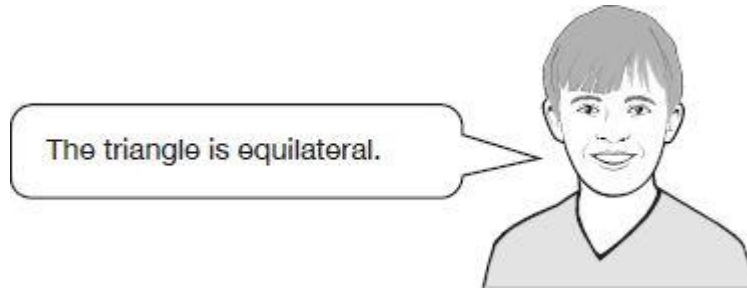


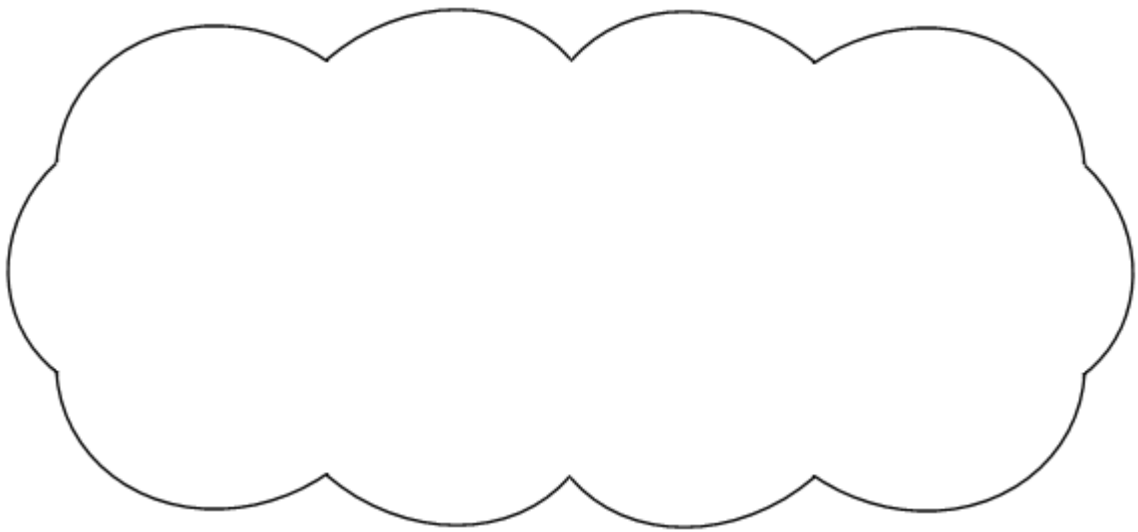
Q1.

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

Jack says,



Explain why Jack is **not** correct.

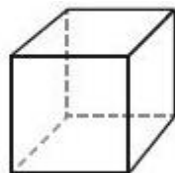


1 mark

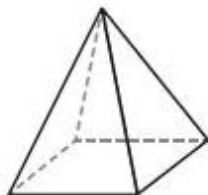
Q2.

Here are diagrams of some 3-D shapes.

Tick each shape that has the same number of faces as vertices.

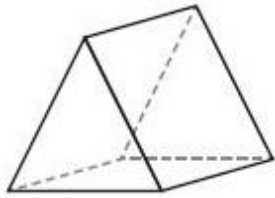


Cube

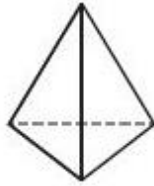


Square-based pyramid





Triangular prism

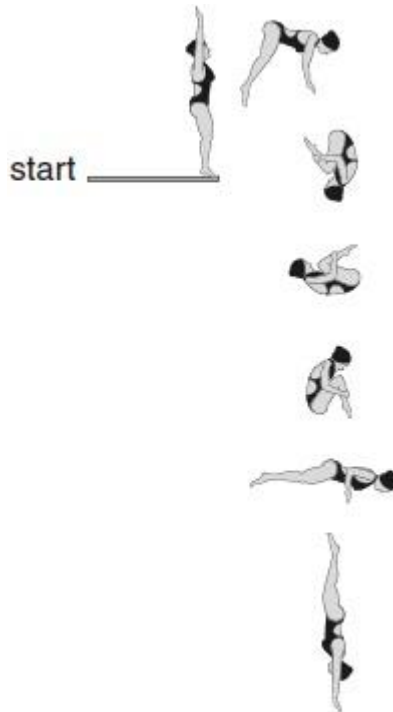


Triangular-based pyramid

2 marks

Q3.

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

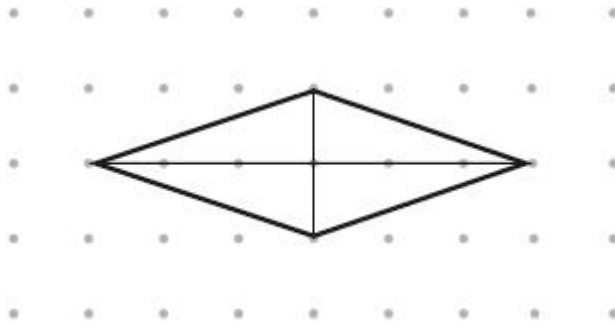


How many **degrees** does Layla turn through in her dive?

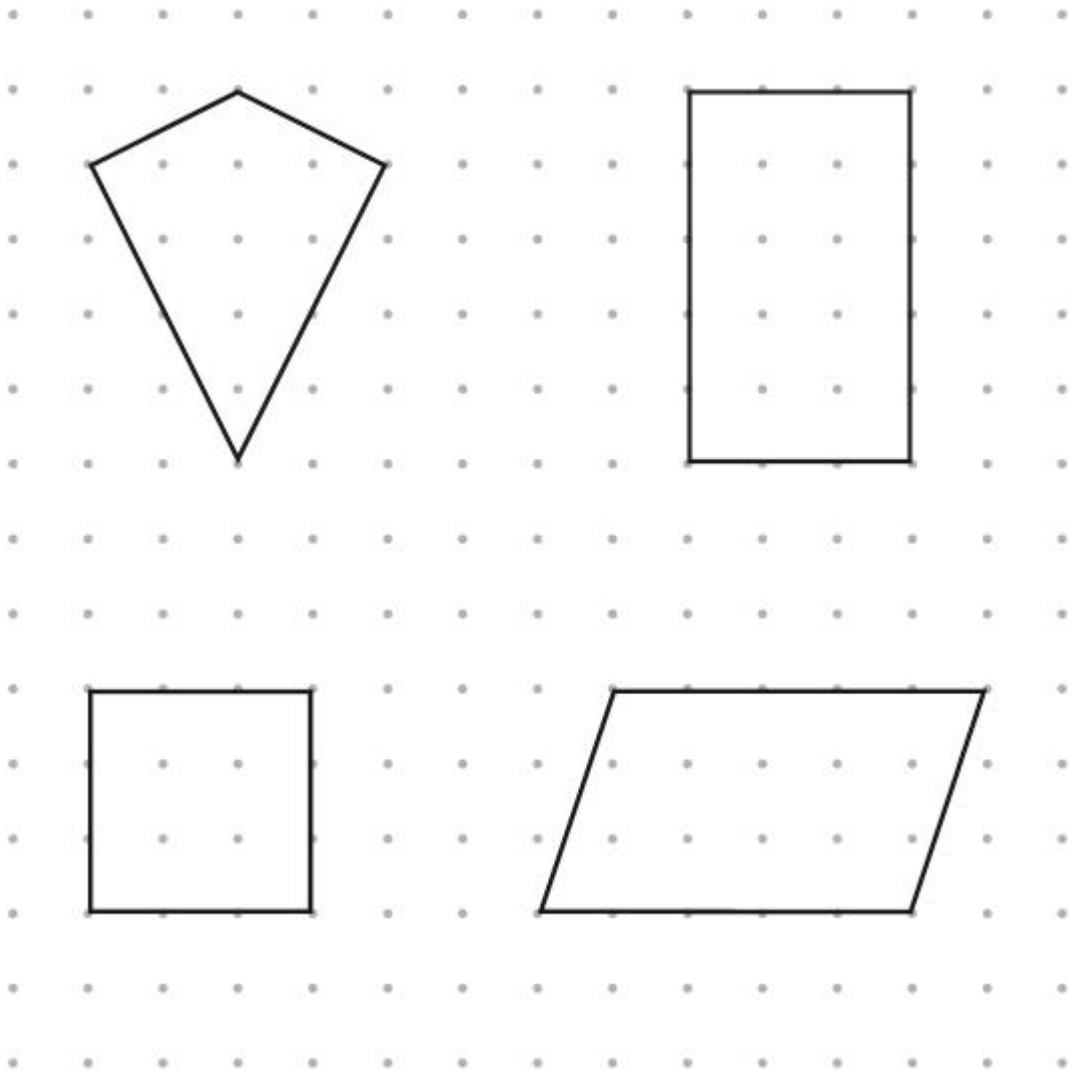
1 mark

Q4.

The diagonals of this quadrilateral cross at right angles.



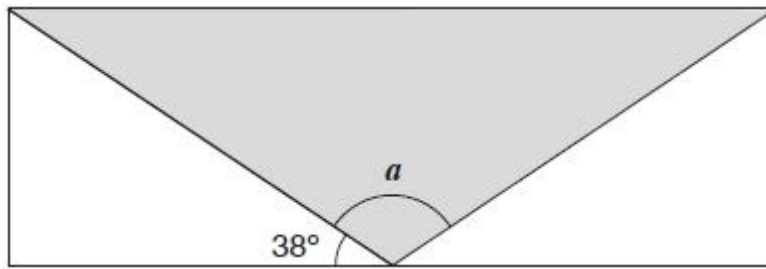
Tick **all** the quadrilaterals that have diagonals which cross at right angles.



2 marks

Q5.

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



Not to scale

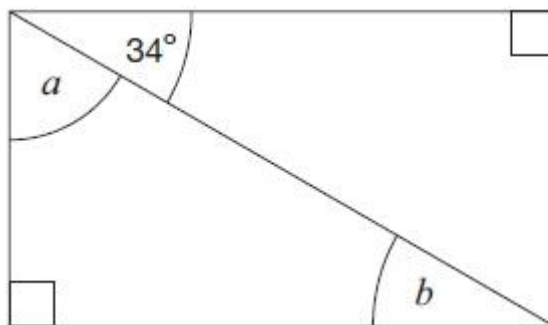
Calculate the size of angle a .

Show your method

2 marks

Q6.

Here is a rectangle.



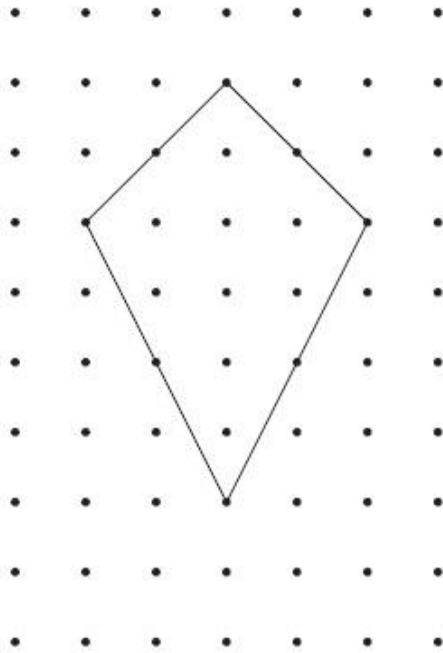
Not to scale

Calculate the size of angles a and b .

Do **not** measure the angles.

$a =$

1 mark



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

The shape is a quadrilateral.

The shape has 2 lines of symmetry.

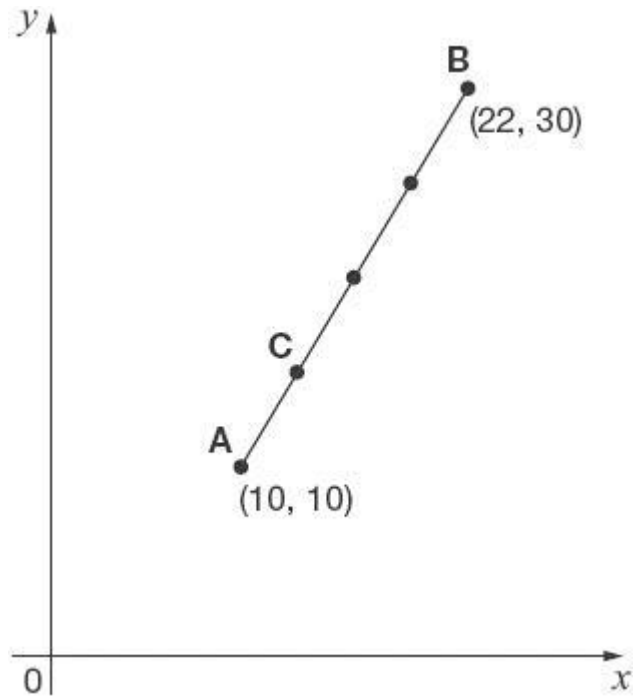
The shape is a parallelogram.

The shape has one right angle.

2 marks

Q9.

A and **B** are joined by a straight line on coordinate axes.



The dots on the line are equally spaced.

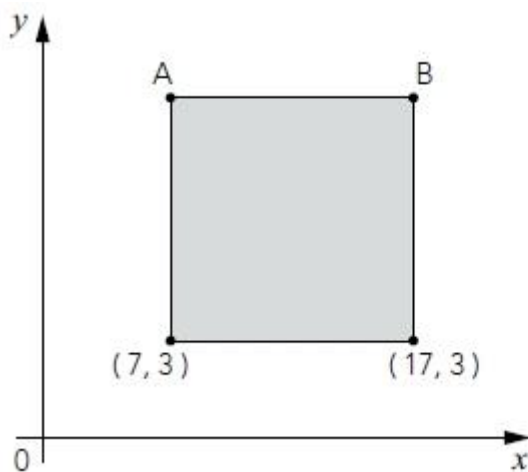
What are the coordinates of **C**?

C is

2 marks

Q10.

The shaded shape is a **square**.



Not drawn accurately

What are the coordinates of A and B?

Show your method

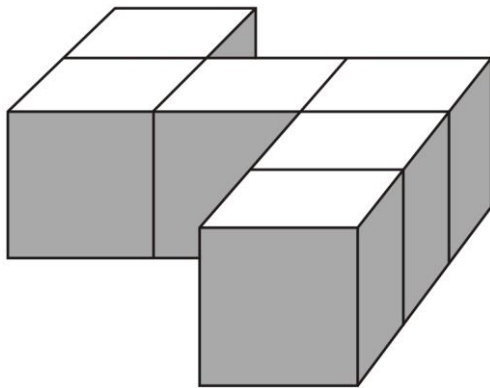
$a = \circ$

2 marks

Q12.

Emily has 6 cubes.

She sticks them together to make this model.



She paints the sides of the model grey all the way round.

She leaves the top and the bottom of the model white.

How many of the cubes in the model have **exactly two** faces painted grey?

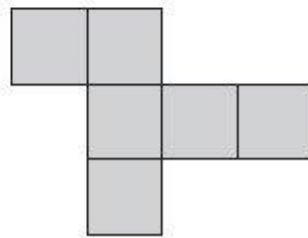
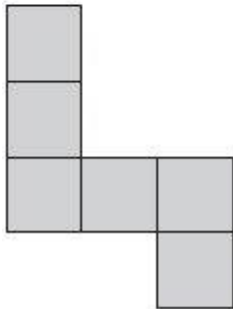
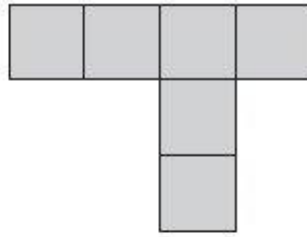
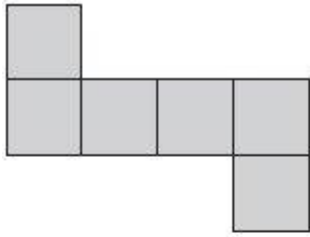
1 mark

Q13.

Here are four diagrams.

On each one put a tick (✓) if it is a net of a cube.

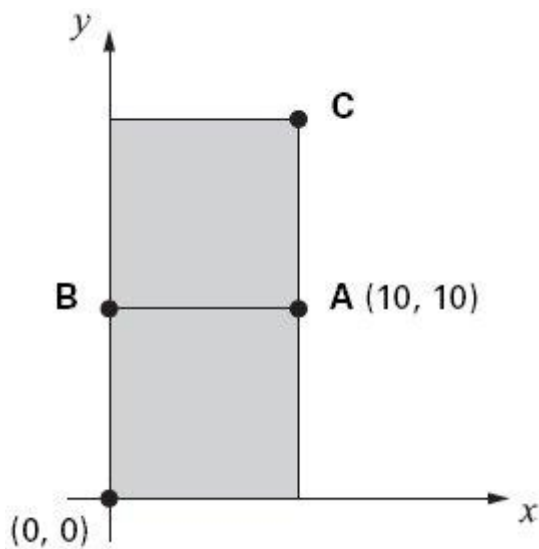
Put a cross (X) if it is not.



2 marks

Q14.

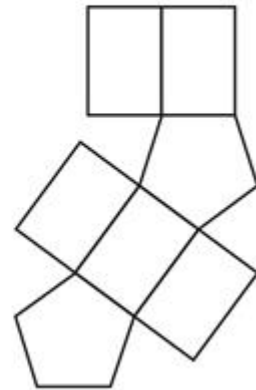
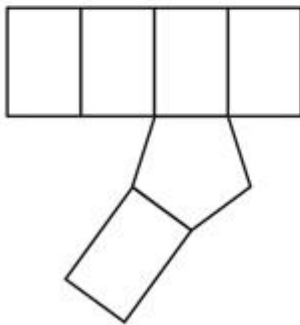
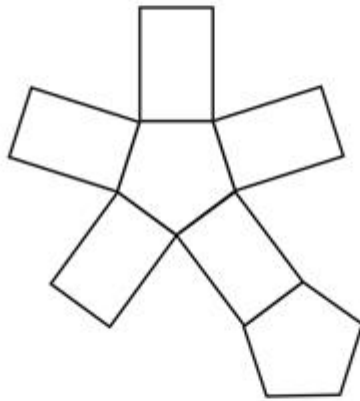
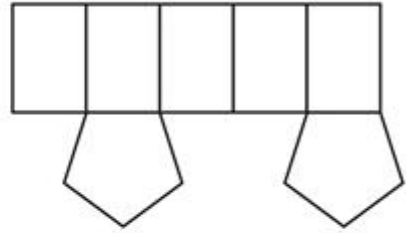
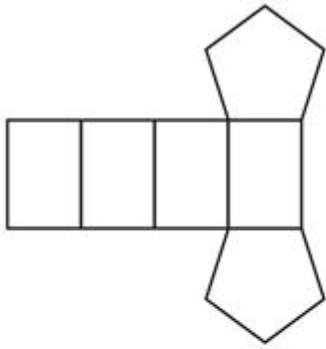
The diagram shows two identical squares.



A is the point (10, 10)

What are the coordinates of B and C?

B is (,)

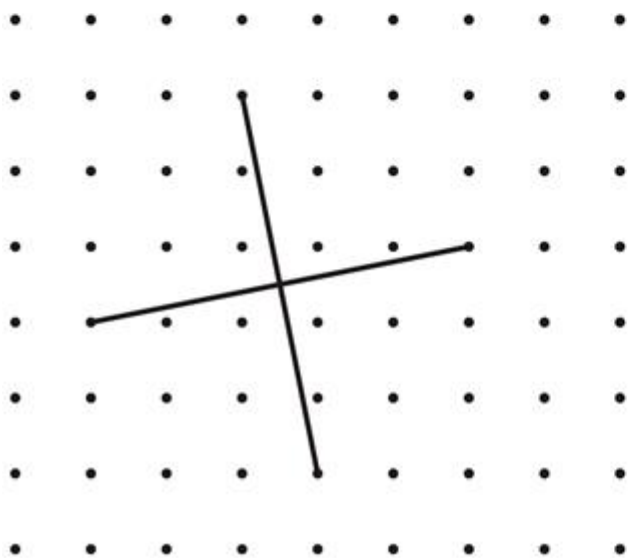
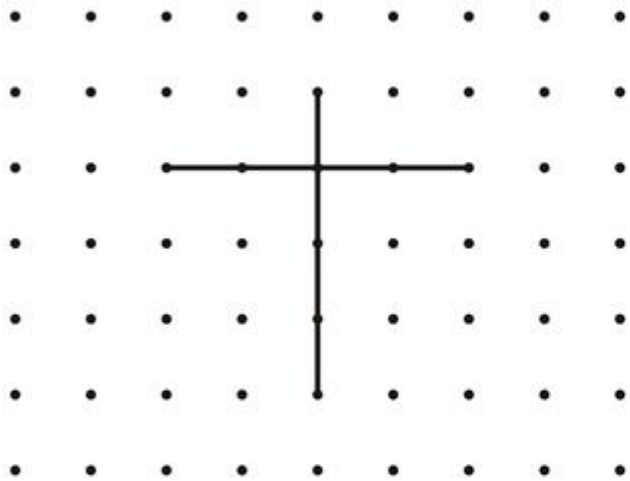
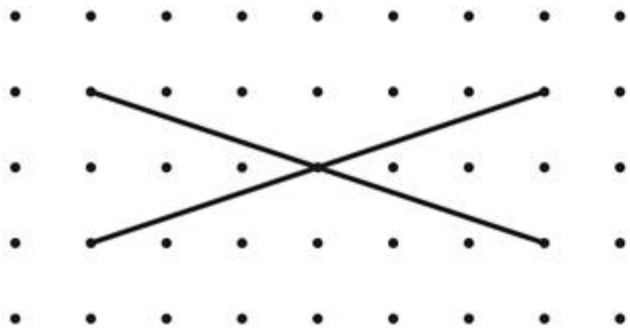


1 mark

Q16.

These diagrams show the **diagonals** of three **quadrilaterals**.

Write the names of the quadrilaterals in the boxes.



2 marks

Q17.

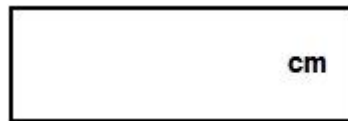
An isosceles triangle has a perimeter of 12 cm.

One of its sides is 5 cm.

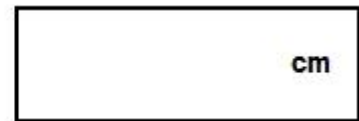
What could the length of each of the other two sides be?

Two different answers are possible.

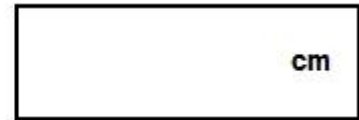
Give **both** answers.



and



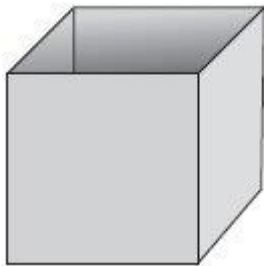
and



2 marks

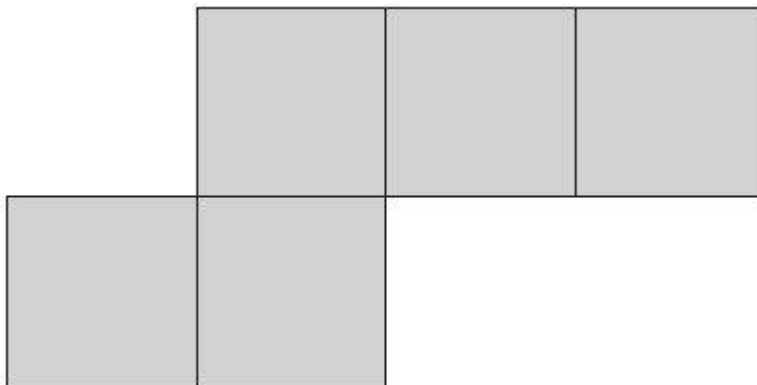
Q18.

Here is an **open top** cube.



Here is the net from which it is made.

Put a tick (✓) on the square which is its **base**.

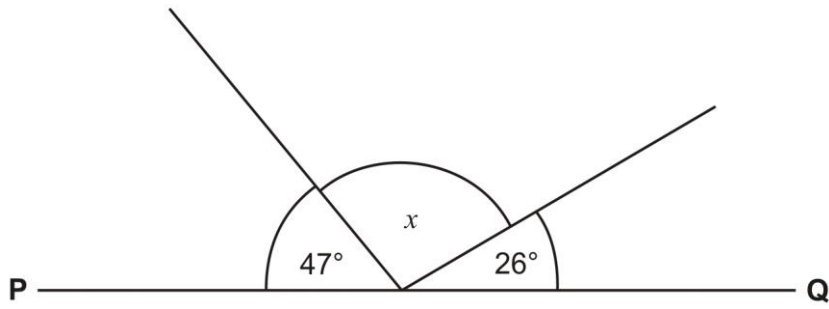


1 mark

Q19.

PQ is a straight line.

Not drawn
accurately



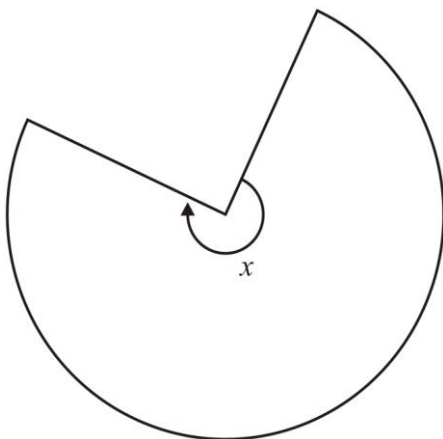
Calculate the size of angle x .

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

1 mark

Q20.

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



How many degrees is **angle x** ?

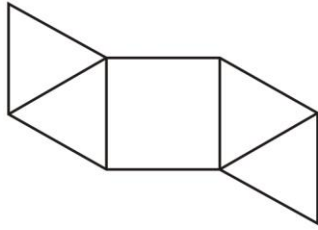
1 mark

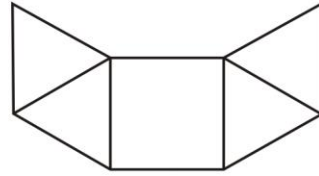
Q21.

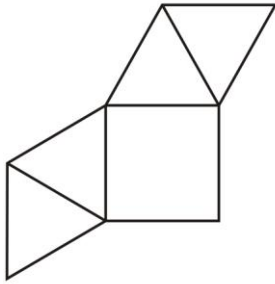
Look at each of these diagrams.

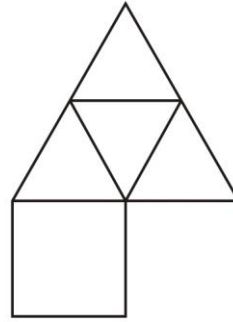
Put a tick (\checkmark) if it is the **net of a square based pyramid**.

Put a cross (\times) if it is **not**.





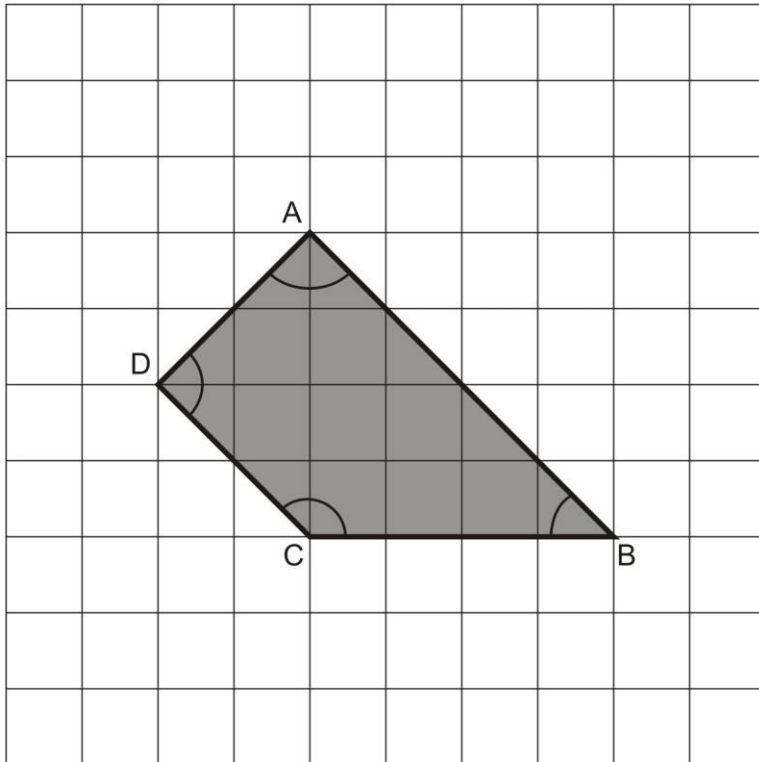




2 mark

Q22.

Here is a shape on a square grid.



For each sentence, put a tick (✓) if it is true.

Put a cross (X) if it is not true.

Angle **C** is an **obtuse** angle.

Angle **D** is an **acute** angle.

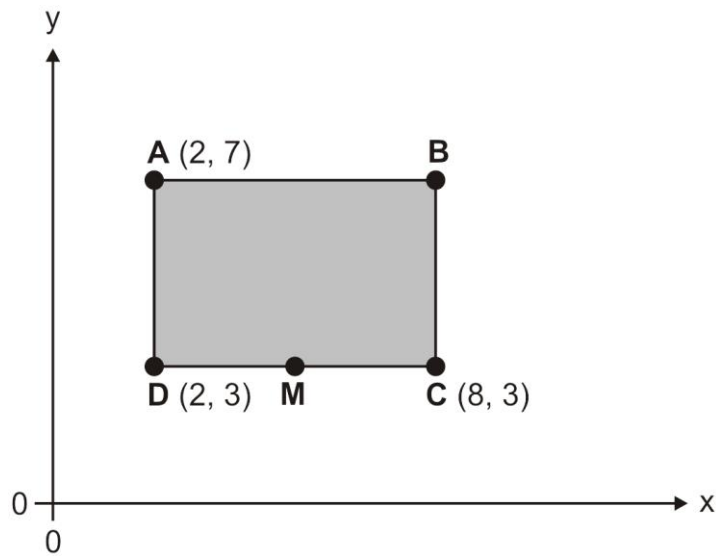
Line **AD** is **parallel** to line **BC**.

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

2 mark

Q23.

Here is a shaded **rectangle**.



What are the co-ordinates of **B**?

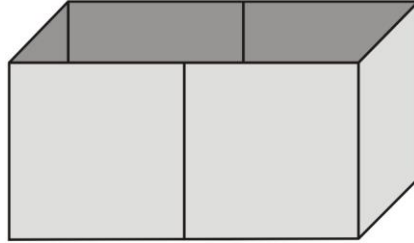
1 mark

M is half way between **D** and **C**.

What are the co-ordinates of **M**?

Q24.

This is an open top box.



Put a tick (✓) for each diagram **if it is a net** for the box.

Put a cross (X) if it is not.

The base is shaded in each one.

A

B

C

D

2 marks

Q25.

Ben has two rectangles.

(Not to scale)

A

B

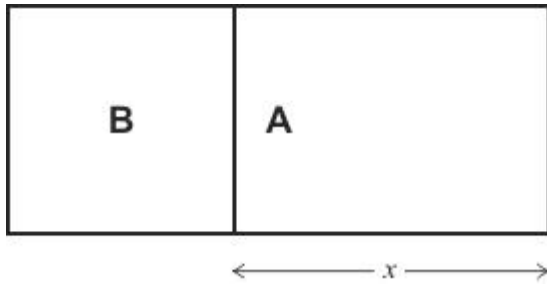
What is the special name of rectangle **B**?



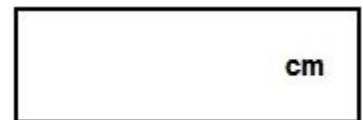
1 mark

Ben puts **B** *directly* on top of **A**.

(Not to scale)



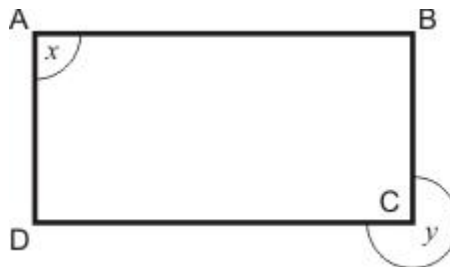
What is the length of x ?



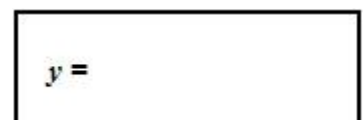
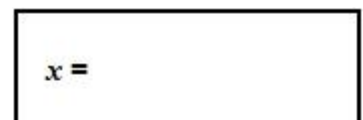
1 mark

Q26.

ABCD is a rectangle.



What are the values of the missing angles?



2 marks

Q27.

Complete the table.

Shape	Number of		
	Faces	Vertices	Edges
Cuboid	6		
Triangular Prism		6	
Square-based pyramid			8

2 marks

Q28.

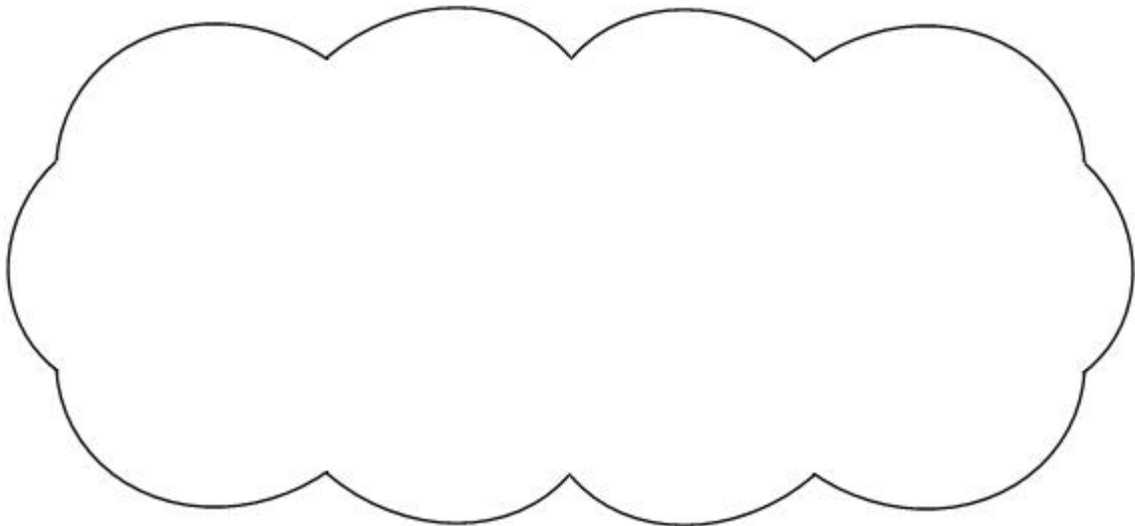
Jack says,

"Two 3D shapes with the same number of faces as each other also have the same number of vertices as each other".

Is Jack correct?
Circle **Yes** or **No**.

Yes / No

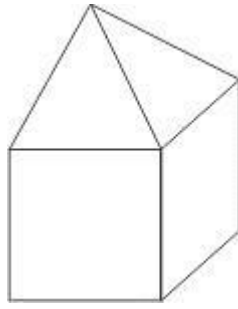
Explain how you know.



1 mark

Q29.

Ben fits a square-based pyramid exactly on top of a cube.



Write in the missing numbers to describe Ben's new shape.

Ben's new shape has faces

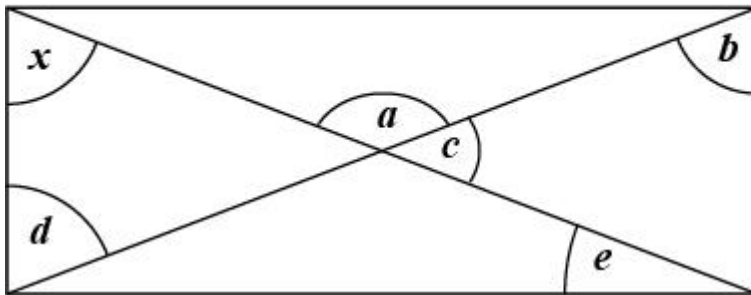
vertices and edges.

2 marks

Q30.

This is a rectangle with its two diagonals.

not drawn accurately



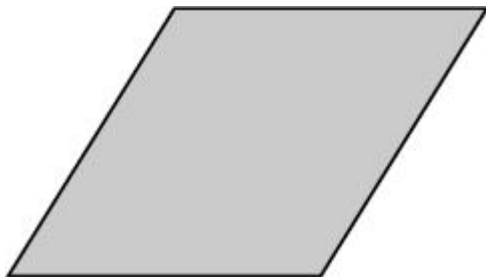
Angle $x = 58^\circ$

Circle the **two** angles that are the same size as angle x

a *b* *c* *d* *e*

1 mark

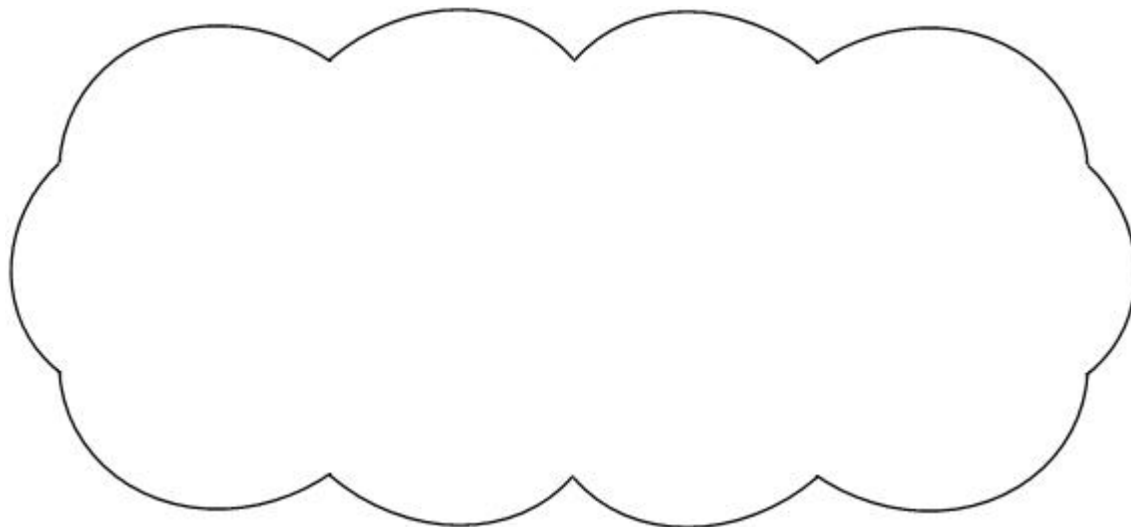
Q31.



Jack says,

"My rhombus is a regular quadrilateral."

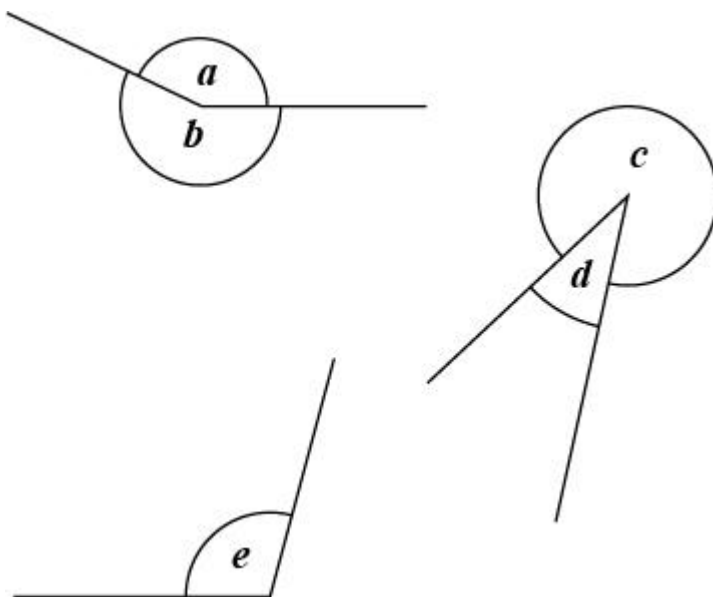
Explain why Jack is **not** correct.



1 mark

Q32.

Look at angles *a*, *b*, *c*, *d* and *e*



Write the angles in order of size, starting with the smallest.

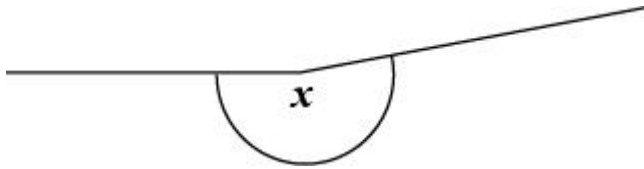
--	--	--	--	--

smallest

1 mark

Q33.

Estimate the size of angle x



Circle the closest estimate.

170°

310°

190°

260°

180°

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 $60^\circ + 60^\circ + 60^\circ$
- 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.)*

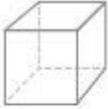
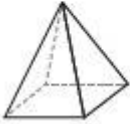
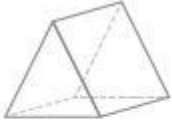

Do not accept explanations which include incorrect mathematics or incorrect information that is relevant to the explanation, e.g.

- $40 + 70 = 110 + 70 = 180$

[1]

Q2.

Award **TWO** marks for both pyramids ticked as shown:

	Cube	<input type="checkbox"/>
	Square-based pyramid	<input checked="" type="checkbox"/>
	Triangular prism	<input type="checkbox"/>
	Triangular-based pyramid	<input checked="" type="checkbox"/>

Accept alternative unambiguous positive indications, e.g. Y.

If the answer is incorrect, award **ONE** mark for:

- the two pyramids and not more than one incorrect shape ticked

OR

- only one correct shape ticked and no incorrect shape ticked.

Up to 2m

[2]

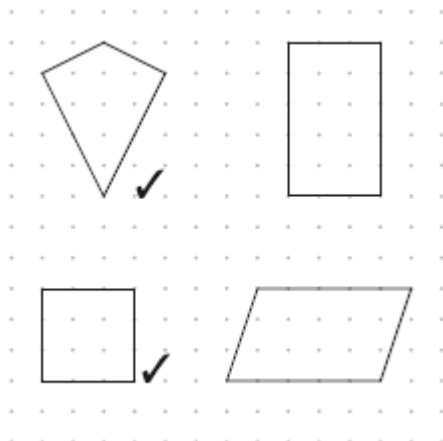
Q3.

540

[1]

Q4.

Award **TWO** marks for both kite **AND** square ticked as shown.



If the answer is incorrect, award **ONE** mark for:

- kite **AND** square and not more than one incorrect shape ticked.

OR

- one correct shape only ticked.

Accept alternative unambiguous positive indications, e.g. shapes circled.

Up to 2m

[2]

Q5.

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]

Q6.

(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]

Q7.

(50, 15)

[1]

Q8.

Award **TWO** marks for all four boxes ticked or crossed correctly as shown:



If the answer is incorrect, award **ONE** mark for three boxes ticked or crossed correctly.

Accept alternative unambiguous indications eg **Y** or **N**.

For **TWO** marks accept:

✓
✓

Up to 2m

[2]

Q9.

- (a) 13 for the x coordinate

Accept unambiguous answers written on the diagram.

U1

- (b) 15 for the y coordinate

Accept unambiguous answers written on the diagram.

1

*If the answer to (a) is 15 **AND** the answer to (b) is 13, then award **ONE** mark for (b).*

[2]

Q10.

Indicates correct coordinates for both points, ie A as (7, 13) and B as (17, 13)

2

or

Indicates correct coordinates for one point

or

Transposes the responses, ie A as (17, 13) and B as (7, 13)

or

The only error is to indicate incorrect, but consistent, y ordinates, provided $y > 3$

eg

- A as (7, 12) and B as (17, 12)


1
U2

[2]

Q11.

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

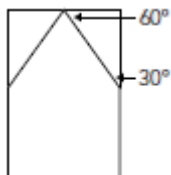
Divides the pentagon vertically and shows that half a is 30°

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

- $90 \neq 150$
- *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

Condoned 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]

Q12.

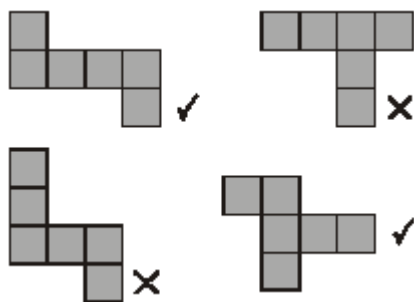
4

U1

[1]

Q13.

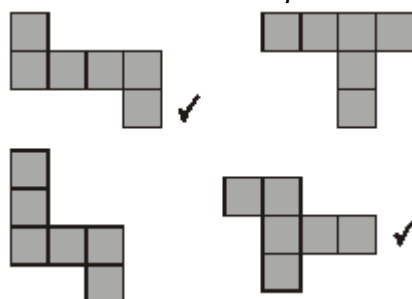
Award **TWO** marks for diagrams ticked or crossed as shown:



If the answer is incorrect, award **ONE** mark for three diagrams ticked or crossed correctly.

Accept alternative unambiguous indications such as **Y** or **N**.

For **TWO** marks accept:



Q14.

(a) (0, 10)

*Coordinates must be written in the correct order.
Accept unambiguous answers written on the diagram.*

1

(b) (10, 20)

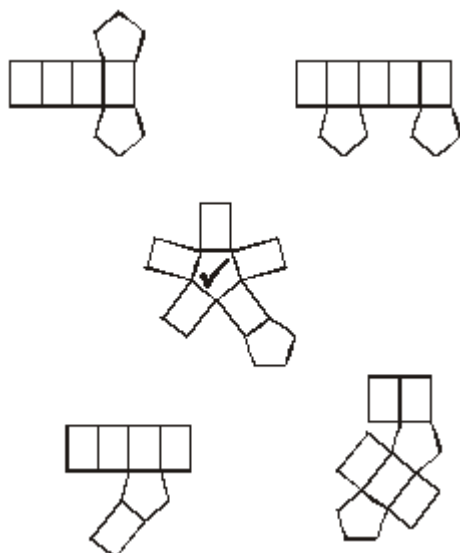
*If the answer for part (a) is (10, 0) **AND** the answer to (b) is (20, 10), award **ONE** mark only, in the part (b) box.*

1

[2]

Q15.

One net ticked as shown:



*Accept alternative unambiguous indications of the correct shape, provided the intention is clear,
eg net circled*

[1]

Q16.

Award **TWO** marks for all three shape names written in the correct order as shown:

- rectangle
- kite
- square

If the answer is incorrect, award **ONE** mark for two shape names written in the correct order.

Accept recognisable misspellings.

For the first shape, accept oblong or parallelogram.
For the third shape, accept rhombus or parallelogram but **do not** accept diamond.

Up to 2

[2]

Q17.

Award **TWO** marks for two different answers as shown:

5 and **2** or **2** and **5**

AND

3.5 and **3.5**

If the answer is incorrect, award **ONE** mark for any one of the above answers.

The two answers may be given in either order.

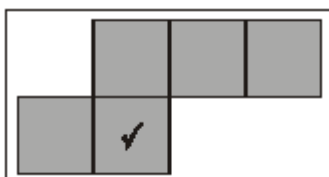
Do not accept '5 and 2' **AND** '2 and 5' for two marks.

Up to 2

[2]

Q18.

Diagram marked as shown:



Accept alternative, unambiguous indications,
such as a cross in the square shown above.

U1

[1]

Q19.

107

[1]

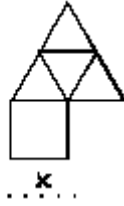
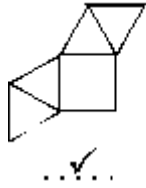
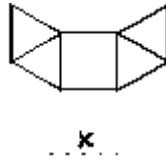
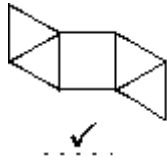
Q20.

270°

[1]

Q21.

Award **TWO** marks for a correct answer as shown below:



If the answer is incorrect, award **ONE** mark for three boxes correctly ticked or crossed **OR** two boxes correctly ticked and the other two boxes left blank.

Accept alternative, unambiguous indications, eg 'Y' or 'N'.

Up to 2

[2]

Q22.

Award **TWO** marks for the boxes ticked and crossed as shown:



If the answer is incorrect, award **ONE** mark for any three boxes ticked or crossed correctly **OR** two boxes correctly ticked and the other two boxes left blank.

Up to 2

[2]

Q23.

(a) (8, 7)

Do not accept (7, 8).

Accept co-ordinates written on diagram with or without commas and brackets, eg:

- (8 7)
- 8 7
- 8,7

1

(b) (5, 3)

Do not accept (3, 5).

Accept co-ordinates written on diagram with or without commas and brackets, eg:

- (5 3)
- 5 3
- 5,3

1

Q24.



Award **TWO** marks for all four boxes correct. Award **ONE** mark if only three boxes correct.

Each box must have a tick or a cross.

A blank box counts as incorrect, unless answer is indicated unambiguously elsewhere on the page.

Up to 2

[2]

Q25.

Square

1

7 cm

1

[2]

Q26.

90°

1

270°

1

[2]

Q27.

All 6 values correct

Shape	Number of		
	Faces	Vertices	Edges
Cuboid	6	8	12
Triangular prism	5	6	9
Square-based pyramid	5	5	8

2

or

Any four correct

1

[2]

Q28.

Any explanation recognising that the statement is not true, e.g. using a counter example accompanying two shapes with the same number of faces, e.g. a cube has 6 faces and 8 vertices, but a pentagonal pyramid has 6 faces but only 6 vertices.

Do not accept another example where the two shapes do not have the same number of faces as each other

[1]

Q29.

All 3 correct

faces, vertices and edges

2

or

for any 2 correct

1

[2]

Q30.

b and d

Accept an indication on the diagram.

[1]

Q31.

Explanation that recognises that a regular shape must have equal length sides/edges and equal angles. (Equal length sides can be assumed within an explanation.) e.g.

- A regular shape has equal sides and equal angles; Jack's shape has equal sides but not equal angles.
- Jack is not correct because all the angles are not the same.
- Jack's rhombus is not a square and only a square is a regular quadrilateral.

[1]

Q32.

Letters written in order as shown

d, e, a, b, c

[1]

Q33.

190° indicated

[1]