

Algebra 1 - Exponential Functions and Growth - Quiz

Common Core F-LE.A.1, F-LE.A.2, F-LE.A.3, F-IF.C.7e, F-IF.C.8b · maths-pdf.fr/en/

Name: _____ Class: _____ Date: ____/____/____

Try these 10 multiple-choice questions on exponential functions and growth (F-LE.A.1, F-LE.A.2, F-LE.A.3, and F-IF.C.8b). Pick one answer for each question, then read the explanation to see why it is right and which mistake the other choices come from. Retake the quiz until every answer feels easy.

Algebra 1 · Common Core State Standards: **F-LE.A.1, F-LE.A.2, F-LE.A.3, F-IF.C.7e, F-IF.C.8b**

Questions

Question 1

Which function models exponential growth?

- A. $y = 2(1.5)^x$
- B. $y = 2(0.5)^x$
- C. $y = 2 + 1.5x$
- D. $y = 1.5 + 2x$

Question 2

What is the growth factor for a 7% increase per year?

- A. 0.07
- B. 0.93
- C. 1.07
- D. 7

Question 3

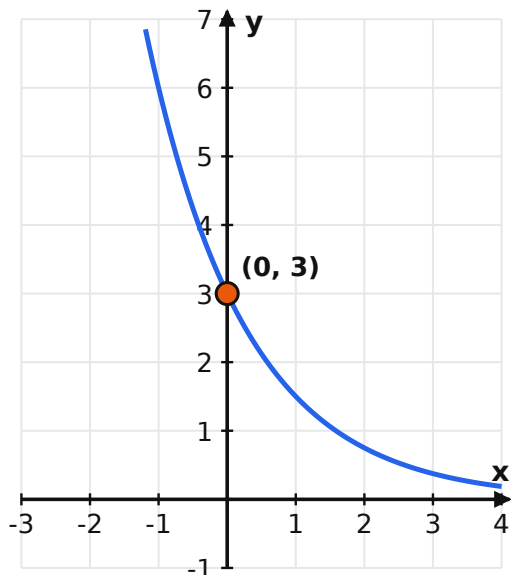
x	0	1	2	3
y	4	8	16	32

Which equation matches the table?

- A. $y = 4x + 4$

- B. $y = 2 \cdot 4^x$
- C. $y = 4 \cdot 2^x$
- D. $y = 4 + 2^x$

Question 4



What kind of function has this graph?

- A. Exponential growth
- B. Exponential decay
- C. Linear with negative slope
- D. Quadratic

Question 5

Solve $3^x = 27$.

- A. $x = 9$
- B. $x = 3$
- C. $x = 24$
- D. $x = 30$

Question 6

A \$1,000 deposit earns 5% interest compounded annually. Which expression gives the amount after 4 years?

- A. $1000(0.05)^4$
- B. $1000 + 0.05(4)$
- C. $1000(1.5)^4$

D. $1000(1.05)^4$

Question 7

x	0	1	2	3
y	6	11	16	21

Is this function linear or exponential?

- A. Linear, because it adds 5 each time
- B. Exponential, because it increases
- C. Exponential, because the ratio is 5
- D. Neither

Question 8

The value of a computer is $V = 800(0.75)^t$. What is its percent decrease per year?

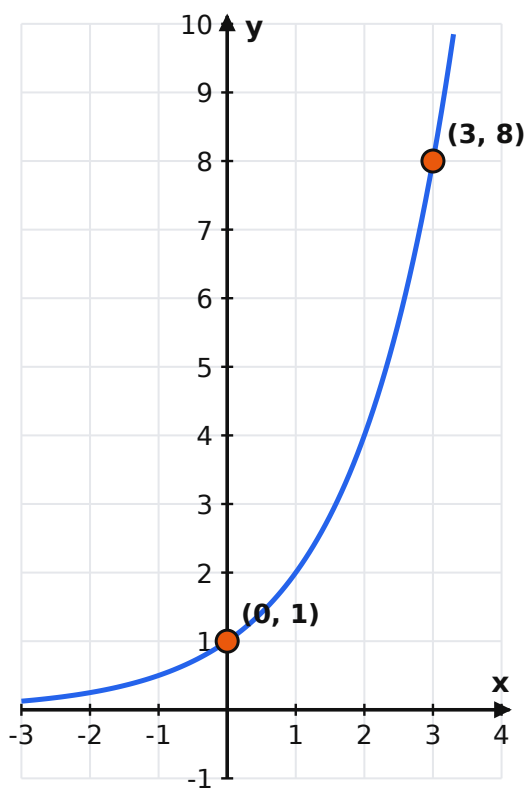
- A. 75%
- B. 25%
- C. 0.75%
- D. 125%

Question 9

A substance has a half-life of 2 days. Starting with 64 grams, how much is left after 6 days?

- A. 8 grams
- B. 32 grams
- C. 16 grams
- D. 4 grams

Question 10



What is the y-intercept of $y = 2^x$ shown in the graph?

- A. (0,2)
- B. (1,0)
- C. (0,0)
- D. (0,1)

Answers

1. **A** - Only $y = 2(1.5)^x$ has a variable exponent and a base greater than 1.
2. **C** - Growth factor = $1 + \text{rate} = 1 + 0.07 = 1.07$.
3. **C** - The starting value is 4 and each step doubles.
4. **B** - The curve falls, flattens toward the x-axis, and never reaches it, which is exponential decay.
5. **B** - Since $27 = 3^3$, $x = 3$. Dividing 27 by 3 gives 9 and is not correct.
6. **D** - $A = P(1 + r)^t$ with $r = 0.05$ and $t = 4$.
7. **A** - The differences are all 5, so it is linear. The ratios $11/6$, $16/11$, $21/16$ are not constant.
8. **B** - The decay factor 0.75 means it keeps 75% and loses 25%.
9. **A** - Six days is 3 half-lives: $64 \rightarrow 32 \rightarrow 16 \rightarrow 8$.
10. **D** - At $x = 0$, $2^0 = 1$, so the curve crosses the y-axis at $(0, 1)$.

Remember

- Exponential form: $f(x) = a \cdot b^x$ with a the starting value and b the factor.
- Growth: $b = 1 + r$. Decay: $b = 1 - r$.
- Linear functions add a constant; exponential functions multiply by a constant.
- Compound interest: $A = P(1 + r)^t$.
- An exponential function eventually exceeds any linear function.