Questions 1 and 2: no calculator. Take $\pi \approx 3$ and round every length to one figure.

1 **Estimate** the area of each circle. Do not use a calculator.

(a) radius 4.9 cm (1)

(b) radius 9.8 cm (1)

(c) radius 2.1 cm (1)

(d) diameter 20.4 cm (1)

(4 marks)

2 **Estimate** the area of each shape. Do not use a calculator.

(a) a semicircle of radius 6.1 cm (1)

(b) a quarter circle of radius 8.2 cm (1)

(2 marks)

3 Now use a calculator. For each, write your estimate from question 1 beside the accurate answer.

(a) circle of radius 4.9 cm (1)

(b) circle of radius 9.8 cm (1)

(c) **What does it tell you if the estimate and the accurate answer are close?** (2)

(4 marks)

4 A pupil calculates the area of a circle of radius 7 cm and writes 44.0 cm^2.

(a) **Estimate the area to show that this must be wrong.** (2)

(b) **Suggest what the pupil did.** (2)

(4 marks)