Answer Key

1. D   DOK1
2. B   DOK1
3. D   DOK2
4. B   DOK2
5. A   DOK1
6. C   DOK2
7. C   DOK2
8.

Population	Factor of Change per Hour
$400(2)^{5h}$	32
$150(5)^{2h}$	25
$80(8)^{h}$	8
$120(3)^{3h}$	27

DOK2

9. A, E   DOK2
10. $(160 - x^2)$ in.^{2}; Sample answer: The area of the original piece of poster board was 160 in.^{2}, and the area of the piece that was removed is x^2 in.^{2}. DOK2
11. $5,000(1.008)^{52}$; Sample answer: 5,000 is the original loan amount, 1.008 is the factor by which the amount due changes each week, 52 is the number of weeks.   DOK2

12. greater than one hour; Sample answer: Each hour, the amount changes by a factor of 0.63. After one hour, there is still 0.63 of the original sample remaining, which is more than one half. Therefore, the half-life is greater than one hour.   DOK2
13. $-0.8t^2 + 9t + 1$ DOK2
14. Part A
    $-16t^2 + 23t + 7$; Sample answer: -16 represents acceleration due to gravity, $23t$ represents the distance traveled due to the initial hit, and 7 represents the initial height.
    Part B
    $3t + 2$; Sample answer: $3t$ represents the difference in height due to the greater initial velocity of Mark's ball, and 2 represents the difference in initial heights
    Part C
    Sample answer: $(q - p)t + (y - w)$; This expression gives the distance of Mark's ball above Janelle's ball. If the value of the expression is negative, that mean's that Janelle's ball is above Mark's ball.   DOK3