

Name: _____

MATHEMATICAL METHODS UNIT 2 CALCULUS APPLICATIONS SAC

The task has two parts, the first part is to be completed without technology, the second part to be completed with technology.

Part Two Technology Active Time 40 minutes

The rectangle with width w and length l has a semicircle with diameter w attached at one end and a half-square triangle with altitude w attached at the other end to form a composite shape.

- a) Draw and label this composite shape.

Let the shape have a fixed perimeter of 100 cm and its area vary.

- b) Specify the area of the shape as a function of w and state the domain and range of this function.

c) Draw the graph of this function.

d) Find the maximum and minimum values for the area of the shape and the dimensions for which these occur.

Now let the shape have a fixed area of 600 cm^2 and its perimeter vary.

- e) Specify the perimeter of the shape as a function of w and state the domain and range of this function.

- f) Plot the graph of this function.

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- g) Find the maximum and minimum values for the perimeter of the shape and the dimensions for which these occur.

END OF PART TWO