Have a go at this one:

Using the digits from 1–9 exactly once each, form three, three-digit numbers such that one of them is the sum of the other two.

Actually, there are several possible solutions to this one. You only need to give me one, however.

The last two problems have both involved using the digits from one through nine exactly once each. It turns out there all sorts of amusing arithmetic tricks along these lines:

- There are many ways to form the nine digits into three numbers, such that one is the product of the other two. Here are two of them: $12 \times 483 = 5796$ and $39 \times 186 = 7254$

- Here's how to make the number 100 by inserting standard arithmetic signs into the sequence $1 - 9$:
$$1 + 2 + 3 + 4 + 5 + 6 + 7 + (8 \times 9) = 100.$$

  If you allow concatenation, then you can get by with just addition and subtraction. Here are two ways:

$$1 + 2 + 34 - 5 + 67 - 8 + 9 = 100$$
$$123 - 45 - 67 + 89 = 100$$

- And then there's this:
$$(123456789 \times 8) + 9 = 987654321.$$

  Even cooler is that this is part of a general pattern. Here are two other examples. I'll let you work out the smaller cases:

$$(12345678 \times 8) + 8 = 98765432$$
$$(1234567 \times 8) + 7 = 9876543$$

Very cool!

Solutions are due to Jason Rosenhouse by 5:00 on Friday, November 14. **Solutions should be written on an official POTW handout, in the space below.** *Place your name, e-mail address, and the section numbers and professors of any math courses you are taking, in the* **upper right corner** *of the front of the page. One weekly winner will receive a five-dollar gift card from Starbucks. Please make sure that the answer to the problem is displayed clearly and prominently, in a box when appropriate. Problems are available at the bulletin board outside Roop 119, and also at the website:*

http://educ.jmu.edu/∼rosenhjd/POTW/Fall14/homepage.html