

Higher tier unit 5a check in test

Calculator

- Q1. The interior angle of a regular polygon is 160° .

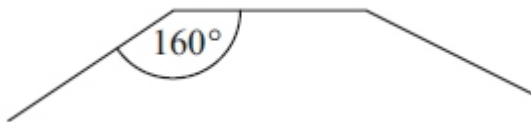


Diagram **NOT** accurately drawn

Find the size of an exterior angle of the polygon.

- Q2. The diagram shows 3 sides of a regular polygon.

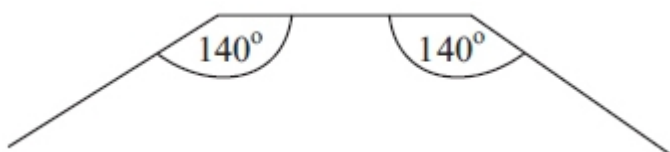


Diagram **NOT** accurately drawn

Each interior angle of the regular polygon is 140° .
Work out the number of sides of the regular polygon.

- Q3. Triangle ABC is a right-angled triangle.

ADB is a straight line.

$DA = DC$

Angle $BCD = 20^\circ$

Work out the size of the angle marked x .

You must give reasons for each stage of your working.

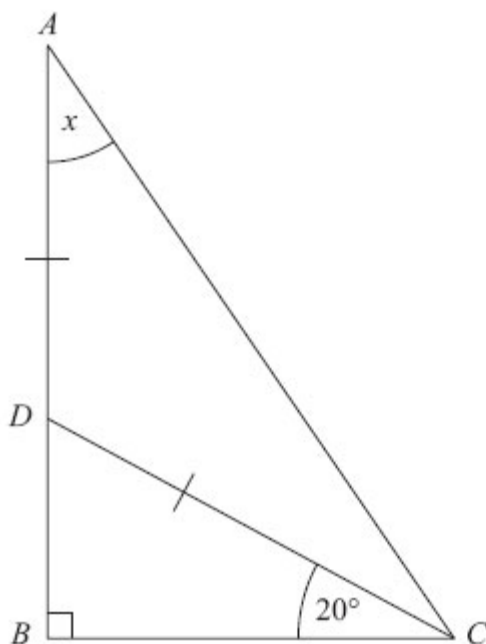


Diagram **NOT**
accurately drawn

Q4. Find the size of the angle marked x .

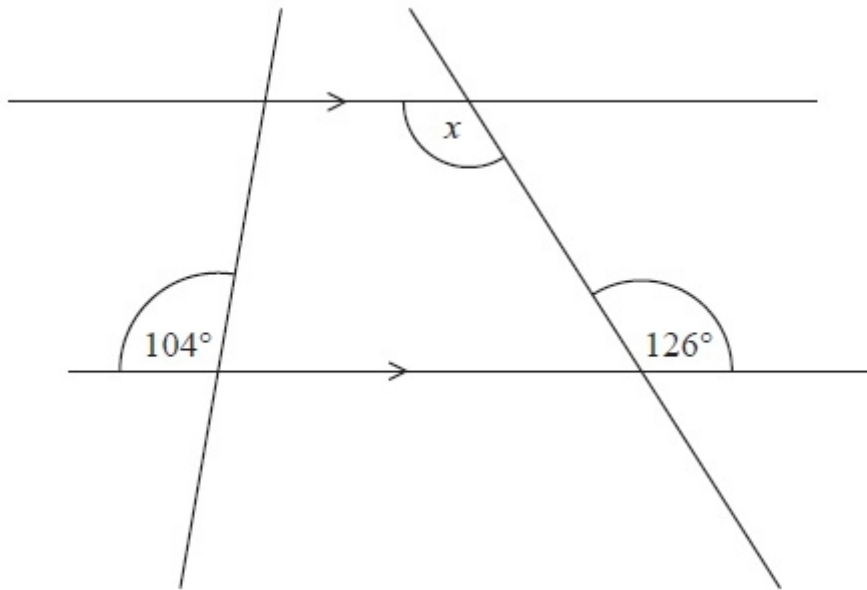


Diagram **NOT** accurately drawn

Q5. The diagram shows a parallelogram.
The sizes of the angles, in degrees, are

- $2x$
- $3x - 15$
- $2x$
- $2x + 24$

Work out the value of x .

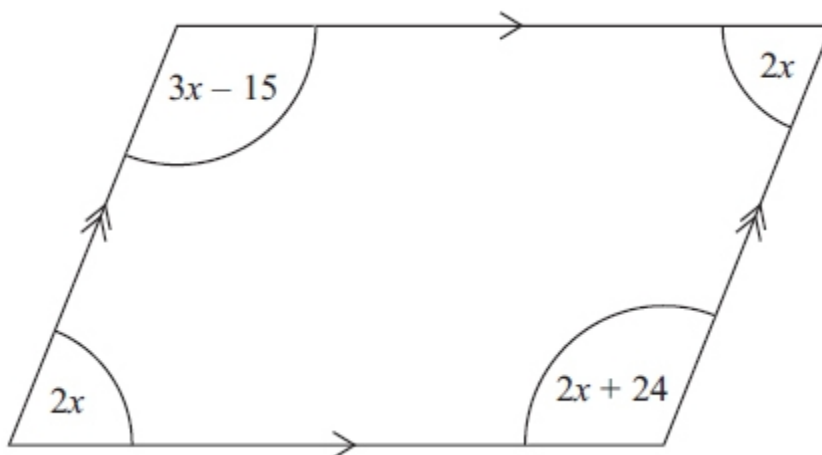


Diagram **NOT** accurately drawn

- Q6. A, B, C and D are four vertices of a regular 10-sided polygon.
Angle $BCX = 90^\circ$.

Work out the size of angle DCX .

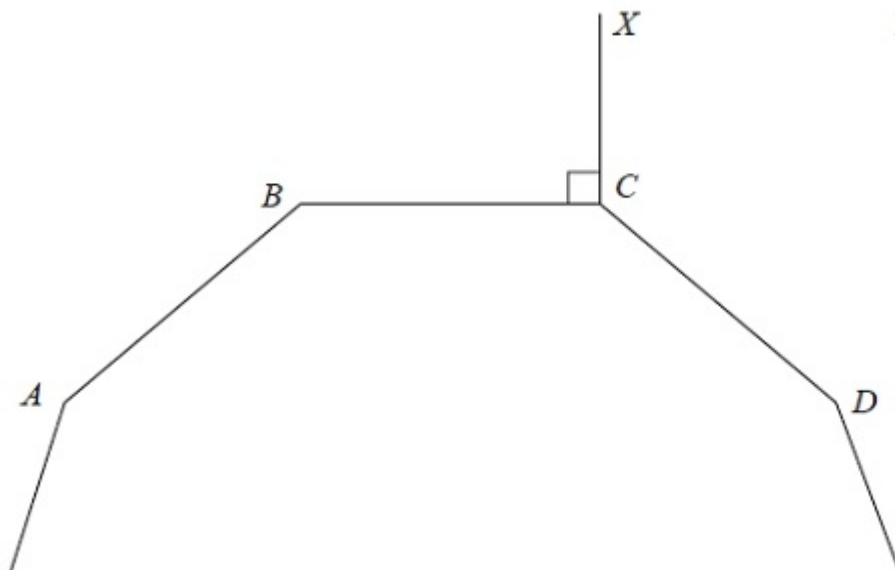


Diagram **NOT**
accurately drawn

- Q7. The diagram shows a pentagon $ABCDE$.

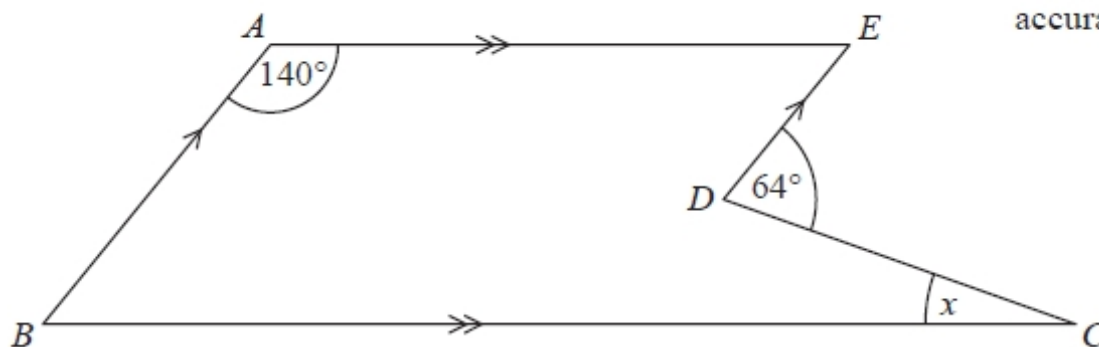


Diagram **NOT**
accurately drawn

AE is parallel to BC .

BA is parallel to DE .

Angle $EDC = 64^\circ$

Angle $BAE = 140^\circ$

Work out the size of the angle marked x .

You must give reasons for your answer.

Q8. ABC , DEF and $PQRS$ are parallel lines.

BEQ is a straight line.

Angle $ABE = 60^\circ$

Angle $QER = 80^\circ$

Work out the size of the angle marked x .

Give reasons for each stage of your working.

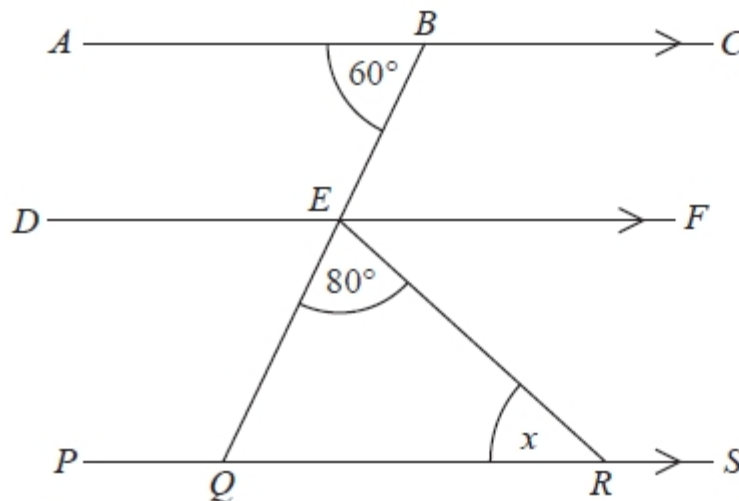
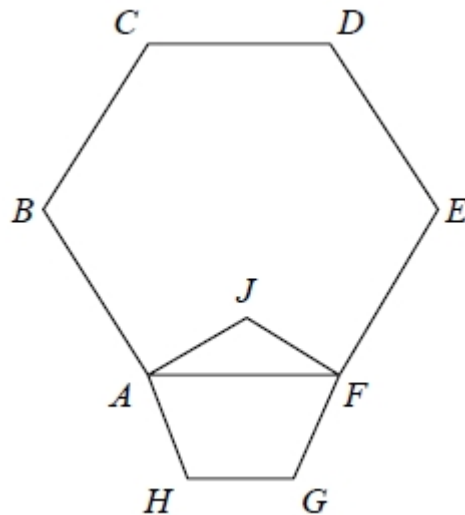


Diagram **NOT**
accurately drawn

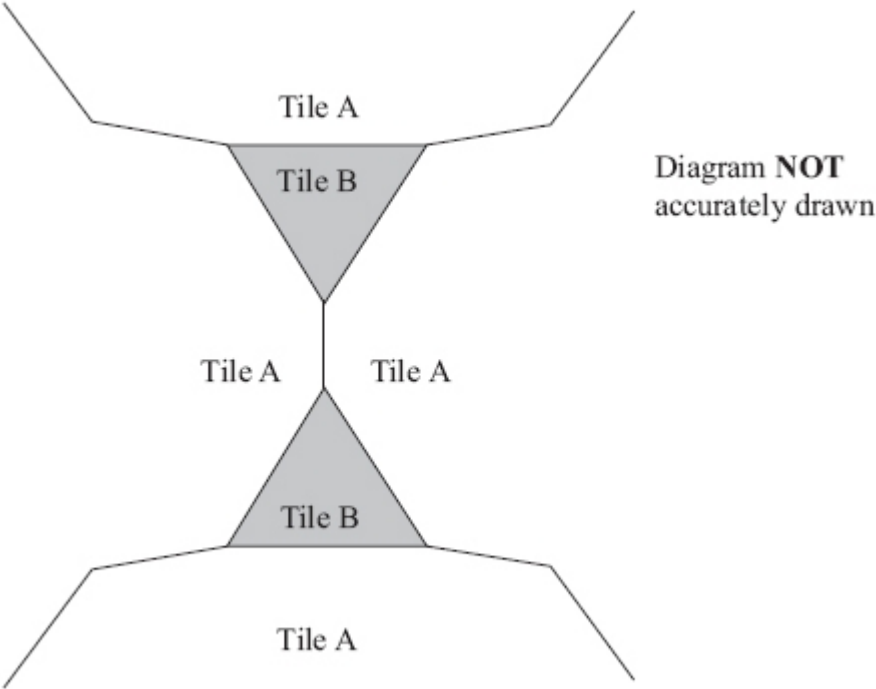
Q9. $ABCDEF$ is a regular hexagon.

$AJFGH$ is a regular pentagon.

Work out the size of angle BAJ .



Q10. The diagram shows part of a pattern made from tiles.
 The pattern is made from two types of tiles, tile A and tile B.
 Both tile A and tile B are regular polygons.
 Work out the number of sides tile A has.



Topics listed in objectives

- Classify quadrilaterals by their geometric properties and distinguish between scalene, isosceles and equilateral triangles;
- Understand 'regular' and 'irregular' as applied to polygons;
- Understand the proof that the angle sum of a triangle is 180° , and derive and use the sum of angles in a triangle;
- Use symmetry property of an isosceles triangle to show that base angles are equal;
- Find missing angles in a triangle using the angle sum in a triangle AND the properties of an isosceles triangle;
- Understand a proof of, and use the fact that, the exterior angle of a triangle is equal to the sum of the interior angles at the other two vertices;
- Explain why the angle sum of a quadrilateral is 360° ; use the angle properties of quadrilaterals and the fact that the angle sum of a quadrilateral is 360° ;
- Understand and use the angle properties of parallel lines and find missing angles using the properties of corresponding and alternate angles, giving reasons;
- Use the angle sums of irregular polygons;
- Calculate and use the sums of the interior angles of polygons; use the sum of angles in a triangle and use the angle sum in any polygon to derive the properties of regular polygons;
- Use the sum of the exterior angles of any polygon is 360° ;
- Use the sum of the interior angles of an n-sided polygon;
- Use the sum of the interior angle and the exterior angle is 180° ;
- Find the size of each interior angle, or the size of each exterior angle, or the number of sides of a regular polygon, and use the sum of angles of irregular polygons;
- Calculate the angles of regular polygons and use these to solve problems;
- Use the side/angle properties of compound shapes made up of triangles, lines and quadrilaterals, including solving angle and symmetry problems for shapes in the first quadrant, more complex problems and using algebra;
- Use angle facts to demonstrate how shapes would 'fit together', and work out interior angles of shapes in a pattern.

Answers

- Q1. 20°
Q2. 9
Q3. 35°
Q4. 126°
Q5. $x = 39$
Q6. 126°
Q7. 24°
Q8. 40°
Q9. 84°
Q10. 12

Higher tier unit 5b check in test

Calculator

- Q1. Calculate the length of AB .
Give your answer correct to 1 decimal place.

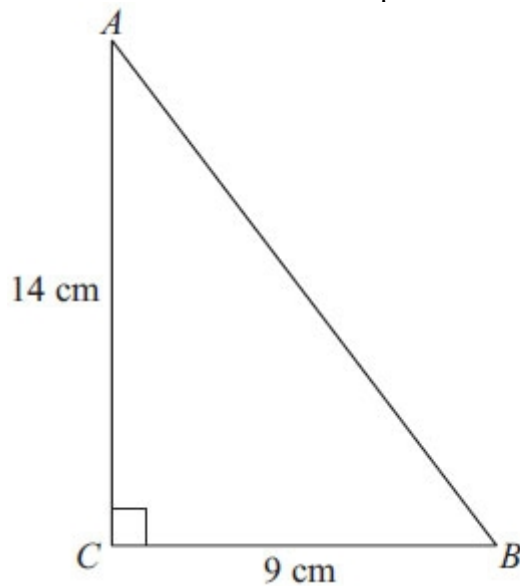


Diagram **NOT**
accurately drawn

- Q2. Work out the length of BC .
Give your answer correct to 3 significant figures.

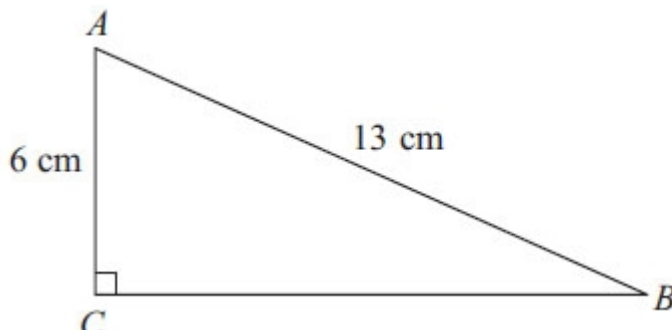
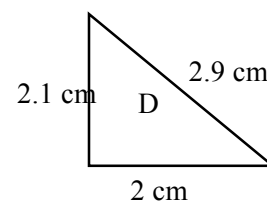
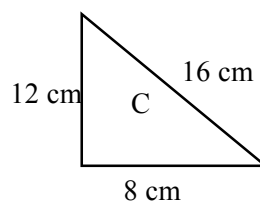
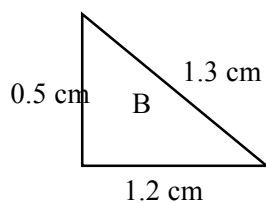
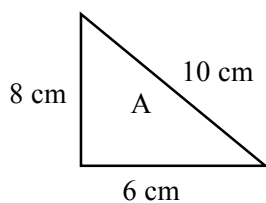


Diagram **NOT**
accurately drawn

- Q3. Which of these triangles is not a right-angled triangle?



Q4. Two points have these coordinates.

$A(4, 2)$

$B(12, 7)$

Find the length of the line segment AB .

Give your answer correct to 1 decimal place.

Q5. Calculate the value of x .

Give your answer correct to 3 significant figures.

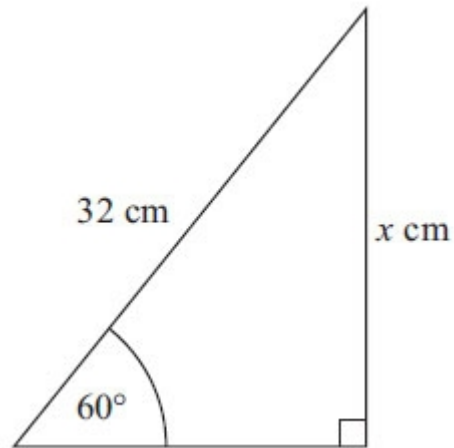


Diagram **NOT**
accurately drawn

Q6. Calculate the size of the angle marked y .

Give your answer correct to 1 decimal place.

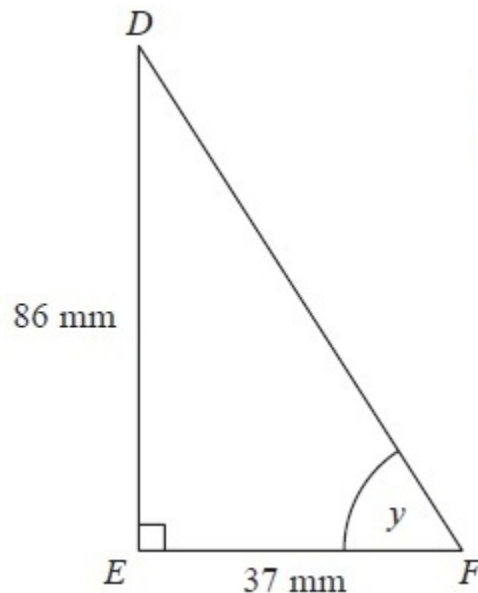
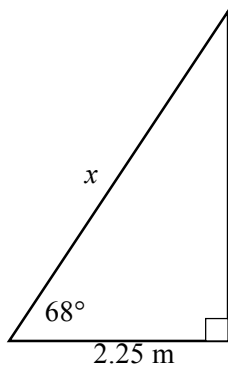
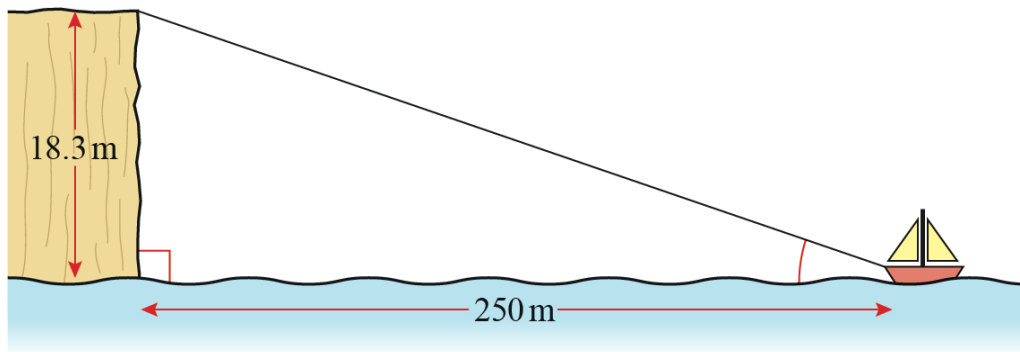


Diagram **NOT**
accurately drawn

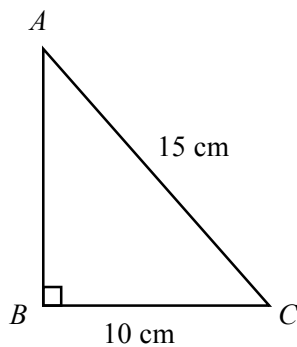
- Q7. Work out the length of the side marked x .
Give your answer correct to 1 decimal place.



- Q8. A boat is anchored 250 m from a cliff.
The cliff is 18.3 m high.
Find the angle of elevation of the top of the cliff from the boat.
Give your answer correct to 1 decimal place.



- Q9. Work out the length of AB .
Give your answer in surd form.



- Q10. Calculate the length of PR .
Give your answer correct to 3 significant figures.

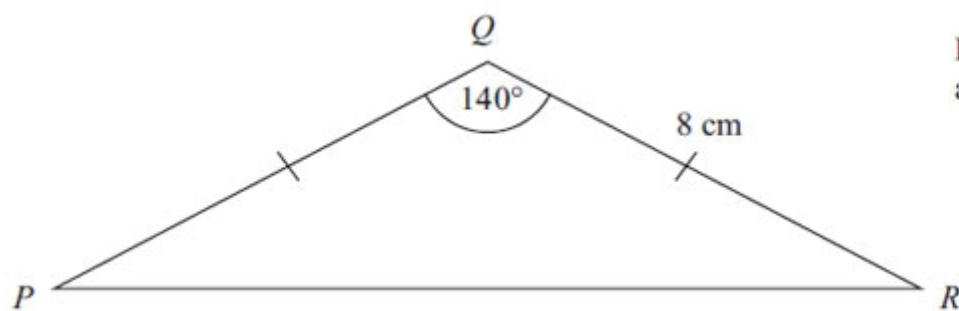


Diagram **NOT**
accurately drawn

Topics listed in objectives

- Understand, recall and use Pythagoras' Theorem in 2D;
- Given three sides of a triangle, justify if it is right-angled or not;
- Calculate the length of the hypotenuse in a right-angled triangle (including decimal lengths and a range of units);
- Find the length of a shorter side in a right-angled triangle;
- Calculate the length of a line segment AB given pairs of points;
- Give an answer to the use of Pythagoras' Theorem in surd form;
- Understand, use and recall the trigonometric ratios sine, cosine and tan, and apply them to find angles and lengths in general triangles in 2D figures;
- Use the trigonometric ratios to solve 2D problems;
- Find angles of elevation and depression;
- Know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90° ; know the exact value of $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60° .

Answers

- Q1. 16.6 cm
Q2. 11.5 cm
Q3. C
Q4. 9.4
Q5. 27.7 cm
Q6. 66.7°
Q7. 6 m
Q8. 4.2°
Q9. $5\sqrt{5}$
Q10. 15.0 cm