# Exponential Relationships

Growth, decay, repeated factors, and exponential modeling.

Name _____ Date _____

32 main · 2-up grid · 12 pages · visible side quests

**Completion Reward**

Shown here as a small pack artifact, not a preview destination.

**1. What makes a pattern exponential?**

A. It changes by the same difference each step
B. It changes by the same factor each step
C. It always forms a straight line
D. It never increases

1.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

1.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

1.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

1.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

1.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**2. If a quantity grows by a factor of 1.25 each step, what happens each step?**

A. The quantity increases by 1.25 units each step.
B. The quantity is multiplied by 1.25 each step.
C. The quantity is divided by 1.25 each step.
D. The quantity gains 125% of the original every step.

2.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

2.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

2.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

2.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

2.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**3. In the model y = 50(1.2^x), what does 50 represent?**

A. The growth factor
B. The x-intercept
C. The initial value
D. The percent increase

3.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

3.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

3.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

3.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

3.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**4. A quantity grows by 12% each step. What is the growth factor?**

A. 0.12
B. 12
C. 1.12
D. 1.2

4.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

4.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

4.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

4.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

4.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**5. Which pattern is exponential?**

A. 6, 12, 18, 24
B. 6, 10, 14, 18
C. 6, 12, 24, 48
D. 6, 9, 12, 15

5.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

5.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

5.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

5.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

5.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**6. Which equation represents exponential decay?**

A. y = 30(1.2^x)
B. y = 30(0.8^x)
C. y = 30 + 0.8x
D. y = 0.8x + 30

6.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

6.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

6.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

6.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

6.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**7. Which pattern is exponential: 5, 8, 11, 14 or 5, 10, 20, 40?**

A. 5, 8, 11, 14
B. Both
C. Neither
D. 5, 10, 20, 40

7.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

7.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

7.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

7.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

7.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**8. A student says 5 percent decay means multiply by 1.05 each step. What is wrong?**

A. Percent change should always be added, never multiplied.
B. Decay of 5 percent means multiply by 0.95, not 1.05.
C. The factor should be 5.0.
D. Decay means multiply by -0.05.

8.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

8.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

8.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

8.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

8.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**9. What is the growth factor in the table?**

| Step | Value |
|---|---|
| 0 | 3 |
| 1 | 6 |
| 2 | 12 |
| 3 | 24 |

Exponential tables are identified by a constant multiplicative change from one row to the next, not by a constant difference.

A. 3
B. 2
C. 6
D. 12

9.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

9.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

9.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

9.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

9.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**10. Which statement about the table is true?**

| x | y |
|---|---|
| 0 | 5 |
| 1 | 10 |
| 2 | 20 |
| 3 | 40 |

When each output is a fixed multiple of the previous output, the table shows exponential behavior.

A. The relation is linear because it adds 5 each time
B. The relation is decreasing
C. The output stays constant
D. The relation is exponential because it multiplies by 2 each time

10.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

10.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

10.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

10.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

10.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**11. A table starts with 4 at x = 0 and doubles each time x increases by 1. Which model matches the table?**

A. y = 2x + 4
B. y = 4x + 2
C. y = 4(2^x)
D. y = 8(2^x)

11.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

11.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

11.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

11.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

11.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**12. A table begins with 6 at x = 0 and shows 12, 24, and 48 for the next three x-values. Which model matches?**

A. y = 12(2^x)
B. y = 6x + 2
C. y = 6(2^x)
D. y = 2x + 6

12.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

12.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

12.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

12.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

12.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**13. Which recursive rule matches the pattern 5, 10, 20, 40, ...?**

A. a_0 = 5 and a_n = a_(n-1) + 2
B. a_0 = 10 and a_n = 5a_(n-1)
C. a_0 = 5 and a_n = 2a_(n-1)
D. a_0 = 5 and a_n = a_(n-1) - 2

13.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

13.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

13.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

13.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

13.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**14. In y = 200(1.05)^x, what does 200 represent?**

On an exponential graph, the initial value is the y-value before any growth steps occur.

A. The starting amount
B. The growth factor
C. The number of time steps
D. The percent increase

14.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

14.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

14.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

14.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

14.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**15. In y = 200(1.05)^x, what does 1.05 represent?**

A factor greater than 1 means the output grows by the same percent each step instead of by the same number.

A. A 105 percent increase each step
B. The initial amount
C. A 5 percent increase each step
D. The output when x = 0

15.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

15.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

15.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

15.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

15.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**16. Which rule matches the table?**

| x | y |
|---|---|
| 0 | 4 |
| 1 | 8 |
| 2 | 16 |
| 3 | 32 |

The output starts at 4 and doubles each time x increases by 1.

A. y = 4(2^x)
B. y = 4 + 2x
C. y = 2(x + 4)
D. y = 4x^2

16.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

16.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

16.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

16.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

16.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**17. A student says an amount that doubles each day is linear because it keeps getting bigger. What is wrong?**

A. Doubling means multiplying by the same factor, which is exponential, not linear.
B. Anything that increases is always linear.
C. Exponential patterns must get smaller.
D. Linear patterns use multiplication more than exponential patterns do.

17.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

17.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

17.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

17.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

17.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**18. A student says 5, 10, 15, 20 is exponential because the values keep increasing. What is wrong?**

A. Exponential patterns must decrease
B. The pattern adds a constant amount, so it is linear, not exponential
C. Exponential patterns can never use whole numbers
D. Nothing is wrong

18.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

18.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

18.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

18.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

18.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**19. A student says 10 percent growth means add 0.10 each step. What is wrong?**

A. 10 percent growth means multiply by 1.10 each step
B. 10 percent growth means subtract 0.10 each step
C. 10 percent growth means multiply by 10
D. Nothing is wrong

19.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

19.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

19.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

19.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

19.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**20. A student models 8 percent growth with y = 500(0.08)^x. What is wrong?**

A. Growth models never use exponents
B. 0.08 means keeping only 8 percent, not growing by 8 percent
C. The initial value should be negative
D. Nothing is wrong

20.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

20.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

20.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

20.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

20.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**21. At x = 2, which value is larger: 3(2^x) or 3x + 3?**

A. 3x + 3
B. They are equal
C. There is not enough information
D. 3(2^x)

21.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

21.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

21.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

21.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

21.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**22. If y = 7(3^x), find y when x = 2. Answer with a number.**

22.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

22.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

22.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

22.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

22.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**23. A quantity starts at 4 and triples each step. What is the value at step 3? Answer with a number.**

23.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

23.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

23.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

23.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

23.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**24. Find y when y = 200(1.1^2). Answer with a number.**

24.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

24.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

24.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

24.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

24.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**25. A quantity starts at 40 and doubles three times. What is the value after 3 steps? Answer with a number.**

25.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

25.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

25.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

25.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

25.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**26. A quantity starts at 200 and decreases by 25% in one step. What is the new value?**

A. 125
B. 175
C. 225
D. 150

26.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

26.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

26.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

26.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

26.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**27. A machine starts with 80 units of battery and loses 15 percent each hour. Which model gives y after x hours?**

A. y = 80(1.15^x)
B. y = 65x
C. y = 80 - 15x
D. y = 80(0.85^x)

27.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

27.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

27.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

27.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

27.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**28. A population starts at 640 and halves every hour. Which model gives y after x hours?**

A. y = 640(0.5^x)
B. y = 640(2^x)
C. y = 320x
D. y = 640 - 0.5x

28.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

28.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

28.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

28.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

28.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**29. Savings start at $50 and grow by 20 percent each month. Which model gives y after x months?**

A. y = 50(0.2^x)
B. y = 20x + 50
C. y = 50(1.2^x)
D. y = 50 + 20x

29.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

29.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

29.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

29.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

29.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**30. A savings balance starts at 500 dollars and grows 8 percent each year. Which model fits?**

A. y = 500 + 8x
B. y = 8(500)^x
C. y = 500(1.08)^x
D. y = 500x + 1.08

30.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

30.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

30.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

30.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

30.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**31. A bacteria culture starts at 100 cells and doubles every hour. Write the model for y after x hours. Answer in the form y = ...**

31.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

31.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

31.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

31.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

31.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8

**32. A phone battery retains 90 percent of its charge each hour and starts at 100 percent. Write the model. Answer in the form y = ...**

32.1. A quantity grows by 20% each step. What is the growth factor?

A. 0.2
B. 1.2
C. 1.02
D. 20

32.2. A quantity decays by 15% each step. What is the decay factor?

A. 0.15
B. 0.85
C. 1.15
D. 1.85

32.3. What is 3^4?

A. 12
B. 27
C. 64
D. 81

32.4. Which pattern is exponential?

A. Add 5 each step
B. Multiply by 2 each step
C. Subtract 3 each step
D. Add 10 then subtract 10

32.5. In y = 4(2)^x, what is the initial value?

A. 2
B. 4
C. 6
D. 8