Measurement and scale - Applications test

Name: _____ Date: _____

16 questions | 42 marks | 60 minutes

Apply measurement models to packaging, storage and purchasing.

A scientific calculator may be used.

1. A doorway measures 0.9 cm on a $1:100$ plan. Find real width. [2 marks]

2. A 2 m cube is a model for a 6 m cube. Find the length factor. [1 mark]

3. An area 7 m² is similarly enlarged with lengths tripled. Find new area. [2 marks]

4. A board is 2.40 m to the nearest 0.01 m. Give bounds. [2 marks]

5. Combine non-overlapping blocks 10 by 8 by 4 cm and 6 by 4 by 3 cm. Find volume. [2 marks]

6. A 12 by 8 by 5 cm box has a 4 by 2 cm hole through its entire 5 cm height. Find remaining volume. [3 marks]

7. A cylindrical tank has internal radius 1 m and water depth 2 m. Find water capacity to nearest litre. [3 marks]

8. A model container holds 0.5 L. A similar container doubles every length. Find capacity. [2 marks]

9. Compare relative errors for 20 cm with 0.2 cm error and 50 cm with 0.4 cm error, using readings as reference. Which is smaller? [3 marks]

10. A design uses 12 copies of exact length $\frac{1}{3}$ m. Compare exact total with using 0.33 m each. [3 marks]

11. A pyramid roof has square base edge 8 m and triangular slant height 5 m. Find the four roof faces' total area. [2 marks]

12. A closed cubic shell has outer edge 10 cm and 1 cm walls. Find material volume. [3 marks]

13. Cut 4 cm corner squares from 30 by 24 cm card. Find folded open-box volume. [3 marks]

14. A job needs 12.5 m^2 of tiles plus 8% waste. Boxes cover 2 m^2. Find minimum boxes. [3 marks]

15. Two similar cubes have surface areas 96 cm^2 and 216 cm^2. The smaller cube has volume 64 cm^3. Find the larger volume. [4 marks]

16. A tank model uses outside dimensions, assumes full capacity, and quotes nearest millilitre. Identify two justified improvements. [4 marks]