

Name: [Roydon Ng](#)

Year 8 Assignment: Perimeter, Area and Circles

Total Marks: 40 (5 sections, 8 marks each)

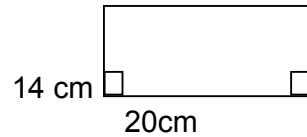
Instructions		
<ul style="list-style-type: none">• You must hand in your assignment on the day it is due at the beginning of your Maths lesson.• You must show all working out for every question.• Your work should be neat and tidy.• You may refer to you notes, textbook or any other sources in order to complete this assignment. However, the work presented must be your own work and you must sign the declaration below.		
Due Date: 22/9/08		
Penalties for assignments submitted after the due date		
1 day late	30% will be deducted from your mark	-
2 days late	50% will be deducted from your mark	A letter will be sent home on this day if your assignment is not handed in.
3 days late	You will be given a mark of 0	You will be given a 60 minute after-school detention during which you will complete the assignment.
I Roydon Ng declare that the work presented in this assignment is my own work done without assistance from any other person.		
Signature: <i>Roydon Ng</i>		
Parent or Guardian Signature:		

Section A
(8marks)

/4

1) Find the area of the shapes below.

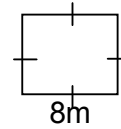
• A.



$$A = 14\text{cm} \times 20\text{cm}$$

$$A = 280\text{cm}^2$$

• B.



$$A = 8^2$$

$$A = 64\text{m}^2$$

/4

2) Select the correct formula for the area of each shape below.

$$A = \pi r^2$$

$$A = LB$$

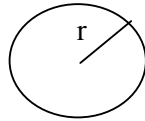
$$A = \frac{1}{2}bh$$

$$A = bh$$

$$A = s^2$$

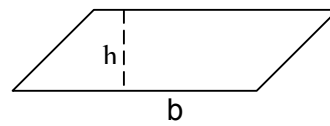
$$C = 2\pi r$$

a.



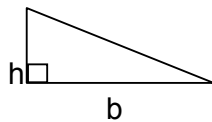
$$A = \pi r^2$$

b.



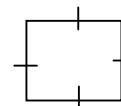
$$A = bh$$

c.



$$A = \frac{1}{2}bh$$

d.

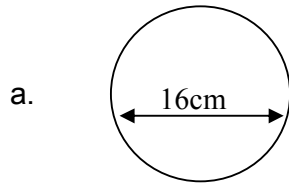


$$A = LB$$

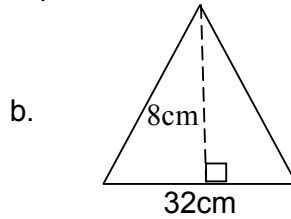
Section B
(8marks)

/6

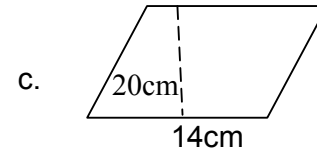
1) Find the area of each shape below.



$$A = \pi \times \frac{1}{2} \times 16^2 \\ = 200.96 \text{cm}^2$$



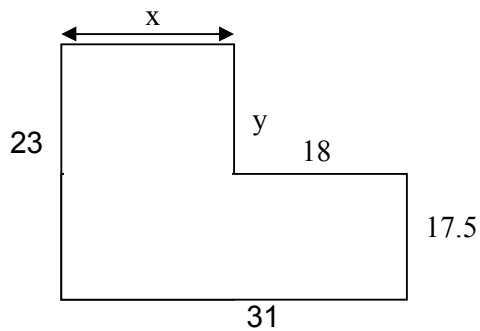
$$A = \frac{8 \times 32}{2} \\ = 128 \text{cm}^2$$



$$A = 20 \text{cm} \times 14 \text{cm} \\ = 280 \text{cm}^2$$

/2

2) Find the value of x and y in the shape below. (All dimensions are in metres)

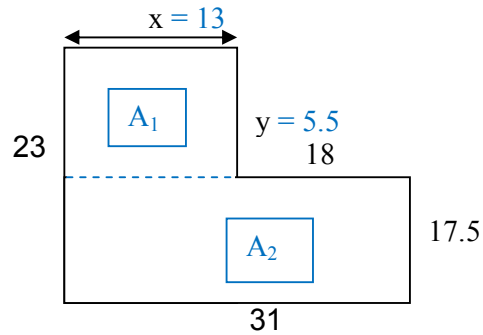


$$X = 31 \text{m} - 18 \text{m} \\ X = 13 \text{m} \\ Y = 23 \text{m} - 17.5 \text{m} \\ Y = 5.5 \text{m}$$

Section C
(8marks)

/2

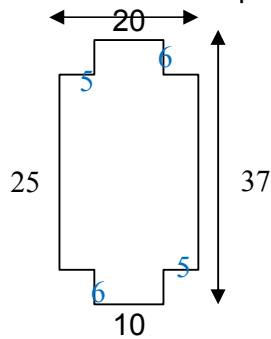
- 1) Find the area of the shape in Section B, Number 2. Show all working.



$$\begin{aligned}
 A &= A_1 + A_2 \\
 A_1 &= 13\text{m} \times 5.5\text{m} \\
 &= 71.5\text{ m}^2 \\
 A_2 &= 17.5\text{m} \times 31\text{m} \\
 &= 54.25\text{ m}^2 \\
 A &= A_1 + A_2 \\
 &= 71.5 + 54.25 \\
 &= 125.75\text{m}^2
 \end{aligned}$$

/3

- 2) Find the area of the shape below. (All dimensions are in centimetres)

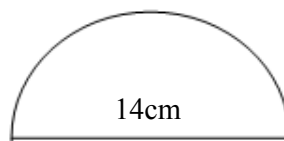


$$\begin{aligned}
 A &= (37 \times 20) - (5 \times 6) \\
 &= 710\text{cm}^2
 \end{aligned}$$

/3

- 3) The shape below is a semi-circle.

- a) Find the area of the semi-circle. $A = \frac{1}{2} \times (\pi \times 14^2)$
 $= 307.72\text{cm}^2$
- b) Find the perimeter of this shape. $P = \frac{1}{2} \times (2 \times \pi \times 7) + 14$
 $= 35.98\text{cm}$



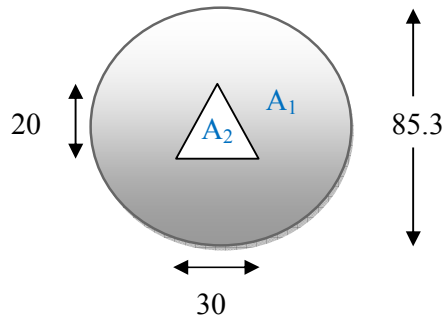
Section D
(8marks)

/4

- 1) Convert the following units.
- 24 ha = 240,000 m²
 - 89m² = 890,000 cm²
 - 546780 cm² = 54.678 m²
 - 400km² = 400,000,000 m²

/2

- 2) Find the shaded area of this shape:



$$\begin{aligned}
 A &= A_1 - A_2 \\
 A_1 &= \pi \times 42.65^2 \\
 &= 579.30652 \\
 A_2 &= \frac{20 \times 30}{2} \\
 &= 300 \\
 A &= 579.30652 - 300 \\
 &= 279.30652
 \end{aligned}$$

/2

- 3) The table below names some mathematicians in the past who have calculated the number π to several decimal places.

Van Culen	35 digits
Machin	100 digits
F. Genuys	10 000 digits
Yaumasa Kanada	1 241 100 000 000

- a) Research one of the people above. Find out where and when they lived. Name other areas of mathematics that they were interested in.

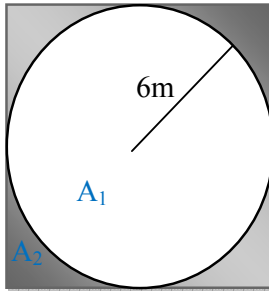


The mathematician I have chosen to research is Ludolph *Van Culen*. He is a German mathematician who lived in the 17th century. He calculated pi to thirty-five decimal places. Van Culen was also interested in the Method of exhaustion. Van Culen calculated pi to be 3.141 592 653 589 793 238 462 643 383 279 502 88 in 35 decimal places.

Section E
(8marks)

/3

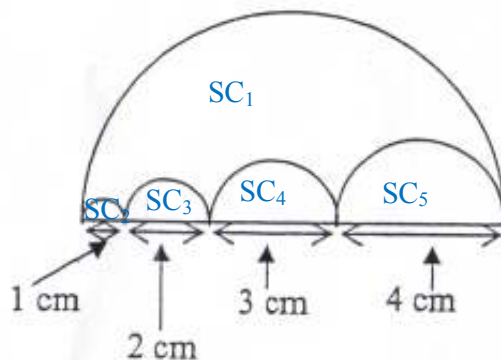
- 1) Find the shaded area of the shape below. The shape is a circle drawn inside a square.



$$\begin{aligned}
 A &= A_2 - A_1 \\
 A_1 &= 6 \times 6 \\
 &= 36\text{m}^2 \\
 A_2 &= 3.14 \times 6^2 \\
 &= 113.04\text{m}^2 \\
 113.04\text{m}^2 - 36\text{m}^2 \\
 &= 77.04\text{m}^2
 \end{aligned}$$

- 2) Answer any
- one
- of the following questions below. (Each question is worth 5 marks)

c) The figure on the right shows a large semi-circle with a series of four smaller semi-circles constructed in it. The sum of the four smaller diameters is equal to the Diameter of the largest semi-circle. Show that the perimeter of the large semi-circle is equal to the sum of the perimeters of the four smaller semi-circles.



$$\begin{aligned}
 P \text{ of } SC_1 &= \\
 &= \frac{2 \times \pi \times SC_2 + SC_3 + SC_4 + SC_5}{2} \\
 &= \frac{2 \times \pi \times 0.5 + 2 + 1.5 + 2}{2} \\
 &= 31.41\text{cm}
 \end{aligned}$$