AQA GCSE MATHEMATICS

FOUNDATION TIER
GEOMETRY AND MEASURES
PRACTICE BOOK

Modules 21–27 | 315 original questions | Formula guides, full answers and marking guidance

FREE WEBSITE EDITION

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MODULE 21 / G1–G7, G9, G11–G21, G24–G25

Unit 4 Contents and Study Plan

MODULES 21–27 • FREE WEBSITE EDITION

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Complete Core Skills, Exam Practice, Grade 4–5 Challenge and same-topic retrieval. Use ruler, compasses, protractor and calculator where instructed. Formula guides and all answers are at the end.

Module	Topic	Specification	Score
21	Angles, Polygons and Shape Properties	G1, G3, G4	____ / ____
22	Constructions, Loci, Scale Drawings and Bearings	G2, G15	____ / ____
23	Congruence, Similarity and Transformations	G5, G6, G7, G19, G24	____ / ____
24	Perimeter, Area and Circles	G9, G14, G16, G17, G18	____ / ____
25	3D Shapes, Plans, Volume and Surface Area	G12, G13, G16, G17	____ / ____
26	Pythagoras and Trigonometry	G20, G21	____ / ____
27	Coordinate Geometry and Vectors	G11, G24, G25	____ / ____

MODULE 21 / G1–G7, G9, G11–G21, G24–G25

Unit 4 Specification and Paper Review

EVIDENCE-INFORMED AUTHORING MAP

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Independently authored from the current AQA 8300 Foundation specification and recurring structures in available Foundation summer Papers 1F–3F (2017, 2018, 2019, 2022, 2023). Summer exams were cancelled in 2020–2021; later secure/unavailable papers are not claimed as reviewed. Higher-only G8, G10, G22 and G23 are excluded.

Module	Specification	Coverage
21	G1, G3, G4	Angles, Polygons and Shape Properties
22	G2, G15	Constructions, Loci, Scale Drawings and Bearings
23	G5, G6, G7, G19, G24	Congruence, Similarity and Transformations
24	G9, G14, G16, G17, G18	Perimeter, Area and Circles
25	G12, G13, G16, G17	3D Shapes, Plans, Volume and Surface Area
26	G20, G21	Pythagoras and Trigonometry
27	G11, G24, G25	Coordinate Geometry and Vectors

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

CORE SKILLS • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. **An angle on a straight line is 37°. Find the adjacent angle.** [2 marks]

2. **An angle on a straight line is 58°. Find the adjacent angle.** [2 marks]

3. **An angle on a straight line is 96°. Find the adjacent angle.** [2 marks]

4. **An angle on a straight line is 124°. Find the adjacent angle.** [2 marks]

5. **An angle on a straight line is 143°. Find the adjacent angle.** [2 marks]

6. **Two angles around a point are 80° and 110°. The other two are equal. Find each.** [3 marks]

7. **Two angles around a point are 95° and 125°. The other two are equal. Find each.** [3 marks]

8. **Two angles around a point are 140° and 75°. The other two are equal. Find each.** [3 marks]

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

CORE SKILLS • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

9. **Two angles around a point are 160° and 88°. The other two are equal. Find each.** **[3 marks]**

10. **Two angles around a point are 105° and 135°. The other two are equal. Find each.** **[3 marks]**

11. **A triangle has angles 45° and 65°. Find the third.** **[2 marks]**

12. **A triangle has angles 38° and 72°. Find the third.** **[2 marks]**

13. **A triangle has angles 50° and 80°. Find the third.** **[2 marks]**

14. **A triangle has angles 27° and 93°. Find the third.** **[2 marks]**

15. **A triangle has angles 61° and 44°. Find the third.** **[2 marks]**

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

EXAM PRACTICE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Find the sum of interior angles of a 5-sided polygon. [2 marks]

2. Find the sum of interior angles of a 6-sided polygon. [2 marks]

3. Find the sum of interior angles of a 8-sided polygon. [2 marks]

4. Find the sum of interior angles of a 9-sided polygon. [2 marks]

5. Find the sum of interior angles of a 10-sided polygon. [2 marks]

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

EXAM PRACTICE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **Find each exterior angle of a regular 3-gon.** **[2 marks]**

7. **Find each exterior angle of a regular 4-gon.** **[2 marks]**

8. **Find each exterior angle of a regular 5-gon.** **[2 marks]**

9. **Find each exterior angle of a regular 8-gon.** **[2 marks]**

10. **Find each exterior angle of a regular 10-gon.** **[2 marks]**

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

EXAM PRACTICE • PART C

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

11. **Two parallel lines are crossed by a transversal. One corresponding angle is 68°. Find the other.** **[2 marks]**

12. **An alternate angle is 117°. Find its matching alternate angle.** **[2 marks]**

13. **An isosceles triangle has vertex angle 42°. Find each base angle.** **[3 marks]**

14. **A quadrilateral has angles 95°,87°,104°. Find fourth.** **[2 marks]**

15. **Name a quadrilateral with four equal sides but angles not necessarily 90°.** **[1 mark]**

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

GRADE 4-5 CHALLENGE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. A regular polygon exterior angle is 24°. Find number of sides. [3 marks]

2. Interior angle of regular polygon is 150°. Find sides. [4 marks]

3. Angles of triangle are x,2x,3x. Find them. [4 marks]

4. Angles around a point are x,2x,3x,4x. Find largest. [4 marks]

5. Find the two base angles of an isosceles triangle with vertex angle 36°. [3 marks]

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

GRADE 4-5 CHALLENGE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **A pentagon has four equal angles 110°. Find fifth.** **[3 marks]**

7. **A regular polygon has 20 sides. Find interior angle.** **[3 marks]**

8. **State rotational symmetry order of a non-square rectangle.** **[1 mark]**

9. **State two properties of a kite.** **[2 marks]**

10. **Explain why triangle cannot have two obtuse angles.** **[2 marks]**

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

MIXED RETRIEVAL

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Vertically opposite to 73°. [1 mark]

2. Third triangle angle: 52°,61°. [1 mark]

3. Interior sum of hexagon. [2 marks]

4. Exterior angle regular octagon. [1 mark]

5. Base angles if isosceles vertex 80°. [2 marks]

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

CORE SKILLS • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. **Construct the perpendicular bisector of an 8 cm segment. State its key property.** [3 marks]

2. **Construct a 60° angle using ruler and compasses.** [3 marks]

3. **Construct the bisector of a 74° angle.** [3 marks]

4. **Construct a perpendicular from point P to line l.** [3 marks]

5. **State the shortest distance from a point to a line.** [1 mark]

6. **Write 35° as a three-figure bearing.** [1 mark]

7. **Write 72° as a three-figure bearing.** [1 mark]

8. **Write 125° as a three-figure bearing.** [1 mark]

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

CORE SKILLS • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

9. **Write 218° as a three-figure bearing.** **[1 mark]**

10. **Write 305° as a three-figure bearing.** **[1 mark]**

11. **The bearing of B from A is 040°. Find the bearing of A from B.** **[2 marks]**

12. **The bearing of B from A is 095°. Find the bearing of A from B.** **[2 marks]**

13. **The bearing of B from A is 140°. Find the bearing of A from B.** **[2 marks]**

14. **The bearing of B from A is 230°. Find the bearing of A from B.** **[2 marks]**

15. **The bearing of B from A is 310°. Find the bearing of A from B.** **[2 marks]**

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

EXAM PRACTICE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. On a scale drawing 1 cm represents 5 m. A length is 4.2 cm. Find actual length. [2 marks]

2. On a scale drawing 1 cm represents 8 m. A length is 6.5 cm. Find actual length. [2 marks]

3. On a scale drawing 1 cm represents 12 m. A length is 3.8 cm. Find actual length. [2 marks]

4. On a scale drawing 1 cm represents 4 m. A length is 7.2 cm. Find actual length. [2 marks]

5. On a scale drawing 1 cm represents 10 m. A length is 5.5 cm. Find actual length. [2 marks]

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

EXAM PRACTICE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **Describe locus of points 3 cm from point A.** **[2 marks]**

7. **Describe locus equidistant from points A and B.** **[2 marks]**

8. **Describe locus 2 cm from a straight line.** **[2 marks]**

9. **A point lies inside angle BAC and must be nearer side AB than side AC. Which construction gives the boundary?** **[2 marks]**

10. **Explain why construction arcs must remain visible.** **[1 mark]**

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

EXAM PRACTICE • PART C

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

11. **A hiker travels 6 km on bearing 090°, then 8 km on 000°. Find straight-line distance.** **[4 marks]**

12. **B is 12 km from A on 040°. C is due east of A. State angle BAC.** **[3 marks]**

13. **A map scale is 1:50,000. Find actual km for 7.4 cm.** **[3 marks]**

14. **Actual distance is 2.4 km at scale 1:20,000. Find map cm.** **[3 marks]**

15. **Two lighthouses are on bearings 060° and 145°. Find angle between directions.** **[2 marks]**

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

GRADE 4-5 CHALLENGE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Region within 4 cm of A and nearer B than C: name boundaries. [3 marks]

2. Construct triangle sides 5,6,7 cm. [3 marks]

3. A bearing is 275°. State compass direction approximately. [2 marks]

4. Why are bearings measured clockwise from north? [1 mark]

5. Scale drawing length doubles. What happens to represented actual length at same scale? [1 mark]

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

GRADE 4-5 CHALLENGE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **State the method or formula for: Bearings.** **[2 marks]**

7. **State the method or formula for: Reverse bearing.** **[2 marks]**

8. **State the method or formula for: Scale drawing.** **[2 marks]**

9. **State the method or formula for: Perpendicular bisector.** **[2 marks]**

10. **State the method or formula for: Angle bisector.** **[2 marks]**

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

MIXED RETRIEVAL

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Reverse bearing of 025°. [1 mark]

2. Reverse bearing of 190°. [1 mark]

3. 1 cm represents 6 m; 8 cm represents? [1 mark]

4. Locus equidistant from two points. [1 mark]

5. Three-figure form of 8°. [1 mark]

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

CORE SKILLS • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. **Translate (1,2) by vector (3,4).** [2 marks]

2. **Translate (-2,3) by vector (4,-1).** [2 marks]

3. **Translate (0,5) by vector (-3,2).** [2 marks]

4. **Translate (4,1) by vector (1,-2).** [2 marks]

5. **Translate (-3,-2) by vector (2,5).** [2 marks]

6. **Reflect (2,3) in the y-axis.** [2 marks]

7. **Reflect (-4,1) in the y-axis.** [2 marks]

8. **Reflect (5,-2) in the y-axis.** [2 marks]

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

CORE SKILLS • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

9. **Reflect (-3,-5) in the y-axis.** [2 marks]

10. **Reflect (0,4) in the y-axis.** [2 marks]

11. **Rotate (2,3) 90° anticlockwise about origin.** [2 marks]

12. **Rotate (-4,1) 90° anticlockwise about origin.** [2 marks]

13. **Rotate (5,-2) 90° anticlockwise about origin.** [2 marks]

14. **Rotate (-3,-5) 90° anticlockwise about origin.** [2 marks]

15. **Rotate (0,4) 90° anticlockwise about origin.** [2 marks]

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

EXAM PRACTICE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Enlarge point (2,3) from origin by scale factor 2. [2 marks]

2. Enlarge point (-4,1) from origin by scale factor 0.5. [2 marks]

3. Enlarge point (5,-2) from origin by scale factor 3. [2 marks]

4. Enlarge point (-3,-5) from origin by scale factor 2. [2 marks]

5. Enlarge point (0,4) from origin by scale factor 0.5. [2 marks]

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

EXAM PRACTICE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **State full description: a shape slides 4 right and 3 down.** **[2 marks]**

7. **What is preserved by rotation?** **[2 marks]**

8. **What changes under reflection?** **[2 marks]**

9. **Triangles have sides 3,4,5 and 6,8,10. Are they similar?** **[2 marks]**

10. **State triangle congruence criteria.** **[2 marks]**

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

EXAM PRACTICE • PART C

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

11. **Similar shapes have scale factor 3. Small area 12 cm². Find large area.** **[3 marks]**

12. **Similar solids scale factor 2. Small volume 35 cm³. Find large volume.** **[3 marks]**

13. **Areas of similar shapes are 25 and 81. Find length scale factor small→large.** **[4 marks]**

14. **Two triangles have sides 5,7,8 and 10,14,16. Prove similar.** **[3 marks]**

15. **Each of two triangles has corresponding sides of 6 cm and 9 cm with the included angle equal to 40°. Are the triangles congruent?** **[2 marks]**

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

GRADE 4-5 CHALLENGE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. **Reflect (3,−2) in x=1.** [3 marks]

2. **Rotate (4,1) 180° about (1,1).** [3 marks]

3. **Enlarge (5,3) centre (1,1) factor 2.** [4 marks]

4. **A transformation changes size but preserves shape. Name it.** [1 mark]

5. **Explain why SSA is not a congruence criterion.** [2 marks]

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

GRADE 4-5 CHALLENGE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. State the method or formula for: Translation. [2 marks]

7. State the method or formula for: Reflection. [2 marks]

8. State the method or formula for: Rotation. [2 marks]

9. State the method or formula for: Enlargement. [2 marks]

10. State the method or formula for: Similarity. [2 marks]

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

MIXED RETRIEVAL

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Translate (1,1) by (−2,5). [1 mark]

2. Reflect (4,−3) in x-axis. [1 mark]

3. Rotate (2,−1) 180° origin. [1 mark]

4. Length scale factor 4; area factor? [1 mark]

5. Name congruence criterion right triangles. [1 mark]

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

CORE SKILLS • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Find perimeter and area of rectangle 8 cm by 5 cm. [2 marks]

2. Find perimeter and area of rectangle 12 cm by 7 cm. [2 marks]

3. Find perimeter and area of rectangle 9 cm by 4 cm. [2 marks]

4. Find perimeter and area of rectangle 15 cm by 6 cm. [2 marks]

5. Find perimeter and area of rectangle 11 cm by 3 cm. [2 marks]

6. Find area of triangle base 8 cm height 5 cm. [2 marks]

7. Find area of triangle base 12 cm height 7 cm. [2 marks]

8. Find area of triangle base 9 cm height 4 cm. [2 marks]

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

CORE SKILLS • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

9. **Find area of triangle base 15 cm height 6 cm.** [2 marks]

10. **Find area of triangle base 11 cm height 3 cm.** [2 marks]

11. **Find area of trapezium parallel sides 5,9 cm, height 4 cm.** [3 marks]

12. **Find area of trapezium parallel sides 7,13 cm, height 6 cm.** [3 marks]

13. **Find area of trapezium parallel sides 8,12 cm, height 5 cm.** [3 marks]

14. **Find area of trapezium parallel sides 4,10 cm, height 7 cm.** [3 marks]

15. **Find area of trapezium parallel sides 9,15 cm, height 3 cm.** [3 marks]

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

EXAM PRACTICE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Find circumference and area of circle radius 2 cm in terms of π. [2 marks]

2. Find circumference and area of circle radius 3 cm in terms of π. [2 marks]

3. Find circumference and area of circle radius 4 cm in terms of π. [2 marks]

4. Find circumference and area of circle radius 5 cm in terms of π. [2 marks]

5. Find circumference and area of circle radius 7 cm in terms of π. [2 marks]

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

EXAM PRACTICE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **Find arc length radius 6 cm, angle 60° in terms of π.** [3 marks]

7. **Find arc length radius 8 cm, angle 90° in terms of π.** [3 marks]

8. **Find arc length radius 10 cm, angle 72° in terms of π.** [3 marks]

9. **Find arc length radius 9 cm, angle 120° in terms of π.** [3 marks]

10. **Find arc length radius 12 cm, angle 45° in terms of π.** [3 marks]

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

EXAM PRACTICE • PART C

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

11. **Find area of semicircle radius 6 cm in terms of π.** **[2 marks]**

12. **A 10 by 8 rectangle has 3 by 2 corner removed. Find remaining area.** **[2 marks]**

13. **Circle diameter 14 cm: find circumference.** **[2 marks]**

14. **Find sector area radius 9 cm angle 80°.** **[3 marks]**

15. **A square area is 81 cm². Find perimeter.** **[2 marks]**

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

GRADE 4-5 CHALLENGE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. **A running track is rectangle 50 by 20 with semicircles diameter 20 at ends. Find perimeter.** **[4 marks]**

2. **Find shaded area: square side 10 minus circle radius 5.** **[3 marks]**

3. **Circle area 64π. Find radius and circumference.** **[3 marks]**

4. **A trapezium area 84, parallel sides 10 and 18. Find height.** **[3 marks]**

5. **Triangle area 54, base 12. Find perpendicular height.** **[3 marks]**

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

GRADE 4-5 CHALLENGE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **Sector radius 12 angle 150: find area.** **[3 marks]**

7. **Sector arc length is 5π, radius 10. Find angle.** **[4 marks]**

8. **Composite shape area 6×9 rectangle plus triangle base6 height4.** **[3 marks]**

9. **A circle circumference 18π. Find area.** **[3 marks]**

10. **Explain square vs cubic units.** **[2 marks]**

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

MIXED RETRIEVAL

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Area triangle b=10,h=7. [1 mark]

2. Circumference r=4 in π. [1 mark]

3. Area circle r=3 in π. [1 mark]

4. Area trapezium sides 6,10,h=5. [2 marks]

5. Perimeter square side 8. [1 mark]

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

CORE SKILLS • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Find volume of cuboid 4×3×5 cm. [2 marks]

2. Find volume of cuboid 8×2×6 cm. [2 marks]

3. Find volume of cuboid 7×5×3 cm. [2 marks]

4. Find volume of cuboid 10×4×2 cm. [2 marks]

5. Find volume of cuboid 6×6×4 cm. [2 marks]

6. A prism has cross-sectional area 12 cm² and length 8 cm. Find volume. [2 marks]

7. A prism has cross-sectional area 15 cm² and length 6 cm. Find volume. [2 marks]

8. A prism has cross-sectional area 22 cm² and length 5 cm. Find volume. [2 marks]

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

CORE SKILLS • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

9. **A prism has cross-sectional area 30 cm² and length 4 cm. Find volume.** **[2 marks]**

10. **A prism has cross-sectional area 18 cm² and length 9 cm. Find volume.** **[2 marks]**

11. **Find cylinder volume radius 2 cm height 5 cm in terms of π.** **[2 marks]**

12. **Find cylinder volume radius 3 cm height 8 cm in terms of π.** **[2 marks]**

13. **Find cylinder volume radius 4 cm height 6 cm in terms of π.** **[2 marks]**

14. **Find cylinder volume radius 5 cm height 10 cm in terms of π.** **[2 marks]**

15. **Find cylinder volume radius 6 cm height 7 cm in terms of π.** **[2 marks]**

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

EXAM PRACTICE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. How many faces, edges, vertices has a cube? [2 marks]

2. Describe front elevation of a cuboid. [1 mark]

3. Name solid with two circular faces and curved surface. [1 mark]

4. Convert 2.5 litres to cm^3. [1 mark]

5. State volume units for dimensions in metres. [1 mark]

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

EXAM PRACTICE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **Find surface area cuboid 4×3×5 cm.** **[3 marks]**

7. **Find surface area cuboid 8×2×6 cm.** **[3 marks]**

8. **Find surface area cuboid 7×5×3 cm.** **[3 marks]**

9. **Find surface area cuboid 10×4×2 cm.** **[3 marks]**

10. **Find surface area cuboid 6×6×4 cm.** **[3 marks]**

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

EXAM PRACTICE • PART C

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

11. **A triangular prism cross-section base 6 height4, length10. Find volume.** **[3 marks]**

12. **Cylinder volume 200π, radius5. Find height.** **[3 marks]**

13. **Cuboid volume 360, base 12×5. Find height.** **[2 marks]**

14. **Tank 80×50×40 cm. Capacity litres?** **[3 marks]**

15. **A plan shows 4 cubes by 3 cubes; height 2 throughout. How many cubes?** **[2 marks]**

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

GRADE 4-5 CHALLENGE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. A solid is two cuboids volumes 120 and 84 with no overlap. Total? [2 marks]

2. Cylinder r=4,h=9: volume decimal to 1 dp. [3 marks]

3. Prism volume 540, length12. Cross-section area? [2 marks]

4. A cube volume 343. Find edge and surface area. [4 marks]

5. Water depth in base 20×15, volume1800. [3 marks]

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

GRADE 4-5 CHALLENGE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **A cuboid 10×8×6 has 2×2×2 cubes removed, 5 cubes. Remaining volume?** **[4 marks]**

7. **Cylinder diameter10,height12. Volume?** **[3 marks]**

8. **Explain plans and elevations.** **[2 marks]**

9. **A prism has constant cross-section: why V=area×length?** **[2 marks]**

10. **Convert 0.75 m³ to litres.** **[2 marks]**

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

MIXED RETRIEVAL

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Cuboid 3×4×5 volume. [1 mark]

2. Prism area 9 length7 volume. [1 mark]

3. Cylinder r2 h3 volume. [1 mark]

4. 1 litre in cm^3. [1 mark]

5. Cube edge4 surface area. [2 marks]

MODULE 26 / G20, G21

Pythagoras and Trigonometry

CORE SKILLS • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. **Right triangle legs 3,4. Find hypotenuse.** [3 marks]

2. **Right triangle legs 5,12. Find hypotenuse.** [3 marks]

3. **Right triangle legs 8,15. Find hypotenuse.** [3 marks]

4. **Right triangle legs 7,24. Find hypotenuse.** [3 marks]

5. **Right triangle legs 9,40. Find hypotenuse.** [3 marks]

6. **Right triangle hypotenuse 5, one leg 3. Find other.** [3 marks]

7. **Right triangle hypotenuse 13, one leg 5. Find other.** [3 marks]

8. **Right triangle hypotenuse 17, one leg 8. Find other.** [3 marks]

MODULE 26 / G20, G21

Pythagoras and Trigonometry

CORE SKILLS • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

9. **Right triangle hypotenuse 25, one leg 7. Find other.** **[3 marks]**

10. **Right triangle hypotenuse 41, one leg 9. Find other.** **[3 marks]**

11. **Which ratio is sin θ?** **[1 mark]**

12. **Which ratio is cos θ?** **[1 mark]**

13. **Which ratio is tan θ?** **[1 mark]**

14. **State sin30°.** **[1 mark]**

15. **State cos60°.** **[1 mark]**

MODULE 26 / G20, G21

Pythagoras and Trigonometry

EXAM PRACTICE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Hypotenuse 10, angle 30°. Find opposite side. [3 marks]

2. Hypotenuse 12, angle 45°. Find opposite side. [3 marks]

3. Hypotenuse 15, angle 60°. Find opposite side. [3 marks]

4. Hypotenuse 20, angle 35°. Find opposite side. [3 marks]

5. Hypotenuse 18, angle 50°. Find opposite side. [3 marks]

MODULE 26 / G20, G21

Pythagoras and Trigonometry

EXAM PRACTICE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **Adjacent 10, angle 30°. Find hypotenuse.** **[3 marks]**

7. **Adjacent 12, angle 45°. Find hypotenuse.** **[3 marks]**

8. **Adjacent 15, angle 60°. Find hypotenuse.** **[3 marks]**

9. **Adjacent 20, angle 35°. Find hypotenuse.** **[3 marks]**

10. **Adjacent 18, angle 50°. Find hypotenuse.** **[3 marks]**

MODULE 26 / G20, G21

Pythagoras and Trigonometry

EXAM PRACTICE • PART C

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

11. **Opposite 6, adjacent8. Find angle.** **[3 marks]**

12. **Opposite5,hypotenuse13. Find angle.** **[3 marks]**

13. **Adjacent12,hypotenuse15. Find angle.** **[3 marks]**

14. **Is triangle 6,8,10 right-angled?** **[3 marks]**

15. **Is triangle 5,6,8 right-angled?** **[3 marks]**

MODULE 26 / G20, G21

Pythagoras and Trigonometry

GRADE 4-5 CHALLENGE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. A 5 m ladder reaches 4 m high. Distance from wall? [3 marks]

2. Rectangle diagonal 13, width5. Length? [3 marks]

3. Ramp rises1.2 over length5. Find angle. [4 marks]

4. Tree shadow 12 m, elevation angle35°. Find height. [4 marks]

5. A roof half-width4, slope length5. Find pitch angle. [4 marks]

MODULE 26 / G20, G21

Pythagoras and Trigonometry

GRADE 4-5 CHALLENGE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **Exact sin45°.** **[1 mark]**

7. **Exact tan45°.** **[1 mark]**

8. **Exact cos0°.** **[1 mark]**

9. **Why identify hypotenuse first?** **[2 marks]**

10. **State calculator mode for GCSE trig angles.** **[1 mark]**

MODULE 26 / G20, G21

Pythagoras and Trigonometry

MIXED RETRIEVAL

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Hypotenuse 10, leg6, other leg. [2 marks]

2. sin ratio. [1 mark]

3. cos60°. [1 mark]

4. tan45°. [1 mark]

5. 6-8-10 right angled? [1 mark]

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

CORE SKILLS • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Find midpoint of (1,2) and (5,6). [2 marks]

2. Find midpoint of (-3,4) and (3,8). [2 marks]

3. Find midpoint of (0,-2) and (6,4). [2 marks]

4. Find midpoint of (2,7) and (8,1). [2 marks]

5. Find midpoint of (-5,-3) and (1,5). [2 marks]

6. Find vector from A(1,2) to B(5,5). [2 marks]

7. Find vector from A(-3,4) to B(3,1). [2 marks]

8. Find vector from A(0,-2) to B(6,4). [2 marks]

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

CORE SKILLS • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

9. **Find vector from A(2,7) to B(8,1).** **[2 marks]**

10. **Find vector from A(-5,-3) to B(1,5).** **[2 marks]**

11. **Add vectors (2,3)+(4,-1).** **[2 marks]**

12. **Add vectors (-2,5)+(3,2).** **[2 marks]**

13. **Add vectors (6,-1)+(-4,3).** **[2 marks]**

14. **Add vectors (1,7)+(5,-2).** **[2 marks]**

15. **Add vectors (-3,-4)+(2,6).** **[2 marks]**

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

EXAM PRACTICE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Multiply vector (2,3) by 4. [2 marks]

2. Multiply vector (-2,5) by 3. [2 marks]

3. Multiply vector (6,-1) by -2. [2 marks]

4. Multiply vector (1,7) by 0.5. [2 marks]

5. Multiply vector (-3,-4) by 2. [2 marks]

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

EXAM PRACTICE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **If AB=a and BC=b, write AC.** [1 mark]

7. **If AB=a, write BA.** [1 mark]

8. **Point A(2,3) translated by (4,−5). Find image.** [2 marks]

9. **Find distance between (0,0) and (6,8).** [3 marks]

10. **State gradient between (1,2),(5,10).** [2 marks]

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

EXAM PRACTICE • PART C

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

11. **A(1,2), B(7,8). C divides AB halfway. Find C.** [2 marks]

12. **A(2,1), vector AB=(5,−3). Find B.** [2 marks]

13. **OA=a, OB=b. Write AB.** [2 marks]

14. **AB=a, BC=b, CD=c. Write AD.** [2 marks]

15. **P is midpoint AB. OA=a, OB=b. Write OP.** [3 marks]

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

GRADE 4-5 CHALLENGE • PART A

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Show points (0,0),(3,4),(6,8) collinear. [3 marks]

2. Vector a=(2,−1), b=(−3,4). Find 2a−b. [3 marks]

3. A(−2,5),B(4,−1). Find length AB. [3 marks]

4. Find point D so ABCD parallelogram: A(0,1),B(4,2),C(6,6). [4 marks]

5. Explain equal vectors. [2 marks]

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

GRADE 4-5 CHALLENGE • PART B

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

6. **State the method or formula for: Vector between points.** **[2 marks]**

7. **State the method or formula for: Add/subtract.** **[2 marks]**

8. **State the method or formula for: Scalar multiple.** **[2 marks]**

9. **State the method or formula for: Position vectors.** **[2 marks]**

10. **State the method or formula for: Midpoint.** **[2 marks]**

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

MIXED RETRIEVAL

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Same-module practice. Draw and label a diagram where helpful.

1. Midpoint (0,0),(4,6). [1 mark]

2. Vector (1,2) to (5,7). [1 mark]

3. Add (2,3)+(−1,4). [1 mark]

4. 3(2,−1). [1 mark]

5. If AB=a, BA? [1 mark]

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

FORMULAS AND METHOD BANK

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use these methods before checking the answer tables. Write the setup first, substitute values, calculate, then give a final answer with units.

When to use it	Formula / method
Straight line	Angles sum to 180°.
Around a point	Angles sum to 360°.
Triangle	Interior angles sum to 180°.
Polygon sum	$(n-2)\times180°$.
Regular exterior angle	$360°\div n$.
Parallel lines	Corresponding and alternate angles are equal; co-interior sum to 180°.
Isosceles	Base angles are equal.

Marking reminder: a correct setup can earn method marks even when a later arithmetic error occurs.

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

FORMULAS AND METHOD BANK

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use these methods before checking the answer tables. Write the setup first, substitute values, calculate, then give a final answer with units.

When to use it	Formula / method
Bearings	Measure clockwise from north and write three digits.
Reverse bearing	Add/subtract 180°, keeping result between 000° and 359°.
Scale drawing	actual = drawing × scale factor, after matching units.
Perpendicular bisector	Equal-radius arcs from both endpoints.
Angle bisector	Intersect equal arcs inside the angle.
Loci	Translate each condition into its standard boundary and shade intersection.

Marking reminder: a correct setup can earn method marks even when a later arithmetic error occurs.

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

FORMULAS AND METHOD BANK

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use these methods before checking the answer tables. Write the setup first, substitute values, calculate, then give a final answer with units.

When to use it	Formula / method
Translation	Add vector components to coordinates.
Reflection	Use mirror line; image stays same perpendicular distance.
Rotation	State centre, angle and direction.
Enlargement	State centre and scale factor; multiply centre-to-point vectors.
Similarity	Corresponding lengths share a scale factor; areas use k^2; volumes k^3.
Congruence	SSS, SAS, ASA or RHS.

Marking reminder: a correct setup can earn method marks even when a later arithmetic error occurs.

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

FORMULAS AND METHOD BANK

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use these methods before checking the answer tables. Write the setup first, substitute values, calculate, then give a final answer with units.

When to use it	Formula / method
Rectangle	A=lw; P=2l+2w.
Triangle	A=½bh.
Parallelogram	A=bh.
Trapezium	A=½(a+b)h.
Circle	C=2πr=πd; A=πr².
Arc	θ/360×2πr.
Sector	θ/360×πr².
Composite	Split/add or subtract simple shapes; keep units consistent.

Marking reminder: a correct setup can earn method marks even when a later arithmetic error occurs.

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

FORMULAS AND METHOD BANK

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use these methods before checking the answer tables. Write the setup first, substitute values, calculate, then give a final answer with units.

When to use it	Formula / method
Cuboid	$V=lwh$; $SA=2(lw+lh+wh)$.
Prism	V=cross-sectional area×length.
Cylinder	$V=\pi r^2h$; curved area$=2\pi rh$.
Capacity	1000 cm^3=1 litre; 1 m^3=1000 litres.
Plans/elevations	Top, front and side orthographic views.
Composite solid	Add non-overlapping volumes or subtract removed parts.

Marking reminder: a correct setup can earn method marks even when a later arithmetic error occurs.

MODULE 26 / G20, G21

Pythagoras and Trigonometry

FORMULAS AND METHOD BANK

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use these methods before checking the answer tables. Write the setup first, substitute values, calculate, then give a final answer with units.

When to use it	Formula / method
Pythagoras	$a^2+b^2=c^2$, c hypotenuse.
Sine	$\sin\theta$=opposite/hypotenuse.
Cosine	$\cos\theta$=adjacent/hypotenuse.
Tangent	$\tan\theta$=opposite/adjacent.
Find angle	Use inverse sin, cos or tan.
Accuracy	Keep full calculator value; round final answer; use degree mode.
Exact values	Know sin/cos/tan at 0°,30°,45°,60°,90° as specified.

Marking reminder: a correct setup can earn method marks even when a later arithmetic error occurs.

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

FORMULAS AND METHOD BANK

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use these methods before checking the answer tables. Write the setup first, substitute values, calculate, then give a final answer with units.

When to use it	Formula / method
Vector between points	$B-A=(x_2-x_1, y_2-y_1)$.
Add/subtract	Operate component by component.
Scalar multiple	Multiply each component.
Position vectors	$AB=OB-OA$.
Midpoint	$((x_1+x_2)/2, (y_1+y_2)/2)$.
Distance	$\sqrt{((\Delta x)^2+(\Delta y)^2)}$.
Collinearity	One direction vector is a scalar multiple of another.

Marking reminder: a correct setup can earn method marks even when a later arithmetic error occurs.

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

CORE SKILLS • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	180−37=143°.	**2**	M1 method; A1 answer.
2	180−58=122°.	**2**	M1 method; A1 answer.
3	180−96=84°.	**2**	M1 method; A1 answer.
4	180−124=56°.	**2**	M1 method; A1 answer.
5	180−143=37°.	**2**	M1 method; A1 answer.
6	Remaining=360−80−110=170; each=85°.	**3**	M1 setup; M1 process; A1 conclusion.
7	Remaining=360−95−125=140; each=70°.	**3**	M1 setup; M1 process; A1 conclusion.
8	Remaining=360−140−75=145; each=72.5°.	**3**	M1 setup; M1 process; A1 conclusion.

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

CORE SKILLS • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	Remaining=360−160−88=112; each=56°.	**3**	M1 setup; M1 process; A1 conclusion.
10	Remaining=360−105−135=120; each=60°.	**3**	M1 setup; M1 process; A1 conclusion.
11	180−45−65=70°.	**2**	M1 method; A1 answer.
12	180−38−72=70°.	**2**	M1 method; A1 answer.
13	180−50−80=50°.	**2**	M1 method; A1 answer.
14	180−27−93=60°.	**2**	M1 method; A1 answer.
15	180−61−44=75°.	**2**	M1 method; A1 answer.

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

EXAM PRACTICE • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	$(n-2)\times180=(5-2)\times180=540°$.	**2**	M1 method; A1 answer.
2	$(n-2)\times180=(6-2)\times180=720°$.	**2**	M1 method; A1 answer.
3	$(n-2)\times180=(8-2)\times180=1080°$.	**2**	M1 method; A1 answer.
4	$(n-2)\times180=(9-2)\times180=1260°$.	**2**	M1 method; A1 answer.
5	$(n-2)\times180=(10-2)\times180=1440°$.	**2**	M1 method; A1 answer.
6	$360\div3=120°$.	**2**	M1 method; A1 answer.
7	$360\div4=90°$.	**2**	M1 method; A1 answer.
8	$360\div5=72°$.	**2**	M1 method; A1 answer.

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

EXAM PRACTICE • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	360÷8=45°.	**2**	M1 method; A1 answer.
10	360÷10=36°.	**2**	M1 method; A1 answer.
11	Corresponding angles are equal: 68°.	**2**	M1 method; A1 answer.
12	Alternate angles are equal: 117°.	**2**	M1 method; A1 answer.
13	(180−42)÷2=69°.	**3**	M1 setup; M1 process; A1 conclusion.
14	360−286=74°.	**2**	M1 method; A1 answer.
15	Rhombus.	**1**	B1: correct result or statement.

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

GRADE 4-5 CHALLENGE - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	360÷24=15.	**3**	M1 setup; M1 process; A1 conclusion.
2	Exterior=30°; sides=360÷30=12.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
3	6x=180;x=30; angles 30°,60°,90°.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
4	10x=360;x=36; largest=144°.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
5	The base angles are equal and total 180°−36°=144°; each is 144°÷2=72°.	**3**	M1 setup; M1 process; A1 conclusion.
6	Sum=540; fifth=540−440=100°.	**3**	M1 setup; M1 process; A1 conclusion.
7	Exterior=18°; interior=162°.	**3**	M1 setup; M1 process; A1 conclusion.
8	2.	**1**	B1: correct result or statement.
9	Two pairs adjacent equal sides; one pair opposite equal angles; perpendicular diagonals (any two).	**2**	M1 method; A1 answer.
10	Two obtuse angles already sum to more than 180°.	**2**	M1 method; A1 answer.

MODULE 21 / G1, G3, G4

Angles, Polygons and Shape Properties

MIXED RETRIEVAL - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	73°.	**1**	B1: correct result or statement.
2	67°.	**1**	B1: correct result or statement.
3	720°.	**2**	M1 method; A1 answer.
4	45°.	**1**	B1: correct result or statement.
5	50°,50°.	**2**	M1 method; A1 answer.

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

CORE SKILLS • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	Every point on it is equidistant from the segment endpoints.	**3**	M1 setup; M1 process; A1 conclusion.
2	Draw equal-radius arcs forming an equilateral triangle; join vertex.	**3**	M1 setup; M1 process; A1 conclusion.
3	Equal-radius arc from vertex, intersecting arcs from those points, join to vertex.	**3**	M1 setup; M1 process; A1 conclusion.
4	Arc from P cuts l twice; intersect equal arcs from cuts; join to P.	**3**	M1 setup; M1 process; A1 conclusion.
5	The perpendicular distance.	**1**	B1: correct result or statement.
6	035°.	**1**	B1: correct result or statement.
7	072°.	**1**	B1: correct result or statement.
8	125°.	**1**	B1: correct result or statement.

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

CORE SKILLS • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	218°.	**1**	B1: correct result or statement.
10	305°.	**1**	B1: correct result or statement.
11	220°.	**2**	M1 method; A1 answer.
12	275°.	**2**	M1 method; A1 answer.
13	320°.	**2**	M1 method; A1 answer.
14	050°.	**2**	M1 method; A1 answer.
15	130°.	**2**	M1 method; A1 answer.

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

EXAM PRACTICE • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	4.2×5=21 m.	**2**	M1 method; A1 answer.
2	6.5×8=52 m.	**2**	M1 method; A1 answer.
3	3.8×12=45.6 m.	**2**	M1 method; A1 answer.
4	7.2×4=28.8 m.	**2**	M1 method; A1 answer.
5	5.5×10=55 m.	**2**	M1 method; A1 answer.
6	Circle centre A radius 3 cm.	**2**	M1 method; A1 answer.
7	Perpendicular bisector of AB.	**2**	M1 method; A1 answer.
8	Two parallel lines, 2 cm either side.	**2**	M1 method; A1 answer.

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

EXAM PRACTICE • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	The internal angle bisector of angle BAC.	**2**	M1 method; A1 answer.
10	They show the valid ruler-and-compass method.	**1**	B1: correct result or statement.
11	Right triangle: $\sqrt{(6^2+8^2)}=10$ km.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
12	Bearing east=090°; angle=90−40=50°.	**3**	M1 setup; M1 process; A1 conclusion.
13	7.4×50000=370000 cm=3.7 km.	**3**	M1 setup; M1 process; A1 conclusion.
14	2.4 km=240000 cm; ÷20000=12 cm.	**3**	M1 setup; M1 process; A1 conclusion.
15	145−60=85°.	**2**	M1 method; A1 answer.

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

GRADE 4-5 CHALLENGE - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	Circle centre A radius 4; perpendicular bisector of BC.	**3**	M1 setup; M1 process; A1 conclusion.
2	Draw 7 cm base; arcs radii 5 and 6 from endpoints; join intersection.	**3**	M1 setup; M1 process; A1 conclusion.
3	Approximately west, slightly north of west.	**2**	M1 method; A1 answer.
4	This is the standard bearing convention.	**1**	B1: correct result or statement.
5	It doubles.	**1**	B1: correct result or statement.
6	Measure clockwise from north and write three digits.	**2**	M1 method; A1 answer.
7	Add/subtract 180°, keeping result between 000° and 359°.	**2**	M1 method; A1 answer.
8	actual = drawing × scale factor, after matching units.	**2**	M1 method; A1 answer.
9	Equal-radius arcs from both endpoints.	**2**	M1 method; A1 answer.
10	Intersect equal arcs inside the angle.	**2**	M1 method; A1 answer.

MODULE 22 / G2, G15

Constructions, Loci, Scale Drawings and Bearings

MIXED RETRIEVAL - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	205°.	**1**	B1: correct result or statement.
2	010°.	**1**	B1: correct result or statement.
3	48 m.	**1**	B1: correct result or statement.
4	Perpendicular bisector.	**1**	B1: correct result or statement.
5	008°.	**1**	B1: correct result or statement.

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

CORE SKILLS • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	(4,6).	**2**	M1 method; A1 answer.
2	(2,2).	**2**	M1 method; A1 answer.
3	(-3,7).	**2**	M1 method; A1 answer.
4	(5,-1).	**2**	M1 method; A1 answer.
5	(-1,3).	**2**	M1 method; A1 answer.
6	(-2,3).	**2**	M1 method; A1 answer.
7	(4,1).	**2**	M1 method; A1 answer.
8	(-5,-2).	**2**	M1 method; A1 answer.

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

CORE SKILLS • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	(3,-5).	**2**	M1 method; A1 answer.
10	(0,4).	**2**	M1 method; A1 answer.
11	(-3,2).	**2**	M1 method; A1 answer.
12	(-1,-4).	**2**	M1 method; A1 answer.
13	(2,5).	**2**	M1 method; A1 answer.
14	(5,-3).	**2**	M1 method; A1 answer.
15	(-4,0).	**2**	M1 method; A1 answer.

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

EXAM PRACTICE • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	(4,6).	**2**	M1 method; A1 answer.
2	(-2,0.5).	**2**	M1 method; A1 answer.
3	(15,-6).	**2**	M1 method; A1 answer.
4	(-6,-10).	**2**	M1 method; A1 answer.
5	(0,2).	**2**	M1 method; A1 answer.
6	Translation by vector (4,−3).	**2**	M1 method; A1 answer.
7	Lengths, angles, area and orientation.	**2**	M1 method; A1 answer.
8	Orientation reverses; size and angles stay.	**2**	M1 method; A1 answer.

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

EXAM PRACTICE • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	Yes, scale factor 2.	**2**	M1 method; A1 answer.
10	SSS, SAS, ASA, RHS.	**2**	M1 method; A1 answer.
11	Area factor=3^2=9; 108 cm^2.	**3**	M1 setup; M1 process; A1 conclusion.
12	Volume factor=2^3=8; 280 cm^3.	**3**	M1 setup; M1 process; A1 conclusion.
13	√(81/25)=9/5.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
14	All corresponding ratios are 2.	**3**	M1 setup; M1 process; A1 conclusion.
15	Yes. Two corresponding sides and the included angle are equal, so the triangles are congruent by SAS.	**2**	M1 method; A1 answer.

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

GRADE 4-5 CHALLENGE - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	It is 2 right of line, image 2 left: (−1,−2).	**3**	M1 setup; M1 process; A1 conclusion.
2	Relative (3,0)→(−3,0); image (−2,1).	**3**	M1 setup; M1 process; A1 conclusion.
3	Vector from centre (4,2) doubles (8,4); image (9,5).	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
4	Enlargement.	**1**	B1: correct result or statement.
5	It can produce two different triangles.	**2**	M1 method; A1 answer.
6	Add vector components to coordinates.	**2**	M1 method; A1 answer.
7	Use mirror line; image stays same perpendicular distance.	**2**	M1 method; A1 answer.
8	State centre, angle and direction.	**2**	M1 method; A1 answer.
9	State centre and scale factor; multiply centre-to-point vectors.	**2**	M1 method; A1 answer.
10	Corresponding lengths share a scale factor; areas use k^2; volumes k^3.	**2**	M1 method; A1 answer.

MODULE 23 / G5, G6, G7, G19, G24

Congruence, Similarity and Transformations

MIXED RETRIEVAL - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	(−1,6).	**1**	B1: correct result or statement.
2	(4,3).	**1**	B1: correct result or statement.
3	(−2,1).	**1**	B1: correct result or statement.
4	16.	**1**	B1: correct result or statement.
5	RHS.	**1**	B1: correct result or statement.

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

CORE SKILLS • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	P=2(8+5)=26 cm; A=8×5=40 cm².	**2**	M1 method; A1 answer.
2	P=2(12+7)=38 cm; A=12×7=84 cm².	**2**	M1 method; A1 answer.
3	P=2(9+4)=26 cm; A=9×4=36 cm².	**2**	M1 method; A1 answer.
4	P=2(15+6)=42 cm; A=15×6=90 cm².	**2**	M1 method; A1 answer.
5	P=2(11+3)=28 cm; A=11×3=33 cm².	**2**	M1 method; A1 answer.
6	A=½bh=½×8×5=20 cm².	**2**	M1 method; A1 answer.
7	A=½bh=½×12×7=42 cm².	**2**	M1 method; A1 answer.
8	A=½bh=½×9×4=18 cm².	**2**	M1 method; A1 answer.

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

CORE SKILLS • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	$A=\frac{1}{2}bh=\frac{1}{2}\times15\times6=45$ cm².	**2**	M1 method; A1 answer.
10	$A=\frac{1}{2}bh=\frac{1}{2}\times11\times3=16.5$ cm².	**2**	M1 method; A1 answer.
11	$A=\frac{1}{2}(5+9)\times4=28$ cm².	**3**	M1 setup; M1 process; A1 conclusion.
12	$A=\frac{1}{2}(7+13)\times6=60$ cm².	**3**	M1 setup; M1 process; A1 conclusion.
13	$A=\frac{1}{2}(8+12)\times5=50$ cm².	**3**	M1 setup; M1 process; A1 conclusion.
14	$A=\frac{1}{2}(4+10)\times7=49$ cm².	**3**	M1 setup; M1 process; A1 conclusion.
15	$A=\frac{1}{2}(9+15)\times3=36$ cm².	**3**	M1 setup; M1 process; A1 conclusion.

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

EXAM PRACTICE • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	$C=2\pi r=4\pi$ cm; $A=\pi r^2=4\pi$ cm².	**2**	M1 method; A1 answer.
2	$C=2\pi r=6\pi$ cm; $A=\pi r^2=9\pi$ cm².	**2**	M1 method; A1 answer.
3	$C=2\pi r=8\pi$ cm; $A=\pi r^2=16\pi$ cm².	**2**	M1 method; A1 answer.
4	$C=2\pi r=10\pi$ cm; $A=\pi r^2=25\pi$ cm².	**2**	M1 method; A1 answer.
5	$C=2\pi r=14\pi$ cm; $A=\pi r^2=49\pi$ cm².	**2**	M1 method; A1 answer.
6	$\text{Arc}=60/360\times 2\pi\times 6=2\pi$ cm.	**3**	M1 setup; M1 process; A1 conclusion.
7	$\text{Arc}=90/360\times 2\pi\times 8=4\pi$ cm.	**3**	M1 setup; M1 process; A1 conclusion.
8	$\text{Arc}=72/360\times 2\pi\times 10=4\pi$ cm.	**3**	M1 setup; M1 process; A1 conclusion.

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

EXAM PRACTICE • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	Arc=120/360×2π×9=6π cm.	**3**	M1 setup; M1 process; A1 conclusion.
10	Arc=45/360×2π×12=3π cm.	**3**	M1 setup; M1 process; A1 conclusion.
11	½π×6²=18π cm².	**2**	M1 method; A1 answer.
12	80−6=74 cm².	**2**	M1 method; A1 answer.
13	C=πd=14π cm.	**2**	M1 method; A1 answer.
14	80/360×π×81=18π cm².	**3**	M1 setup; M1 process; A1 conclusion.
15	Side=9; perimeter=36 cm.	**2**	M1 method; A1 answer.

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

GRADE 4-5 CHALLENGE - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	Two straights=100; semicircles make circle circumference=20π; total 100+20π m.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
2	100−25π square units.	**3**	M1 setup; M1 process; A1 conclusion.
3	$r^2=64$;r=8; C=16π.	**3**	M1 setup; M1 process; A1 conclusion.
4	84=½×28×h=14h; h=6.	**3**	M1 setup; M1 process; A1 conclusion.
5	54=6h; h=9.	**3**	M1 setup; M1 process; A1 conclusion.
6	150/360×144π=60π.	**3**	M1 setup; M1 process; A1 conclusion.
7	θ/360×20π=5π; θ=90°.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
8	54+12=66.	**3**	M1 setup; M1 process; A1 conclusion.
9	2πr=18π;r=9; area=81π.	**3**	M1 setup; M1 process; A1 conclusion.
10	Area uses squared length units; volume uses cubed units.	**2**	M1 method; A1 answer.

MODULE 24 / G9, G14, G16, G17, G18

Perimeter, Area and Circles

MIXED RETRIEVAL - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	35.	**1**	B1: correct result or statement.
2	8π.	**1**	B1: correct result or statement.
3	9π.	**1**	B1: correct result or statement.
4	40.	**2**	M1 method; A1 answer.
5	32.	**1**	B1: correct result or statement.

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

CORE SKILLS • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	$V=lwh=60\ cm^3$.	**2**	M1 method; A1 answer.
2	$V=lwh=96\ cm^3$.	**2**	M1 method; A1 answer.
3	$V=lwh=105\ cm^3$.	**2**	M1 method; A1 answer.
4	$V=lwh=80\ cm^3$.	**2**	M1 method; A1 answer.
5	$V=lwh=144\ cm^3$.	**2**	M1 method; A1 answer.
6	$V=\text{area}\times\text{length}=96\ cm^3$.	**2**	M1 method; A1 answer.
7	$V=\text{area}\times\text{length}=90\ cm^3$.	**2**	M1 method; A1 answer.
8	$V=\text{area}\times\text{length}=110\ cm^3$.	**2**	M1 method; A1 answer.

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

CORE SKILLS • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	$V=\text{area}\times\text{length}=120\ \text{cm}^3$.	**2**	M1 method; A1 answer.
10	$V=\text{area}\times\text{length}=162\ \text{cm}^3$.	**2**	M1 method; A1 answer.
11	$V=\pi r^2h=20\pi\ \text{cm}^3$.	**2**	M1 method; A1 answer.
12	$V=\pi r^2h=72\pi\ \text{cm}^3$.	**2**	M1 method; A1 answer.
13	$V=\pi r^2h=96\pi\ \text{cm}^3$.	**2**	M1 method; A1 answer.
14	$V=\pi r^2h=250\pi\ \text{cm}^3$.	**2**	M1 method; A1 answer.
15	$V=\pi r^2h=252\pi\ \text{cm}^3$.	**2**	M1 method; A1 answer.

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

EXAM PRACTICE • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	6 faces,12 edges,8 vertices.	**2**	M1 method; A1 answer.
2	A rectangle showing width and height.	**1**	B1: correct result or statement.
3	Cylinder.	**1**	B1: correct result or statement.
4	2500 cm^3.	**1**	B1: correct result or statement.
5	m^3.	**1**	B1: correct result or statement.
6	SA=2(lw+lh+wh)=2(12+20+15)=94 cm^2.	**3**	M1 setup; M1 process; A1 conclusion.
7	SA=2(lw+lh+wh)=2(16+48+12)=152 cm^2.	**3**	M1 setup; M1 process; A1 conclusion.
8	SA=2(lw+lh+wh)=2(35+21+15)=142 cm^2.	**3**	M1 setup; M1 process; A1 conclusion.

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

EXAM PRACTICE • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	SA=2(lw+lh+wh)=2(40+20+8)=136 cm².	**3**	M1 setup; M1 process; A1 conclusion.
10	SA=2(lw+lh+wh)=2(36+24+24)=168 cm².	**3**	M1 setup; M1 process; A1 conclusion.
11	Cross area=12; volume=120 cm³.	**3**	M1 setup; M1 process; A1 conclusion.
12	25πh=200π;h=8.	**3**	M1 setup; M1 process; A1 conclusion.
13	h=360/60=6.	**2**	M1 method; A1 answer.
14	160000 cm³=160 L.	**3**	M1 setup; M1 process; A1 conclusion.
15	4×3×2=24.	**2**	M1 method; A1 answer.

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

GRADE 4-5 CHALLENGE - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	204 cm³.	**2**	M1 method; A1 answer.
2	144π≈452.4 cm³.	**3**	M1 setup; M1 process; A1 conclusion.
3	540÷12=45 cm².	**2**	M1 method; A1 answer.
4	Edge=7; SA=6×49=294.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
5	Depth=1800/300=6 cm.	**3**	M1 setup; M1 process; A1 conclusion.
6	480−5×8=440 cm³.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
7	r=5; V=300π.	**3**	M1 setup; M1 process; A1 conclusion.
8	2D views from above, front and side showing maximum extents/steps.	**2**	M1 method; A1 answer.
9	It stacks identical cross-sections along length.	**2**	M1 method; A1 answer.
10	750 L.	**2**	M1 method; A1 answer.

MODULE 25 / G12, G13, G16, G17

3D Shapes, Plans, Volume and Surface Area

MIXED RETRIEVAL - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	60.	**1**	B1: correct result or statement.
2	63.	**1**	B1: correct result or statement.
3	12π.	**1**	B1: correct result or statement.
4	1000.	**1**	B1: correct result or statement.
5	96.	**2**	M1 method; A1 answer.

MODULE 26 / G20, G21

Pythagoras and Trigonometry

CORE SKILLS • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	$\sqrt{(3^2+4^2)}=5$.	**3**	M1 setup; M1 process; A1 conclusion.
2	$\sqrt{(5^2+12^2)}=13$.	**3**	M1 setup; M1 process; A1 conclusion.
3	$\sqrt{(8^2+15^2)}=17$.	**3**	M1 setup; M1 process; A1 conclusion.
4	$\sqrt{(7^2+24^2)}=25$.	**3**	M1 setup; M1 process; A1 conclusion.
5	$\sqrt{(9^2+40^2)}=41$.	**3**	M1 setup; M1 process; A1 conclusion.
6	$\sqrt{(5^2-3^2)}=4$.	**3**	M1 setup; M1 process; A1 conclusion.
7	$\sqrt{(13^2-5^2)}=12$.	**3**	M1 setup; M1 process; A1 conclusion.
8	$\sqrt{(17^2-8^2)}=15$.	**3**	M1 setup; M1 process; A1 conclusion.

MODULE 26 / G20, G21

Pythagoras and Trigonometry

CORE SKILLS • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	$\sqrt{(25^2-7^2)}=24$.	**3**	M1 setup; M1 process; A1 conclusion.
10	$\sqrt{(41^2-9^2)}=40$.	**3**	M1 setup; M1 process; A1 conclusion.
11	opposite/hypotenuse.	**1**	B1: correct result or statement.
12	adjacent/hypotenuse.	**1**	B1: correct result or statement.
13	opposite/adjacent.	**1**	B1: correct result or statement.
14	1/2.	**1**	B1: correct result or statement.
15	1/2.	**1**	B1: correct result or statement.

MODULE 26 / G20, G21

Pythagoras and Trigonometry

EXAM PRACTICE • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	opposite=10sin30°≈5.00.	**3**	M1 setup; M1 process; A1 conclusion.
2	opposite=12sin45°≈8.49.	**3**	M1 setup; M1 process; A1 conclusion.
3	opposite=15sin60°≈12.99.	**3**	M1 setup; M1 process; A1 conclusion.
4	opposite=20sin35°≈11.47.	**3**	M1 setup; M1 process; A1 conclusion.
5	opposite=18sin50°≈13.79.	**3**	M1 setup; M1 process; A1 conclusion.
6	hypotenuse=10/cos30°≈11.55.	**3**	M1 setup; M1 process; A1 conclusion.
7	hypotenuse=12/cos45°≈16.97.	**3**	M1 setup; M1 process; A1 conclusion.
8	hypotenuse=15/cos60°≈30.00.	**3**	M1 setup; M1 process; A1 conclusion.

MODULE 26 / G20, G21

Pythagoras and Trigonometry

EXAM PRACTICE • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	hypotenuse=20/cos35°≈24.42.	**3**	M1 setup; M1 process; A1 conclusion.
10	hypotenuse=18/cos50°≈28.00.	**3**	M1 setup; M1 process; A1 conclusion.
11	$\theta=\tan^{-1}(6/8)\approx36.9°$.	**3**	M1 setup; M1 process; A1 conclusion.
12	$\theta=\sin^{-1}(5/13)\approx22.6°$.	**3**	M1 setup; M1 process; A1 conclusion.
13	$\theta=\cos^{-1}(12/15)\approx36.9°$.	**3**	M1 setup; M1 process; A1 conclusion.
14	$6^2+8^2=100=10^2$, yes.	**3**	M1 setup; M1 process; A1 conclusion.
15	25+36=61≠64, no.	**3**	M1 setup; M1 process; A1 conclusion.

MODULE 26 / G20, G21

Pythagoras and Trigonometry

GRADE 4-5 CHALLENGE - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	$\sqrt{(25-16)}=3$ m.	**3**	M1 setup; M1 process; A1 conclusion.
2	$\sqrt{(169-25)}=12$.	**3**	M1 setup; M1 process; A1 conclusion.
3	$\sin\theta=1.2/5$; $\theta\approx13.9°$.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
4	$h=12\tan35°\approx8.40$ m.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
5	$\cos\theta=4/5$; $\theta\approx36.9°$.	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
6	$\sqrt{2}/2$.	**1**	B1: correct result or statement.
7	1.	**1**	B1: correct result or statement.
8	1.	**1**	B1: correct result or statement.
9	It is opposite right angle and fixes correct trig ratio.	**2**	M1 method; A1 answer.
10	Degrees.	**1**	B1: correct result or statement.

MODULE 26 / G20, G21

Pythagoras and Trigonometry

MIXED RETRIEVAL - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	8.	**2**	M1 method; A1 answer.
2	opposite/hypotenuse.	**1**	B1: correct result or statement.
3	1/2.	**1**	B1: correct result or statement.
4	1.	**1**	B1: correct result or statement.
5	Yes.	**1**	B1: correct result or statement.

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

CORE SKILLS • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	((1+5)/2,(2+6)/2)=(3,4).	**2**	M1 method; A1 answer.
2	((-3+3)/2,(4+8)/2)=(0,6).	**2**	M1 method; A1 answer.
3	((0+6)/2,(-2+4)/2)=(3,1).	**2**	M1 method; A1 answer.
4	((2+8)/2,(7+1)/2)=(5,4).	**2**	M1 method; A1 answer.
5	((-5+1)/2,(-3+5)/2)=(-2,1).	**2**	M1 method; A1 answer.
6	(4,3).	**2**	M1 method; A1 answer.
7	(6,-3).	**2**	M1 method; A1 answer.
8	(6,6).	**2**	M1 method; A1 answer.

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

CORE SKILLS • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	(6,-6).	**2**	M1 method; A1 answer.
10	(6,8).	**2**	M1 method; A1 answer.
11	(6,2).	**2**	M1 method; A1 answer.
12	(1,7).	**2**	M1 method; A1 answer.
13	(2,2).	**2**	M1 method; A1 answer.
14	(6,5).	**2**	M1 method; A1 answer.
15	(-1,2).	**2**	M1 method; A1 answer.

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

EXAM PRACTICE • PART A - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	(8,12).	**2**	M1 method; A1 answer.
2	(-6,15).	**2**	M1 method; A1 answer.
3	(-12,2).	**2**	M1 method; A1 answer.
4	(0.5,3.5).	**2**	M1 method; A1 answer.
5	(-6,-8).	**2**	M1 method; A1 answer.
6	a+b.	**1**	B1: correct result or statement.
7	−a.	**1**	B1: correct result or statement.
8	(6,−2).	**2**	M1 method; A1 answer.

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

EXAM PRACTICE • PART B - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
9	√(36+64)=10.	**3**	M1 setup; M1 process; A1 conclusion.
10	8/4=2.	**2**	M1 method; A1 answer.
11	(4,5).	**2**	M1 method; A1 answer.
12	(7,−2).	**2**	M1 method; A1 answer.
13	b−a.	**2**	M1 method; A1 answer.
14	a+b+c.	**2**	M1 method; A1 answer.
15	(a+b)/2.	**3**	M1 setup; M1 process; A1 conclusion.

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

GRADE 4-5 CHALLENGE - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	Vectors (3,4) and (6,8)=2(3,4), so parallel same origin.	**3**	M1 setup; M1 process; A1 conclusion.
2	(4,−2)−(−3,4)=(7,−6).	**3**	M1 setup; M1 process; A1 conclusion.
3	Difference (6,−6); length=√72=6√2≈8.49.	**3**	M1 setup; M1 process; A1 conclusion.
4	D=A+C−B=(2,5).	**4**	M1 setup; M1 development; A1 accuracy; A1 conclusion.
5	Same magnitude and direction, regardless of position.	**2**	M1 method; A1 answer.
6	$B-A=(x_2-x_1, y_2-y_1)$.	**2**	M1 method; A1 answer.
7	Operate component by component.	**2**	M1 method; A1 answer.
8	Multiply each component.	**2**	M1 method; A1 answer.
9	AB=OB−OA.	**2**	M1 method; A1 answer.
10	$((x_1+x_2)/2, (y_1+y_2)/2)$.	**2**	M1 method; A1 answer.

MODULE 27 / G11, G24, G25

Coordinate Geometry and Vectors

MIXED RETRIEVAL - ANSWERS

FOUNDATION TIER • SHOW CLEAR WORKING • WRITE UNITS WHERE REQUIRED

Name: _____ Date: _____ Score: _____ / _____

Use the formula/method guides in the consolidated solutions section. Award method marks where the setup is correct.

Q	Answer / concise method	Marks	Check
1	(2,3).	**1**	B1: correct result or statement.
2	(4,5).	**1**	B1: correct result or statement.
3	(1,7).	**1**	B1: correct result or statement.
4	(6,−3).	**1**	B1: correct result or statement.
5	−a.	**1**	B1: correct result or statement.