Answer Key

1. B   DOK1
2. C   DOK2
3. D   DOK2
4. C   DOK2
5. D   DOK2
6. B   DOK2
7. D   DOK2
8. B   DOK1
9.

Term	Value
a_2	8,000
a_3	2,000
a_5	125
a_7	7.8125

DOK2

10. $a_n = a_{n-1} \cdot 1.5, a_1 = 10; a_n = 10 \cdot 1.5^{n-1}$;
Sample answer:
Using the recursive formula:
$a_2 = 10 \cdot 1.5 = 15$
$a_3 = 15 \cdot 1.5 = 22.5$
$a_4 = 22.5 \cdot 1.5 = 33.75$
Using the explicit formula:
$a_4 = 10 \cdot 1.5^{4-3} = 10 \cdot 1.5^3 = 33.75$
DOK2

11. Geometric: C, D, F
Arithmetic: A, E
Neither: B
DOK2

12. 12; Sample answer: $a_1 \cdot 5 = 60$,
so $a_1 = 60 \div 5 = 12$
DOK2

13. **Part A**
$a_n = 100 \cdot 0.9^{n-1}$
Part B
$65.61; a_5 = 100 \cdot 0.9^{5-1} = 100 \cdot 0.9^4 = 65.61$
DOK2

14. 33; Sample answer:
If r is the common ratio, then $3r = a_2$, and
$a_2 \cdot 3 = 363$. So, $3r \cdot r = 363$, or $3r^2 = 363$.
Divide each side by 3: $r^2 = 121$, so $r = 11$.
$a_2 = 3 \cdot 11 = 33$
DOK3

15. **Part A**
geometric; Sample answer: The thickness of
the stack doubles after each cut. Since there is a
common ratio between terms, the sequence is
geometric.
Part B
$a_n = 0.006 \cdot 2^{n-1}$
Part C
1.536 inches; It is the 9th term, because the first
term represents the thickness after 0 cuts, the
second term represents the thickness after 1 cut,
etc.
Part D
Sample answer: 14 cuts; I am about 5 foot
6 inches tall, or 66 inches. Find the value of n
so that $0.006 \cdot 2^{n-1} > 66$. Divide each side by
0.006: $2^{n-1} > 11,000$. Find the smallest power of
2 that is greater than 11,000:
$2^{13} = 8,192; 2^{14} = 16,384$.
So, $n - 1 = 14$, and $n = 15$
The 15th term represents the thickness after
14 cuts.
$a_{15} = 0.006 \cdot 2^{15-1} \approx 98.304$
DOK3

UNIT 2