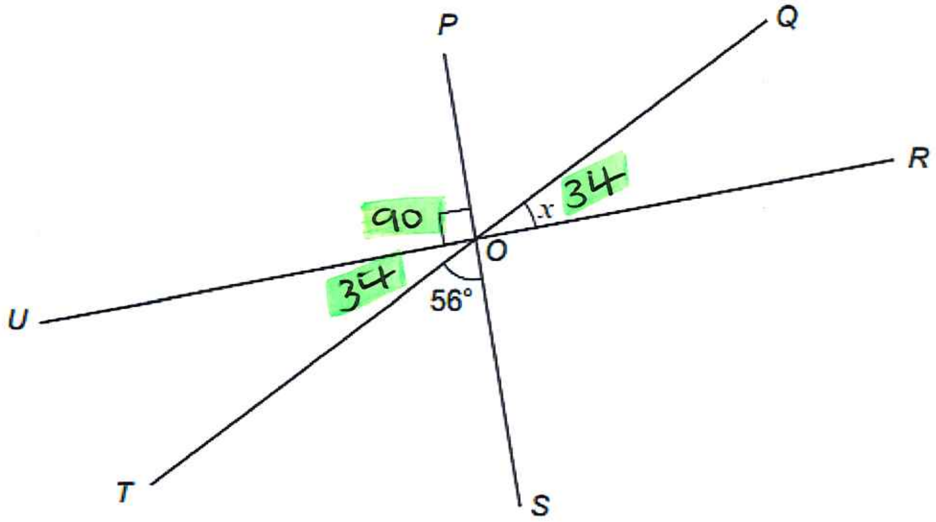


Diagram not drawn to scale

$U\hat{O}T = 34°$ $(180-(90+56))$ angles on a straight line

$\hat{x} = U\hat{O}T = 34°$ vertically opposite

$x =$ 34 °

(b) *ABCD* is a rhombus. Find the size of angle y. [3]

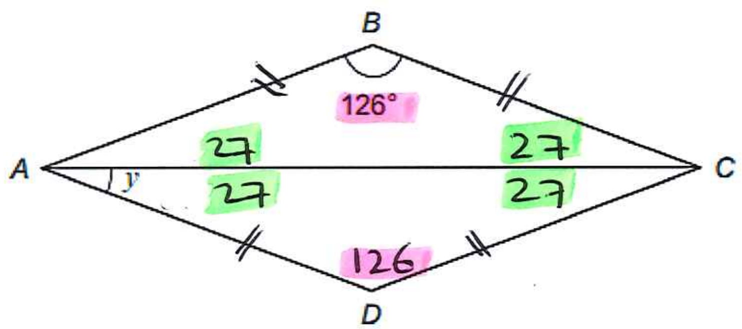


Diagram not drawn to scale

Rhombus, so four equal sides.
opposite angles equal $\hat{B} = \hat{D}$ $\hat{A} = \hat{C}$
diagonal bisects angles $\hat{A}$ and $\hat{C}$ and is
a line of symmetry.
two isosceles triangles

$y =$ 27 °

9.

(a) *ABCD* is a rhombus with $A\hat{D}B = 37°$.
Find the size of angle x. [3]

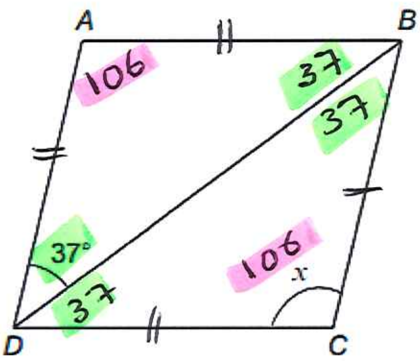


Diagram not drawn to scale

Diagonal BD bisects $\hat{D}$ and $\hat{B}$ and two isosceles triangles are formed

$x =$ 106 °

(b) Find the size of angle y. [3]

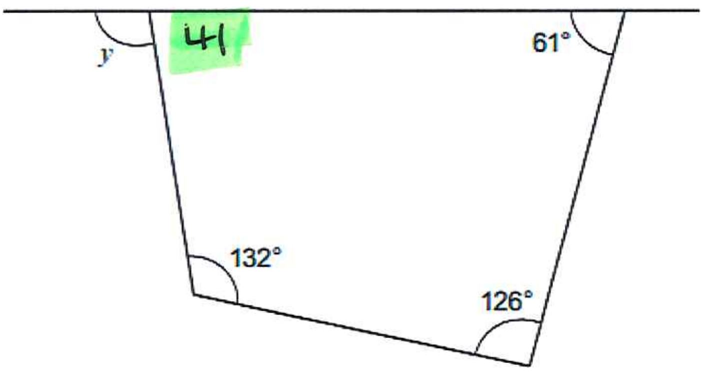


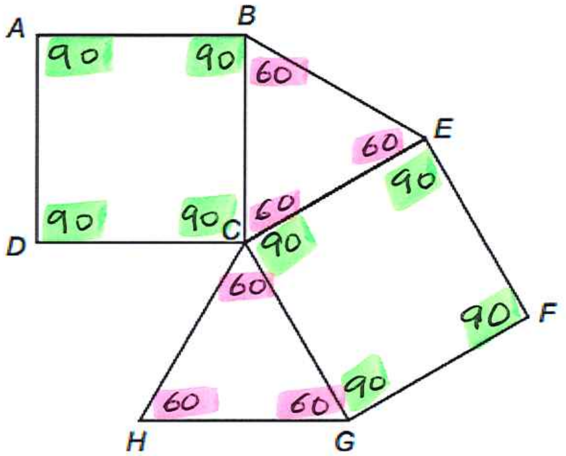
Diagram not drawn to scale

41 because 360 − (132 + 126 + 61) = 41
(angles in a quadrilateral total 360°)
y = 180 − 41 (angles on a straight line)
y = 139°

$y =$ 139 °

10.

The diagram shows 2 identical squares and 2 identical equilateral triangles.
Explain fully how another equilateral triangle will fit exactly into the gap *DCH*. [5]



Angles at a point total 360°
Angles in a square all are 90°
Angles in an equilateral triangle all are 60°

This means so far at C we have
$90 + 60 + 90 + 60 = 300°$
$\therefore D\hat{C}H = 360° - 300° = 60°$
$DC = CH$ $\therefore$ isosceles triangle
But, will actually be 3 lots of 60°
$\therefore$ $D\hat{C}H$ = equilateral triangle.