Measurement & Geometry

Question 1 **(4 marks)**

A circular herb garden has a diameter of 8 m. Use $\pi \approx 3.14$.

(a) Calculate the circumference of the garden, in metres. (2 marks)

(b) Calculate the area of the garden, in square metres. (2 marks)

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Question 2 **(6 marks)**

(a) A tent has a triangular cross-section with a base of 6 cm and a height of 4 cm. The tent (prism) is 10 cm long. Calculate the volume of the triangular prism. (2 marks)

(b) The following parts are not related to the tent above. Two parallel lines are crossed by a transversal. One of the angles formed measures 115°, and x is the co-interior angle on the same side of the transversal. Find the size of x, giving a geometric reason. (2 marks)

(c) Triangle ABC is congruent to triangle DEF, with vertices matching in the order A ↔ D, B ↔ E, C ↔ F. Given that ∠A = 50° and ∠B = 70°, find the size of ∠F, giving a reason. (2 marks)

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Number & Algebra

Question 3 **(4 marks)**

Simplify the following expressions, writing your answers using positive indices.

(a) $a^4 \times a^3$ (1 mark)

(b) $m^8 \div m^5$ (1 mark)

(c) Expand and simplify $3(x + 4) - 2x$. (2 marks)

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Question 4 **(6 marks)**

(a) Solve each equation for the unknown. Solve for x: $2x + 5 = 17$. (2 marks)

(b) Solve for y: $y \div 3 - 2 = 4$. (2 marks)

(c) The following part is not related to the equations above. A fruit punch recipe mixes juice and lemonade in the ratio 3 : 5. If 15 L of lemonade is used, how much juice is needed? (2 marks)

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Statistics & Probability

Question 5 **(5 marks)**

Forty Year 8 students were asked whether they prefer Maths or English, and which class they are in. Of the 20 students in Class A, 12 prefer Maths and 8 prefer English. Of the 20 students in Class B, 9 prefer Maths and 11 prefer English.

(a) How many of the 40 students prefer English in total? (1 mark)

(b) One student is chosen at random from all 40 students. Find the probability that the student is in Class B and prefers Maths. (2 marks)

(c) Find the probability that a randomly selected student does NOT prefer Maths. (2 marks)

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Question 6 **(5 marks)**

In a class of 25 students, 15 play a sport, 10 play a musical instrument, and 4 students do both.

(a) How many students play sport only (and not a musical instrument)? (1 mark)

(b) Draw a Venn diagram to represent this information, then use it to find the probability that a randomly chosen student plays neither a sport nor a musical instrument. (2 marks)

Two tutoring groups recorded their test scores out of 10: Group X: 6, 7, 7, 8, 9, 9, 10 Group Y: 4, 5, 7, 8, 9, 10, 10

(c) Calculate the range and median of each group's scores, and state which group had more consistent results. (2 marks)

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