MATH ϟ☽⋆ **Homework** **Due: 31 October 2012**

(1) Solve the following division problems (any way you like).

(a) $12345 \div 15$

(b) ⋆ϟ♡☽ ÷ ϟϟ

(2) Find the missing digits for the division problems below. Explain clearly how you got each number and why your answer is the only one possible. (No credit for answers without explanation...)

```
        2 _
3 _ )_ 2 _
     _ _
     1 6 _
     1 6 _
```

```
        _ 3 _
_ _ )3 _ _ 8
     _ _
       8 _
       _ 2
       1 _ 8
       1 _ 8
```

(3) Remember how we used pictures to explain the multiplication scheme? Construct a picturesque way to explain students the *division* $228 \div 12$.

(4) (a) Find another name for $\frac{3}{4}$. Show it equals $\frac{3}{4}$ with a picture that looks like folded paper.

(b) Find another name for $\frac{2}{5}$. Show it equals $\frac{2}{5}$ with a picture that looks like folded paper.

(5) An old woman was carrying a load of eggs to the market in a cart. Suddenly a speeding water buffalo cause the cart to tip and all her eggs were broken. The woman's insurance agent asked her how many eggs she lost but the woman couldn't remember. She did, however, know that if she put the eggs in piles of 2, there was one left over. If they were in piles of three, there was one left over. Indeed, if they were arranged in piles of 4, 5, or 6, there was always one left over. However, if she put them in piles of seven, there were none left over.

(a) Write down a number for how many eggs the woman had, which fits all the facts known.

(b) Give a different number that fits all the conditions.

(c) Describe how you went about solving the problem. Attach your scratch paper.

(d) (Extra credit) Write down a way to generate *all* possible answers for this problem. How do you know you have all the answers?