



DEPARTMENT OF MATHEMATICS  
**PROBLEM SOLVING CHALLENGE**

**Q1.**

*Junior Cycle*

If the pattern shown continues, what will be

- (a) The first number in the 5th row  
(b) The last number in the 6th row  
(c) The middle number in the 7th row  
(d) In which row will the number 289 appear?

			1		
		3		5	
	7		9	11	
13		15		17	19

**Q2.**

*Senior Cycle*

- (a) Town 1 and Town 2 are 160 km apart. A hare travels at 12 km per hour from Town 1 to Town 2, while a tortoise travels at 4 km per hour from Town 2 to Town 1. If both set out at the same time, how many kilometres will the hare have to travel before meeting the tortoise en route?
- (b) There is a pole in a lake. One-half of the pole is in the ground, another one-third of it is covered by water, and 9 m is out of the water. What is the total length of the pole in metres?
- (c) Prove that the sum of two odd numbers is always even.  
*Hint: Even numbers may be expressed in the form  $2n$  and odd numbers may be expressed in the form  $2n+1$  where  $n \in \mathbb{Z}$*

Answers on an A4 sheet with your Name, Year and Class should be handed into the box in the office before 4pm on Friday 12<sup>th</sup> of December

Monthly Prize for both **Junior** and **Senior** Cycle.\*

**Good Luck.**

*Junior Cycle students answer question 1 only.*

*Senior Cycle students answer question 2 only*