Year 9 · Measurement: Circles, Triangles and Speed

Name: _____ Date: _____

Kia ora! This sheet gives you practice with metric units, areas and perimeters (including circles), Pythagoras' theorem, and speed–distance–time. Show your working and check your units.

Warm-up

1. Convert 3.6 km into metres.

2. Convert 4500 mm into metres.

3. Find the area of a parallelogram with base 7 cm and perpendicular height 4 cm.

4. Find the circumference of a circle with diameter 10 cm. Use $\pi \approx 3.14$.

Practice

5. Find the area of a trapezium with parallel sides 6 m and 10 m and a perpendicular height of 4 m.

6. A right-angled triangle has two shorter sides of 6 cm and 8 cm. Find the length of the hypotenuse.

7. Aroha cycles the 12 km from Avondale to New Lynn and back in 40 minutes. What is her average speed in km/h?

8. A van travels along the motorway at a steady 90 km/h for 2.5 hours. How far does it travel?

9. A semicircular (half-circle) garden edge has a diameter of 14 cm on a plan. Find the perimeter of the half circle. Use $\pi \approx 3.14$.

10. A rectangular deck is measured as 3.2 m by 2.5 m. Calculate its area, giving the answer to the correct precision.

Challenge

11. The numbers (5, 12, 13) form a Pythagorean triple. Use them to write down another Pythagorean triple, and verify that your new triple satisfies Pythagoras' theorem.

12. A quarter-circle path curves around the corner of Heron Park with radius 6 m. Starting from the full-circle formula, work out the total perimeter of the quarter-circle region (the curved part plus the two straight radii). Use $\pi \approx 3.14$, and give your answer to 3 significant figures.