Problemath 4

In the plane of triangle abc, one draws, outside abc, the triangles bcp, acq and abr such that the measure of angles $\widehat{pbc}$ and $\widehat{qac}$ is 45°, the measure of $\widehat{bcp}$ and $\widehat{acq}$ is 30°, and the measure of $\widehat{abr}$ and $\widehat{bar}$ is 15°. What is the measure of angle $\widehat{prq}$?

Problemath 5

An integer $n > 0$ is said to be *stupefying* if, when it is written, (in decimal notation) at the right of any positive integer, the resulting number is divisible by n. What are the stupefying integers?

Problemath 6

One dimensional Battleships. A Ship which can be seen as reduced to a point, is moving on the real line $\mathbb{R}$ in a uniform rectilinear motion. Its position and velocity are unknown at all times. The only pieces of information provided are:

(i) Its position at time $t = 0$ is a whole number $x \in \mathbb{Z}$.

(ii) Its velocity (measured per minute) is a whole number $v \in \mathbb{Z}$.

Every minute, starting at $t = 0$, a bomb is thrown on a point of integer abscissa. If the ship is on that point, then it sinks and one wins the game.

Is there a strategy which will, without fail, sink the ship in a finite amount of time?

Deadline Friday 31 October 14:00