Q1.

Two of the angles in a triangle are 70° and 40°

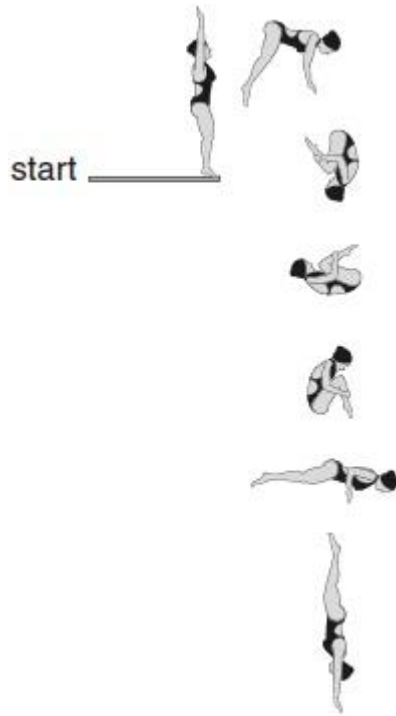Jack says,

The triangle is equilateral.

Explain why Jack is **not** correct.

1 mark

Q2.

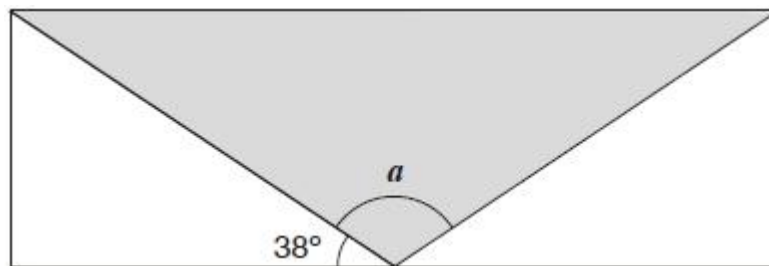Layla completes one-and-a-half somersaults in a dive.

start

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

☐ °

1 mark

Q3.

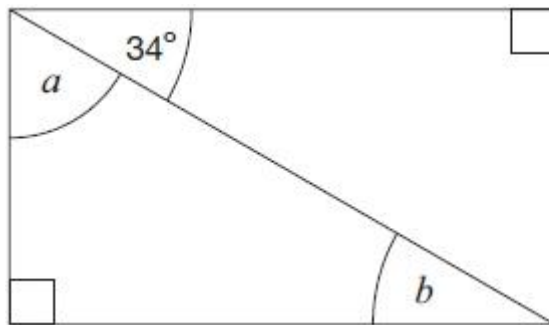A shaded **isosceles** triangle is drawn inside a rectangle.

Not to scale

38° a

Calculate the size of angle a.

2 marks

Q4.

Here is a rectangle.

34°

a

Not to scale

b

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

Do **not** measure the angles.

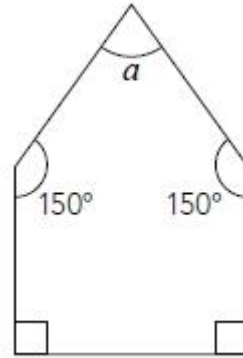$$a = \boxed{\qquad}°$$

1 mark

$$b = \boxed{\qquad}°$$

1 mark

Q5.

The diagram shows a pentagon.
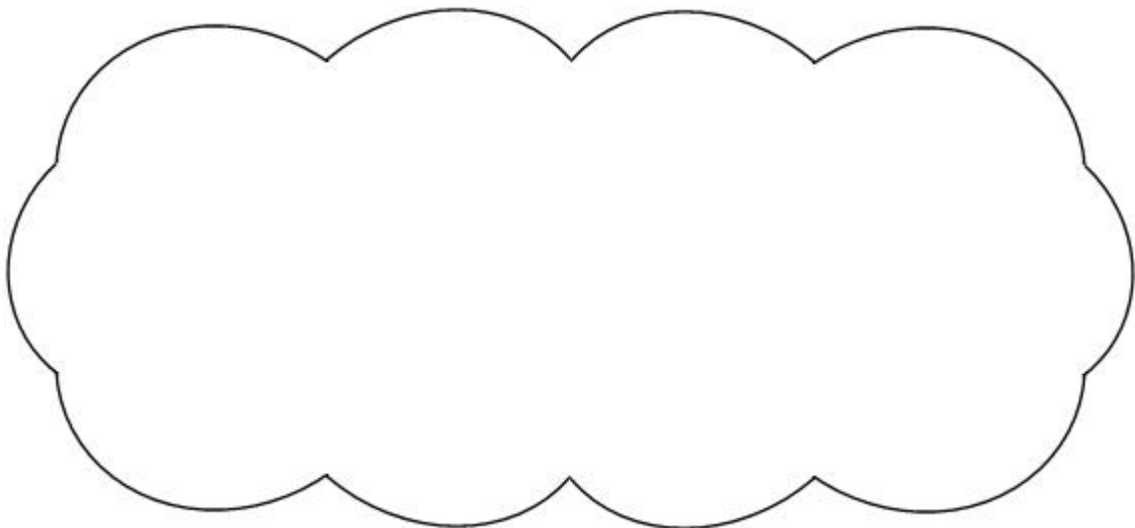
Not drawn accurately

Each side of the pentagon is the **same length.**

Is the shape a **regular** pentagon?

Circle **Yes** or **No**.

Yes / No

Explain your answer.

1 mark

Work out the size of angle a

$a =$ [ ] °

2 marks

Q6.

PQ is a straight line.

Not drawn
accurately

P ———— 47° [x] 26° ———— Q
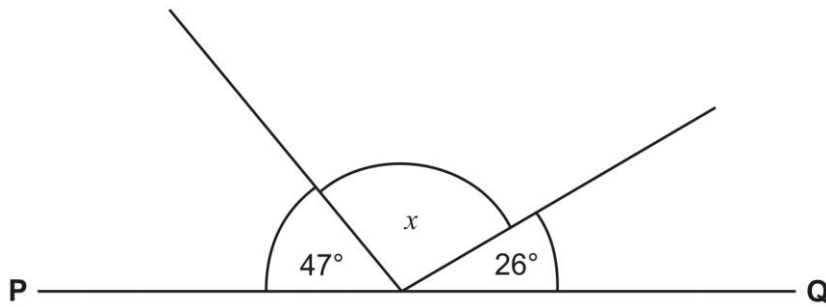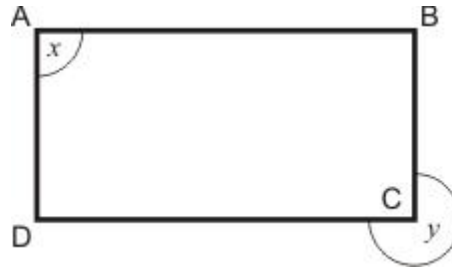
Calculate the size of angle x.

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

[ ] °

1 mark

Q7.

ABCD is a rectangle.

What are the values of the missing angles?

$x =$

$y =$

2 marks

Q8.

Look at angles a, b, c, d and e
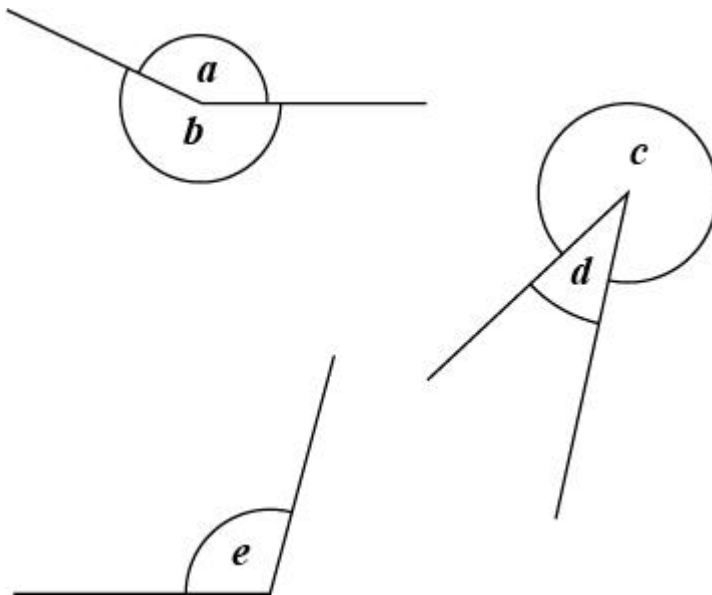
Write the angles in order of size, starting with the smallest.

smallest

1 mark

Q9.

Estimate the size of angle x
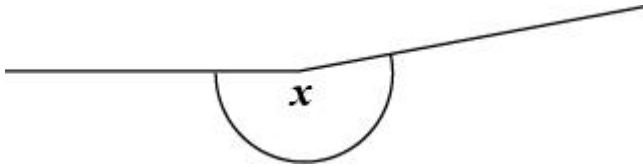
Circle the closest estimate.

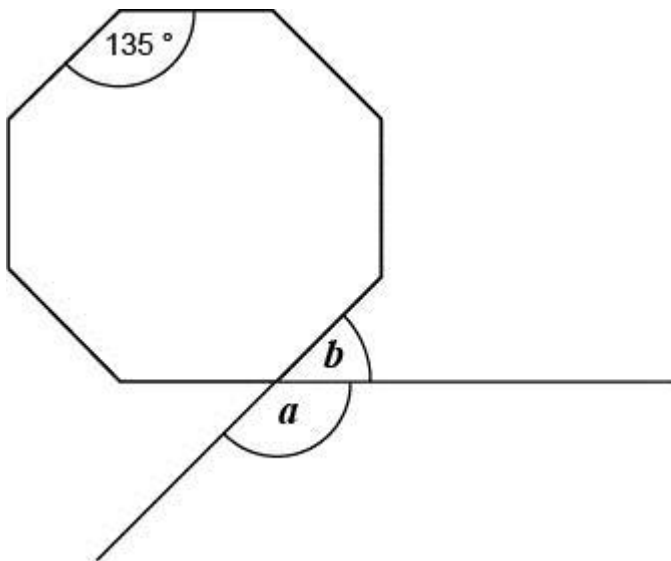170°   310°   190°   260°   180°

Q10.

Here is a regular octagon.

Calculate the sizes of angles a and b

$a = $ _____

1 mark

$b = $ _____

1 mark

Mark schemes

Q1.

An explanation showing an understanding:

- that this specific triangle has angles 70, 70 and 40

OR

- of the properties of an equilateral triangle − all angles are equal (60°)

and therefore that this triangle cannot be equilateral, e.g.

- The angles aren't 60°
- There is not a 60° angle
- It has two different angles (70° and 40°) so it can't be equilateral
- The angles aren't the same
- An equilateral triangle has 60° + 60° + 60°
- All the angles are the same in an equilateral triangle
- It's an isosceles triangle.

(In the context of this question, the term isosceles triangle is treated as not including equilateral triangles as a special type, as the national curriculum does not specify this at key stage 2.)

> *Do not* accept vague or incomplete explanations, e.g.
> - *The other angle is 70°*
> - *They aren't (all) the same. (No reference to angles)*
> - *An equilateral triangle has equal angles. (Does not say all.)*
>
> *Do not* accept explanations which include incorrect mathematics or incorrect information that is relevant to the explanation, e.g.
> - *40 + 70 = 110 + 70 = 180*

[1]

Q2.

540

[1]

Q3.

Award **TWO** marks for the correct answer of 104°.

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g:

- 180 − 38 − 38 = a

> *Answer need not be obtained for the award of **ONE** mark.*

Up to 2

[2]

Q4.

    (a)   56

                                 1

    (b)   34

                     *If the answers to (a) and (b) are incorrect, award **ONE** mark if their (a) plus their (b) = 90°, provided that (b) is **not** 45°, 30° or 60°.*

                                 1

                                 [2]

Q5.

Indicates No and gives a correct explanation

eg

- The angles are not the same size

- A regular pentagon looks like this, with its angles all the same size

- All the angles should be 108°

- It doesn't have rotation symmetry

- It's got more sides than a square so all its angles should be obtuse, but they're not

                                 1

60°

                                 2

Shows that the 150° angle can be split into 90° and 60°
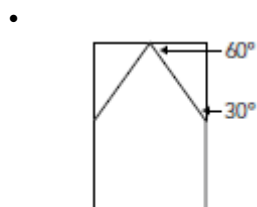
or

Divides the pentagon vertically and shows that half a is $30°$

or

Draws triangles to show a rectangle, labelling the non-right angles on at least one side correctly
eg

-

or

Shows or implies that the angle sum of a pentagon is 540°

                                 1

Accept minimally acceptable explanation
eg
*   •   90 ≠ 150*
*   •   Different angles*
*   •   A regular pentagon doesn't have right angles in it*
*   •   A regular one can't have 150° angles*
*   •   It doesn't look the same when it's turned*
*   •   Not all the angles are obtuse*

! Incorrect angle size for a regular pentagon given
Condone alongside a correct response
eg, accept
*   •   The angles are different, they should be 60° (error, but all equal implied)*
*   •   The angles should all be 70° (error)*
eg, do not accept
*   •   The 90° angles should be 60° (does not imply the angles should all be the same)*

Do not accept *incomplete explanation*
eg
*   •   Not the same*
*   •   It has two right angles*
*   •   Two angles are the same*

*   •   A regular pentagon looks like this*

*   •   A regular pentagon doesn't have any vertical lines*

! Indicates Yes, or no decision made, but explanation clearly correct
Condone provided the explanation is more than minimal

[3]

Q6.
107

[1]

Q7.
90°

1

270°

1

[2]

Q8.
Letters written in order as shown

d, e, a, b, c

[1]

Q9.

190° indicated

[1]

Q10.

a = 135°

1

b = 45°

Accept b = 180° - a

1

[2]