

OCTOBER
2015

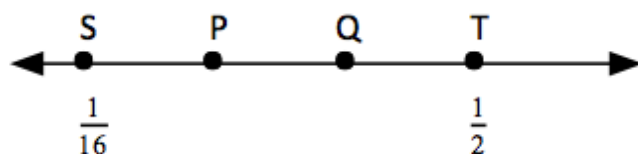
DEPARTMENT OF MATHEMATICS

PROBLEM SOLVING CHALLENGE

Q1.

Junior Cycle

- (a) The set $S = \{1, 2, 3, 4, \dots, 50\}$ contains the first 50 positive integers. After the multiples of 2 and the multiples of 3 are removed, how many integers remain in the set S ?
- (b) On the number line, points P and Q divide the line segment ST into three equal parts. What is the value at P ?

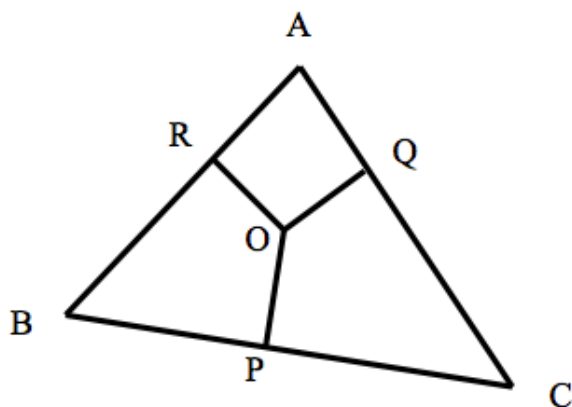


Q2.

Senior Cycle

O is a point inside an acute-angled triangle ABC . The feet of the perpendiculars from O to BC , CA and AB respectively are P , Q and R . Prove that

$$|PB|^2 - |PC|^2 = |OB|^2 - |OC|^2$$



Answers on an A4 sheet with your Name, Year and Class should be handed into the office or given to Mr. McEvoy before 4pm on Friday 23rd of October

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

Good Luck.

Junior Cycle students answer question 1 only.

Senior Cycle students answer question 2 only