

SELECT SOLUTIONS

Homework Title: Modeling Sinusoidal Data I

1a) Max = 80, Min = 34, D = 57, A = 23, Period = 12 months,  $B = \frac{\pi}{6}$ ,

Equation:  $y = -23 \cos\left(\frac{\pi}{6}(x - 1)\right) + 57$  or  $y = 23 \cos\left(\frac{\pi}{6}(x - 7)\right) + 57$

1d) Max = 61, Min = 17, D = 39, A = 22, Period = 12 months,  $B = \frac{\pi}{6}$ , Equation:  $y =$  \_\_\_\_\_

2a) Max = 100, Min = 0, D = 50, A = 50, Period = 30 days,  $B = \frac{\pi}{15}$ , Equation:  $y =$  \_\_\_\_\_

2c) Graph your equation in  $Y_1$  and 25 in  $Y_2$ . Set your window to just look at the percent of the moon illuminated in January ( $0 \leq x \leq 32$ ,  $x\text{scl} = 1$ ,  $-10 \leq y \leq 110$ ,  $y\text{scl} = 10$ ). Then use 2ND TRACE to get to the CALC menu. Option #5 allows you to find intersection points between two "curves". Sketch what you see on your graphing calculator screen as part of showing work. There is more than 1 day in January when only 25% of the moon is illuminated!!