

## **Assignment #25: Multivariable Digit Problems**

Example: The sum of the digits of a two-digit number is 6. The tens digit of the number is 38 less than the number. Find the number.

Solution: Let the ten's digit be  $x$  and the ones digit be  $y$ . So the number looks like " $xy$ ", but its value is  $10x + y$ . The equations are:

$$\begin{aligned}x + y &= 6 \\x &= 10x + y - 38\end{aligned}$$

### Problems

1. Fred and his 23 identical clones together weigh 12 lbs less than 3 times the weight of Tacoman. When they (Fred, Tacoman, and all the clones) step on the scale together, it breaks with their combined weight of 1234 lbs. How much does Tacoman weigh?
2. Alice swam 16 miles downstream in 48 minutes. It took her twice as long to swim back. How fast was the current?
3. A chicken (whose speed in still air is 25 mph) flew 3 hours with the wind and then 7 hours against the wind. In total, he covered 200 miles. Find the wind speed.
4. It takes an hour for Maia to float downstream from her river-front home to Mud Flats. She can row the two miles back home in 30 minutes. How fast does she row in still water?
5. A water rat takes 5 times as long to swim upstream to the dump as it does to swim back. How many times faster than the current is the rat's speed in still water? (Note: you are not being asked to find the current speed or the rat's speed.)

6. A tsetse fly flew 1 mile upwind and then returned to its starting point. The total elapsed time was 2 hours. He flew  $\frac{1}{5}$  mile upwind in the same time as he flew  $\frac{3}{5}$  mile downwind. Find the wind speed.
  7. The sum of the digits of a two-digit number is 9. Three times the reverse of the number is 189 more than the number. Find the number. (Hint: the answer may or may not rhyme with "plenty, Kevin". Quit cheating.)
  8. The sum of the digits of a two-digit number is 12. Twice the reverse of the number is 39 more than the number. Find the number.
- (L): How many 3-digit numbers have no zeroes but at least one 5?