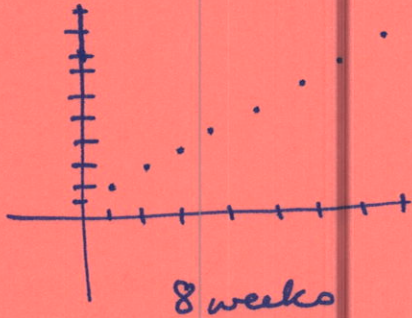
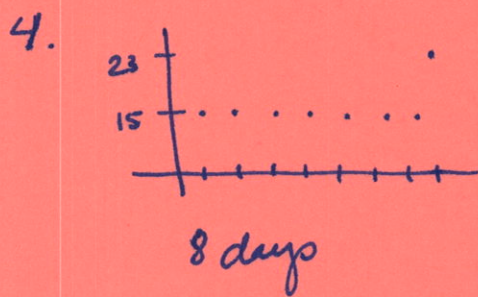


MAT100 Homework #3 Key

1. $A_n = d(n-1) + A_1$
 ↑ ↑
 common first term (if starting at A_1)
 difference

2. $A_n = A_{n-1} + d$ ← common difference
 ↑
 previous term

3. $A_1 = 15$ $d = 8$
 $A_{52} = 8(52-1) + 15 = 423$



5. $5n = 8(n-1) + 15$
 $\frac{5n - 15}{-15} = \frac{8(n-1) - 15}{-15}$

 $\frac{496}{8} = \frac{8(n-1)}{8}$
 $62 = n-1$
 $\frac{62}{+1} = \frac{n-1}{+1}$
 $63 = n$

63 weeks

6. $A_1 = 2$

$198 = 2(n-1) + 2$
 $\frac{198 - 2}{-2} = \frac{2(n-1) - 2}{-2}$

 $\frac{196}{2} = \frac{2(n-1)}{2}$
 $98 = n-1$
 $\frac{98}{+1} = \frac{n-1}{+1}$
 $99 = n$

Sum = $\frac{(2+198) \cdot 99}{2}$
 $= \frac{200}{2} \cdot 99 = 100 \cdot 99$
 $= 9900$

7. exponential

8. $100(1 + \frac{.10}{12})^6 = \sqrt[3]{105.11}$

9. $Sum = \frac{100(1 - 1.01^n)}{1 - 1.01} = 1156.68...$

10. $A_1 = 10 \quad d = 1$

$A_{30} = 10 + \frac{(n-1)d}{30} = 10 + 29 = 39$ seats in final row

$\frac{(10+39)30}{2} = 735$ seats in the section

11. $R = 1.02 \quad A_1 = 1,576,300 = \text{in } 2015$

$A_6 = \quad \quad \quad = \text{in } 2020$

$A_N = 1,576,300 (1.02)^5 = 1,740,362$

$\frac{2 \times 1,576,300}{1,576,300} = (1.02)^{n-1} \frac{1,576,300}{1,576,300}$

$n = 36.002789$

$2 = (1.02)^{n-1}$

in 2051