Powers

Math

Per. 8

Mon. 10/2/17

In Class:

*The Broken Eggs* problem

**If the number we are stacking the eggs by is:**

2 there would be one left over

3 there would be one left over

4 there would be one left over

4 there would be one left over

5 there would be one left over

6 there would be one left over

7 there would be none left over

The answer must be an odd number because when we divide by 2, there must be one left over.

You could start by considering groups in multiples of 7, such as 7, 14, 21, 28, 35, 42, 49 and then see if they each satisfy the above requirements of there being one left over in groupings of 1 through 6.

This is the “Guess and Check” strategy.

Through “49” the conditions are not satisfied. We can then go up by multiples of 14, because this will eliminate the even numbered groups of 7 that we know won’t satisfy the condition of being an odd number.

Test the numbers 63, 77, 91 and 105: None of these work, so continue testing by multiples of 14.

**Note**: When you use a calculator, if you divide by 3 the decimal would read .33 if there were 1 left over, when dividing by 4 the decimal would be .25 if there were 1 left over, for 5 it would be .2 and for 6 it would be .166

Anything divisible by 5 ends in a 5 or a 0, so our solution must end in either a 1 or a 6, in order to have one left over when divided by 5.

Because our answer must be odd, we can eliminate numbers ending in 6

So we now know the solution must end in 1 and be divisible evenly by 7

We can now move up in our sequence by 70: 21, 91, 161, 231, 301

**301 is the smallest answer that satisfies the conditions**

To find the next answer that could possibly satisfy all the conditions, add multiples of 70 to 301. So check 371, 441 and 551. 581, 651, 721.

**We find that 721 also meets all the conditions. (As does 1141, 1561, 1981)**

**Homework:**

Do questions 1, 2 and 3 on the Egg Problem handout explaining the writeup.