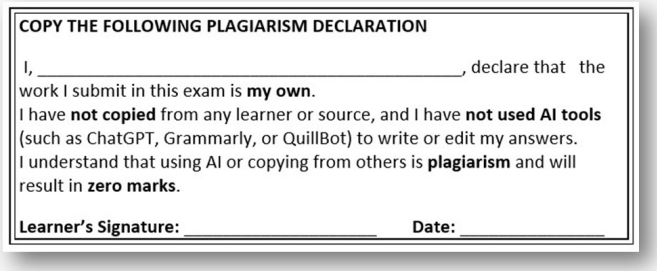
Grade 9 Mathematics: Term 3 Task 1

Date assigned : 12 August 2026

Due Date : 19 August 2026


COPY THE FOLLOWING PLAGIARISM DECLARATION

I, _____, declare that the work I submit in this exam is **my own**.
I have **not copied** from any learner or source, and I have **not used AI tools** (such as ChatGPT, Grammarly, or QuillBot) to write or edit my answers.
I understand that using AI or copying from others is **plagiarism** and will result in **zero marks**.

Learner's Signature: _____ **Date:** _____

Instructions:

- Answer all questions on your own paper.
- Neatness counts.
- Written work must be submitted using link.
- Diagrams are NOT drawn to scale unless stated otherwise.
- For questions involving π, use π = 22/7 unless otherwise instructed.
- Show all WORKING, marks are awared for method.
- Total marks: 50.

QUESTION 1: PROPORTIONAL REASONING & SCALE DRAWINGS

(10 Marks)

1.1 Solve for x:

$(x + 3) / 4 = 15 / 6$ **(2)**

1.2 A photograph has a width of 8 cm and a height of 12 cm. It is enlarged by a scale factor of 2.5 to create a poster.

1.2.1 Calculate the width of the poster. **(1)**

1.2.2 Calculate the height of the poster. **(1)**

1.2.3 Determine the ratio of the area of the poster to the area of the original photograph. **(1)**

1.3 A model aeroplane is built to a scale of 1:72. The actual aeroplane is 36 m long and has a wingspan of 28.8 m.

1.3.1 Calculate the length of the model in centimetres. **(2)**

1.3.2 Calculate the wingspan of the model in centimetres. **(1)**

1.4 A floor plan uses a scale of 1:50. A rectangular room on the plan measures 8 cm by 6 cm. Calculate the actual area of the room in square metres. **(2)**

QUESTION 2: ANGLE RELATIONSHIPS, PARALLEL LINES, AND TRIANGLES

(10 Marks)

Refer to Diagram D1 for Question 2.1 and Diagram D2 for Question 2.4.

2.1 In the diagram, AB || CD and EF is a transversal. $\angle AGE = 55°$.

2.1.1 Name the angle that is corresponding to $\angle AGE$. **(1)**

2.1.2 Calculate the size of $\angle CHF$. Give a reason for your answer. **(2)**

2.2 In ΔPQR, $\angle P = 40°$ and $\angle Q = 65°$.

2.2.1 Calculate the size of $\angle R$. **(1)**

2.2.2 Calculate the size of the exterior angle at vertex R. **(1)**

2.3 Prove that if two lines are cut by a transversal and the alternate interior angles are equal, then the two lines are parallel. **(2)**

2.4 In the diagram, PQ || RS. T is a point between the parallel lines such that PT and RT are drawn. $\angle QPT = 38°$ and $\angle SRT = 42°$. Calculate the size of $\angle PTR$. **(3)**

QUESTION 3: PYTHAGOREAN THEOREM & IRRATIONAL NUMBERS

(10 Marks)

3.1 Calculate the length of the hypotenuse of a right-angled triangle with legs of 9 cm and 12 cm. **(2)**

3.2 An isosceles triangle has equal sides of 10 cm and a base of 12 cm. Calculate the perpendicular height of the triangle. **(2)**

3.3 Show, without using a calculator, that √45 is an irrational number. Simplify √45 fully. **(2)**

3.4 A rectangular soccer field measures 80 m by 60 m. Calculate the length of the diagonal of the field. **(1)**

3.5 A ship sails 15 km due East and then 8 km due South from its starting point.

3.5.1 How far is the ship from its starting point? **(2)**

3.5.2 If the ship had sailed directly from its starting point to its final position, on what bearing would it have travelled? Give your answer to the nearest degree. **(1)**

QUESTION 4: ANALYTIC GEOMETRY

(10 Marks)

Refer to Diagram D3 for Question 4.1.

4.1 Points A(-2, 3) and B(4, -1) are plotted on the Cartesian plane.

4.1.1 Calculate the gradient of line segment AB. **(2)**

4.1.2 Calculate the length of line segment AB. Leave your answer in simplest surd form. **(2)**

4.2 Determine the equation of the straight line that passes through the point (0, -3) and has a gradient of 2. **(2)**

4.3 Determine whether the lines $y = 3x + 1$ and $y = 3x - 4$ are parallel, perpendicular, or neither. Justify your answer. **(1)**

4.4 Given A(1, 2), B(4, 2), and C(5, 5), find the coordinates of point D such that ABCD is a parallelogram. **(2)**

4.5 Find the equation of the line that is perpendicular to $2x - 3y = 6$ and passes through the point (6, -1). Give your answer in the form $y = mx + c$. **(3)**

QUESTION 5: CIRCLES AND SOLID GEOMETRY

(10 Marks)

5.1 Calculate the area of a circle with radius 10 cm. Leave your answer in terms of π. **(2)**

5.2 A circular garden has a circumference of 44 m. Use π = 22/7.

5.2.1 Calculate the radius of the garden. **(1)**

5.2.2 Calculate the area of the garden. **(1)**

5.3 Calculate the volume of a cone with radius 3 cm and perpendicular height 4 cm. Use π = 3.14 and round your answer to one decimal place. **(2)**

5.4 A sphere has a volume of 36π cm³. Calculate the radius of the sphere. **(1)**

5.5 A cylindrical water tank has a radius of 0.5 m and a height of 1.2 m. The tank is filled to 75% of its capacity. The water is then poured into rectangular containers measuring 20 cm × 15 cm × 25 cm. How many containers can be completely filled? Use π = 3.14. **(3)**

[END OF TEST PAPER]

DIAGRAMS

Diagram D1 — For Question 2.1

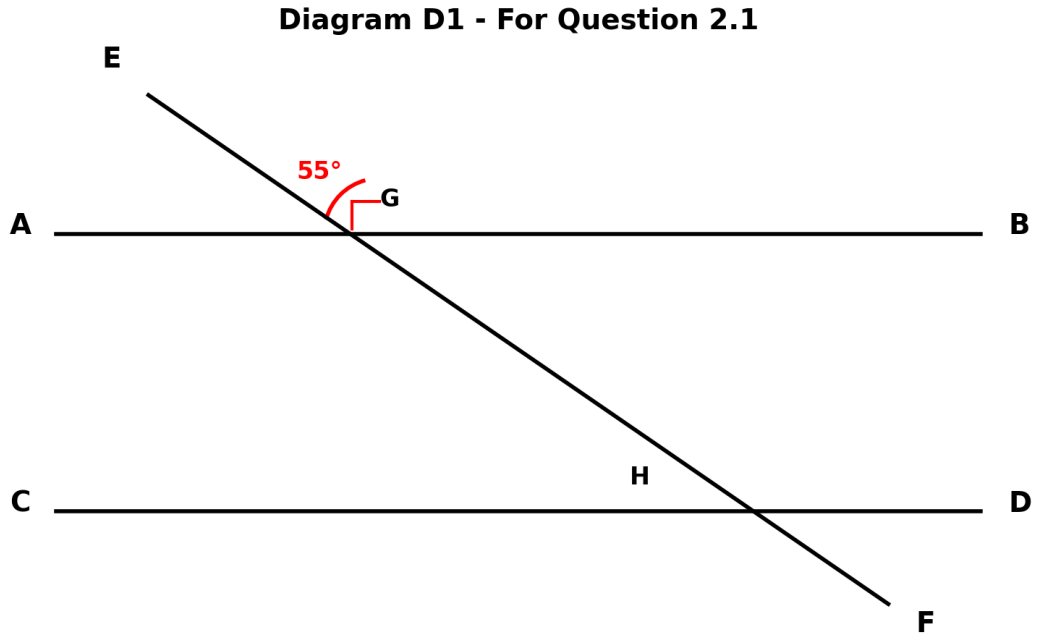


Diagram D2 — For Question 2.4

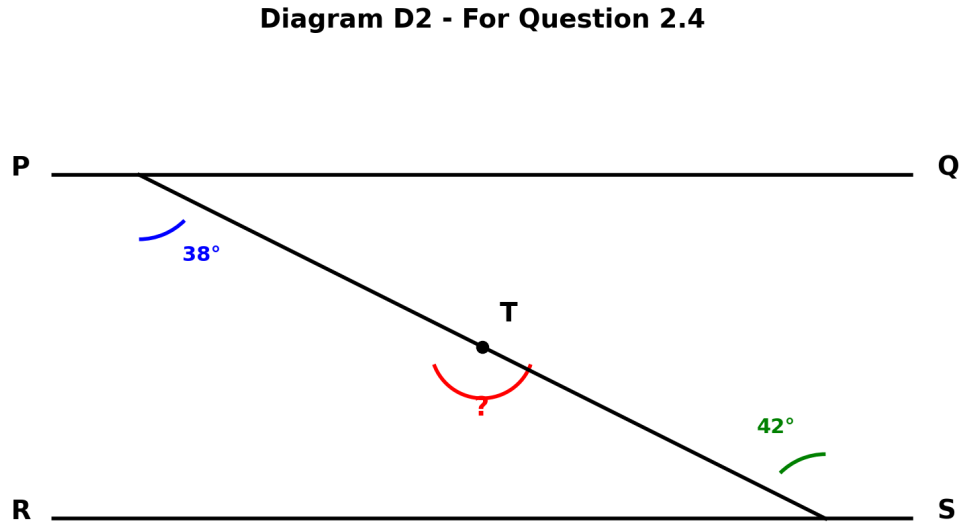


Diagram D3 — For Question 4.1