Take $\pi = 3.14$, or use the π key. Give answers to one decimal place.

1 Four semicircular pieces of chocolate, each of radius 2 cm, are arranged in a row in a box. The base of the box is a rectangle 16 cm by 2 cm.

(a) Find the area occupied by the chocolate (3)

(b) Find the area of the base of the box (1)

(c) Find the percentage of the base *not* covered by chocolate (3)

(7 marks)

2 A square of side 10 cm has a disc of radius 4 cm removed from its centre.

(a) Find the area remaining (3)

(b) Find the percentage of the square that has been removed (2)

(5 marks)

3 A rectangle 20 cm by 12 cm has two identical circular holes cut in it. The area remaining is 182.5 cm^2.

(a) Find the total area of the two holes (1)

(b) Find the area of one hole (1)

(c) **Find the radius of one hole.** (3)

(5 marks)

4 A circular pond of radius 4 m is surrounded by a path 1 m wide.

(a) Write down the outer radius of the path (1)

(b) Find the area of the path (3)

(c) **A bag of gravel covers 5 m^2. Find how many bags are needed.** (2)

(6 marks)