On Adding Magic Triangles

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Magic triangles can be added to each other term by term, the same way that magic squares can be added to each other. We show here how two third order magic triangles can yield another third order magic triangle through addition.

Example 1. See Figure 1.

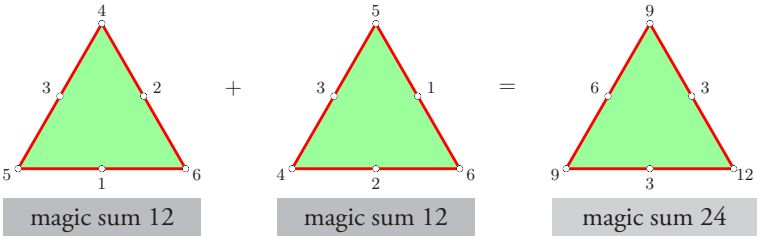

Figure 1. Addition of two third-order magic triangles – I

Note that the resulting magic triangle is non-standard; it does not use all the numbers from 1 till n for some positive integer n. Two of its sides are identical, so we may call it an 'isosceles magic triangle.' Also, the result uses only the numbers 3, 6, 9, and 12; we may also call it a 'hybrid magic triangle.'

The above example may be generalised through the use of an AP (arithmetic progression); see Figure 2. The sequence involved here is

$$2a + d,\ 2a + 4d,\ 2a + 7d,\ 2a + 10d.$$

Keywords: Magic triangle, arithmetic progression, sequence

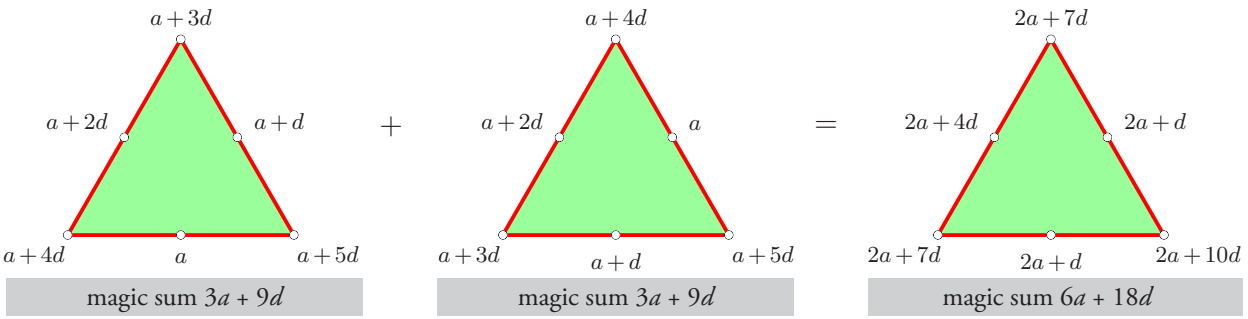

Figure 2. Addition of two third-order magic triangles – I (generalised)

Example 2. Another example is shown in Figures 3 and 4.

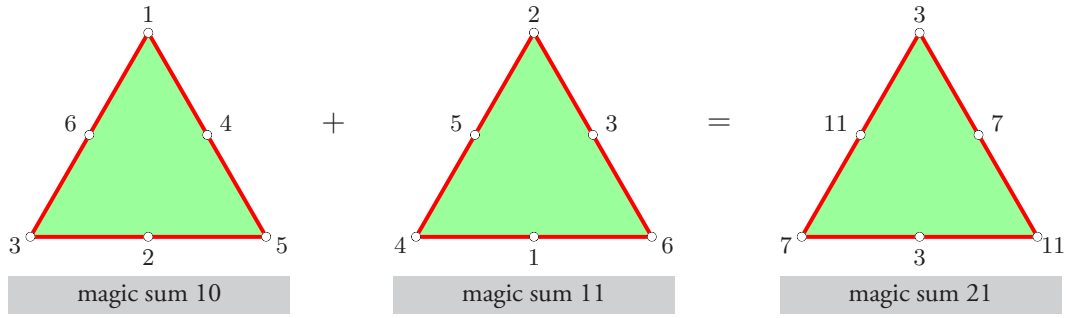

Figure 3. Addition of two third-order magic triangles – II

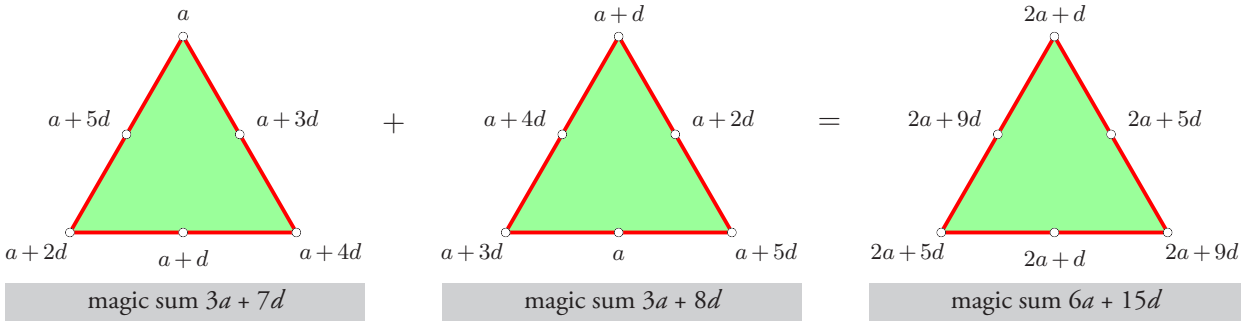

Figure 4. Addition of two third-order magic triangles – II (generalised)

Here the sequence involved is

$$2a + d,\ 2a + 5d,\ 2a + 9d.$$

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