

## Large and Small Factors

Each of the four numbers below is larger than a million. Interestingly they all have one four-digit prime factor and lots of one-digit ones. The challenge is to discover the large factor in each case.

**1336860**

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**1073016**

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**1607025**

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**1560762**

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## Shared Factors

These four-digit numbers all share the same two-digit factor. Fill in the squares below to show what it is.

$$\begin{array}{l} 1608 = \boxed{\phantom{00}} \boxed{\phantom{00}} \times \\ 3015 = \boxed{\phantom{00}} \boxed{\phantom{00}} \times \\ 4690 = \boxed{\phantom{00}} \boxed{\phantom{00}} \times \end{array} \left. \vphantom{\begin{array}{l} 1608 \\ 3015 \\ 4690 \end{array}} \right\} \boxed{\phantom{00}} \boxed{\phantom{00}}$$

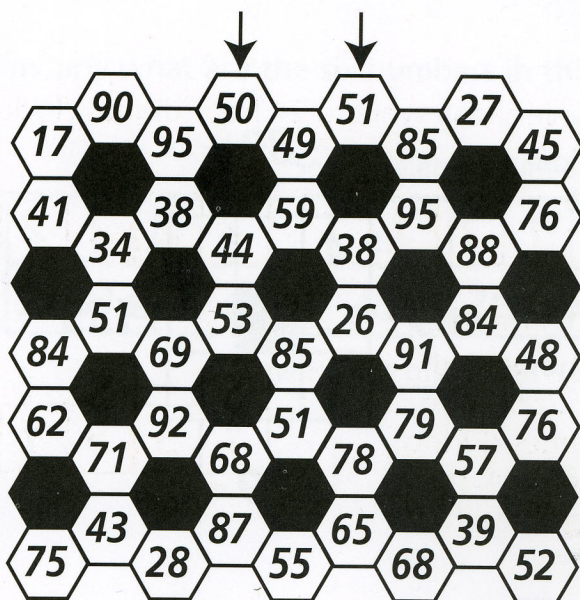
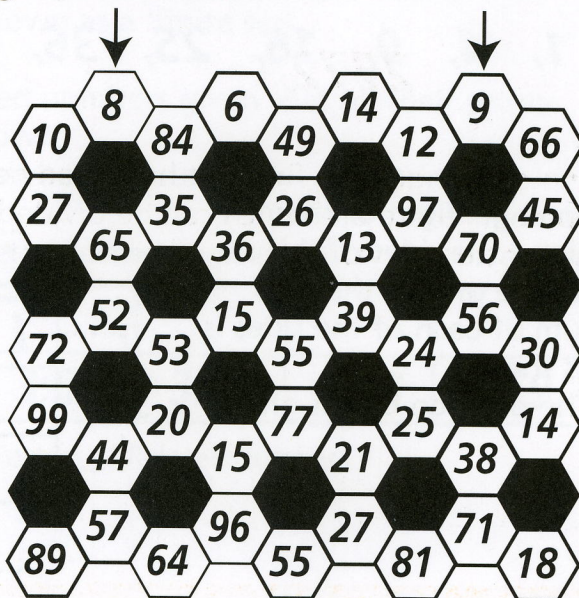
Similarly these five-digit numbers all share the same three-digit factor. Fill in the squares below to show what it is.

$$\begin{array}{l} 58338 = \boxed{\phantom{000}} \boxed{\phantom{000}} \boxed{\phantom{000}} \times \\ 64820 = \boxed{\phantom{000}} \boxed{\phantom{000}} \boxed{\phantom{000}} \times \\ 76395 = \boxed{\phantom{000}} \boxed{\phantom{000}} \boxed{\phantom{000}} \times \\ 97230 = \boxed{\phantom{000}} \boxed{\phantom{000}} \boxed{\phantom{000}} \times \end{array} \left. \vphantom{\begin{array}{l} 58338 \\ 64820 \\ 76395 \\ 97230 \end{array}} \right\} \boxed{\phantom{000}} \boxed{\phantom{000}} \boxed{\phantom{000}}$$

# Common Factor Trails

Starting at each of the arrowed hexagons the idea is to cross from the top of each grid to the bottom.

Each move must be made from adjacent number to adjacent number but only moving between numbers which share a common factor apart from 1.

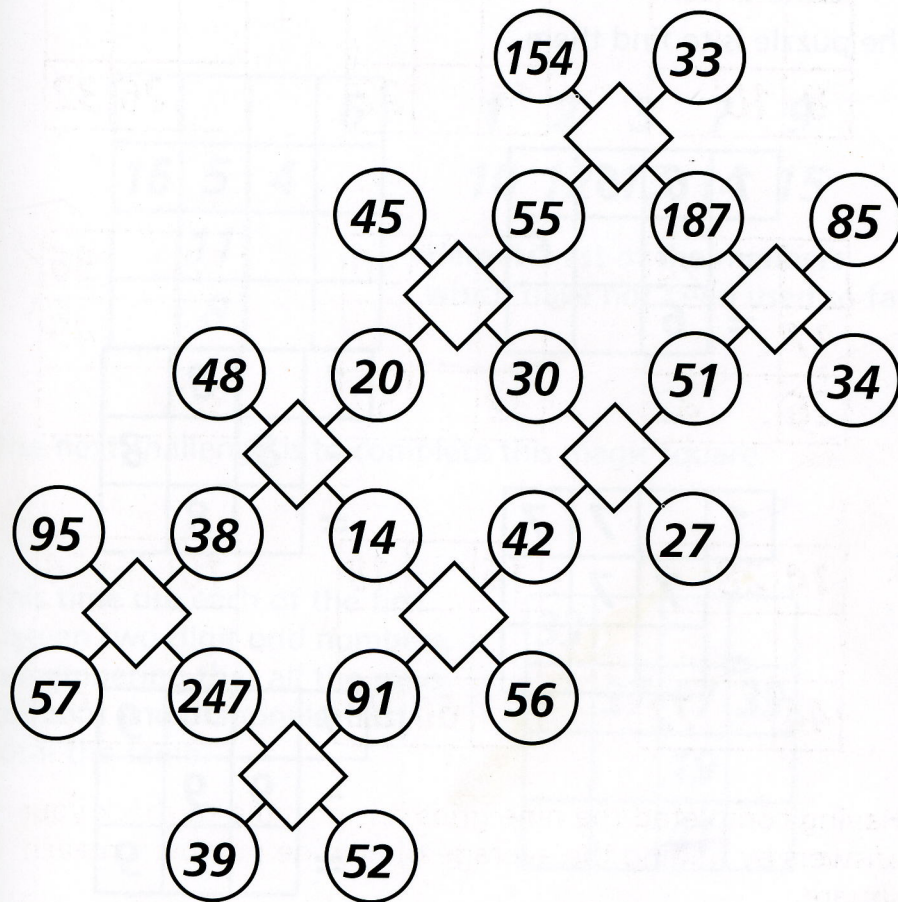


In all there are four trails to find, two in each diagram.



## Lowest Common Factors

Complete this grid by entering into each of the eight squares the only common factor of the four numbers in the circles which surround it.



Now find a triangular number by dividing the sum of the two largest factors in the grid by the product of the two smallest.