Q1. Here is a shaded shape on a grid of centimetre squares.

| (a) | Find the perimeter of the shaded shape. | | |
|-----|-----------------------------------------|-----|-----|
| | | cm | (1) |
| (b) | Find the area of the shaded shape. | | |
| | | cm² | (1) |

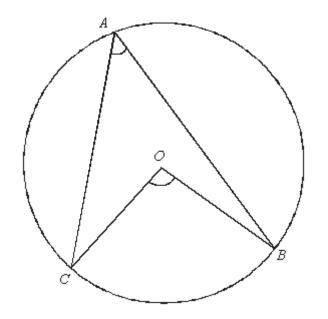
(c) Write down the mathematical name of the shaded shape.

(1) (Total 3 marks)

Q2.

Diagram **NOT** accurately drawn

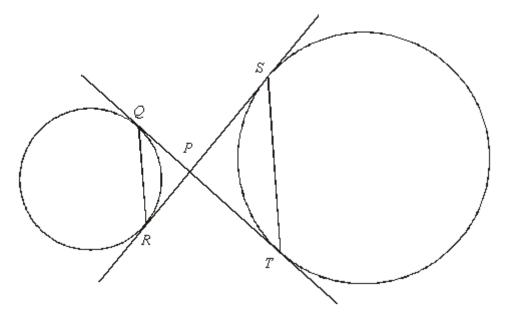
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A, B and C are points on the circle with centre O.

Prove that the angle subtended by arc *BC* at the centre of the circle is twice the angle subtended by arc *BC* at point *A*.

(Total 4 marks)

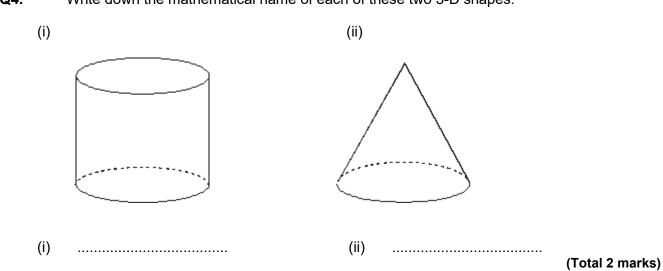


Q and R are two points on the circumference of a circle. S and T are two points on the circumference of another circle.

QT and *SR* are tangents to both circles. *P* is the point of intersection of the two tangents.

Prove that *QR* is parallel to *ST*.

(Total 5 marks)



Q4. Write down the mathematical name of each of these two 3-D shapes.

M1.

| | Answer | Mark | Additional Guidance |
|-----|-----------|------|----------------------------------------------------------------------------|
| (a) | 16 | 1 | B1 for 16 cao |
| (b) | 15 | 1 | B1 for 15 cao |
| (c) | rectangle | | B1 for rectangle, quadrilateral, trapezium, parallelogram or oblong |
| | | | Total for Question: 3 marks |

M2.

| | Working | Answer | Mark | Additional Guidance |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (i, ii, iii) | Join <i>AO</i> and produce to <i>P</i> Mark equal angles in isosceles triangle <i>AOC</i> or <i>AOB</i> Mark angle <i>COP</i> as twice angle <i>CAO</i> or mark angle <i>BOP</i> as twice angle <i>BAO</i> Identify angle <i>A</i> as half angle <i>BOC</i> | | 4 | Additional Guidance M1 for Joining AO and producing to "P" M1 for marking equal angles in isosceles triangle AOC or AOB giving reason that triangles are isosceles because radii are equal M1 for marking angle COP as twice angle CAO or marking Angle BOP as twice angle BAO giving reason that exterior angle of a triangle is equal to the interior angle of a triangle so.e. QWC: Working should be logical and sequential in structure; following on from labelling the extended line A1 for Identifying angle A as half angle BOC if M3 awarded QWC: All labelling |
| | | | | and angle notation should be consistent Total for Question: 4 marks |

M3.

| | Working | Answer | Mark | Additional Guidance |
|-------------------|------------------------------------------------------------------------------|--------|------|-------------------------------------------------------------------------------|
| C (i, ii, iii) | PS = PT and PQ = PR (equal tgts from a point) Let angle SPT = <i>x</i> | Proof | | B1 for PS = PT or PQ = PR B1 for equal tangents from a point |

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Total for Question: 5 marks

M4.

| | Answer | Mark | Additional Guidance |
|------|----------|------|-----------------------------|
| (i) | Cylinder | 2 | B1 cao |
| (ii) | Cone | | B1 cao |
| | | | Total for Question: 2 marks |

E1. A well understood question by most candidates; however a significant minority mixed up area and perimeter and some candidates found the area and perimeter of the grid on which the shaded shape was drawn. Almost all candidates wrote rectangle for the shape though some candidates did write quadrilateral, square or even kite.

E4. There were many correct answers although some gave quite imaginative answers such as 'rollergram' in (i). 'Pyramid' was a popular incorrect response in (ii).