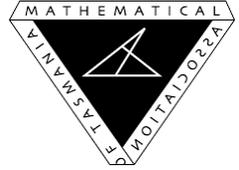


**M.A.T. RELAY COMPETITION  
SENIOR SECONDARY [Year 11 - 12] SAMPLE**



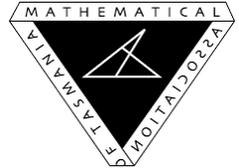
1.

The word *prime* in my dictionary is on a page which is a prime number. The product of the two pages at that opening is 812. On what page is *prime* defined?

ANSWER

5  
MARKS

**M.A.T. RELAY COMPETITION  
SENIOR SECONDARY [Year 11 - 12] SAMPLE**

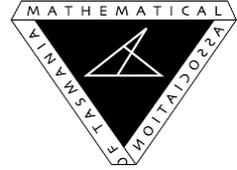


2. A closed rectangular box has surface area  $1000 \text{ cm}^2$ . Its length is twice its width and its height is 6 times its width. What is its volume in  $\text{cm}^3$ ?

ANSWER

5  
MARKS

**M.A.T. RELAY COMPETITION  
SENIOR SECONDARY [Year 11 - 12] SAMPLE**



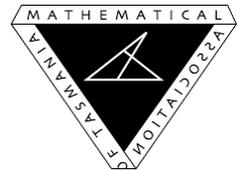
**3.**

If  $200^6$  is written in normal counting number form, how many digits will it have?

**ANSWER**

**5  
MARKS**

**M.A.T. RELAY COMPETITION  
SENIOR SECONDARY [Year 11 - 12] SAMPLE**



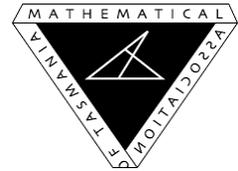
**4.**

What is the area of a rhombus that has side length 10 cm and the length of the diagonals differ by 4 cm ?

**ANSWER**

**5  
MARKS**

**M.A.T. RELAY COMPETITION  
SENIOR SECONDARY [Year 11 - 12] SAMPLE**



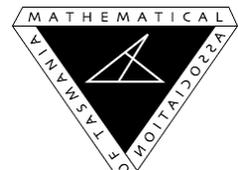
**5.**

Three six-sided dice are rolled. One die is selected and the number on the uppermost face is doubled and 5 added. This result is multiplied by 5 and added to the number on the uppermost face of the second die. This result is multiplied by 10 and added to the value of the third die. The result is 816. What was the least number that was thrown on the three dice?

**ANSWER**

**10  
MARKS**

**M.A.T. RELAY COMPETITION  
SENIOR SECONDARY [Year 11 - 12] SAMPLE**



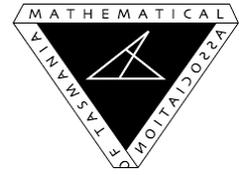
**6.**

The total number of interior angles in two separate regular polygons is 17 and the total number of diagonals is 53. How many sides does each regular polygon have?

**ANSWER**

**10  
MARKS**

**M.A.T. RELAY COMPETITION  
SENIOR SECONDARY [Year 11 - 12] SAMPLE**



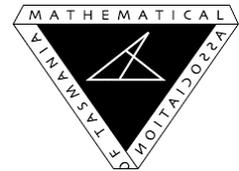
7.

The perpendicular sides of a right angle triangle are such that one side is seven times the length of the other. The hypotenuse of the triangle is 5 cm long. In square centimetres, what is the area of the triangle?

ANSWER

10  
MARKS

**M.A.T. RELAY COMPETITION  
SENIOR SECONDARY [Year 11 - 12] SAMPLE**



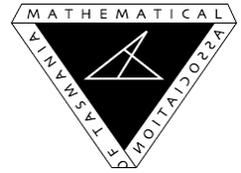
8.

In a supermarket oranges have been stacked to form a solid triangular pyramid 15 layers high. The bottom layer is an equilateral triangle with 15 oranges along each side, the next layer has 14 oranges along each side and so on. The top layer has just one orange. What is the total number of oranges in the stack?

ANSWER

15  
MARKS

**M.A.T. RELAY COMPETITION  
SENIOR SECONDARY [Year 11 - 12] SAMPLE**



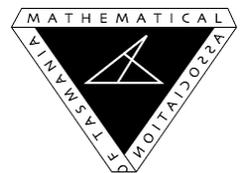
9. A five digit number is such that with a 1 after it, it is 3 times as large as it is with a 1 before it.

What is the 5 digit number ?

ANSWER

15  
MARKS

**M.A.T. RELAY COMPETITION  
SENIOR SECONDARY [Year 11 - 12] SAMPLE**



10. A 24-hour digital clock shows hours using two digits and minutes using two digits. How many times between 1 minute after midnight [00 : 01] and 1 minute to midnight on the same day [23 : 59] does the clock show the same time when read forwards or backwards as does, for example, 15 : 51 ?

ANSWER

20  
MARKS