

Algebra 2 (basic) – 6.1 (trb, vs14x) Exponential Growth & Decay

Goal: 6.1: determine multiplier for exponential growth and decay;
write and evaluate exponential expressions to model growth and decay situations (apply)

Find the multiplier for each rate of exponential growth or decay.

- | | |
|----------------------|----------------------|
| 1. 1% growth _____ | 2. 1% decay _____ |
| 3. 7% decay _____ | 4. 12% growth _____ |
| 5. 10% growth _____ | 6. 3% decay _____ |
| 7. 5.2% decay _____ | 8. 7.5% growth _____ |
| 9. 0.4% growth _____ | 10. 5.9% decay _____ |

Evaluate each expression to the nearest thousandth for the given value of x.

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|--|--|
| 11. 2^x for $x = 0.5$ _____ | 12. $10(2^x)$ for $x = \frac{2}{3}$ _____ |
| 13. $(\frac{1}{2})^{3x}$ for $x = 2$ _____ | 14. $7(0.5)^x$ for $x = -2$ _____ |
| 15. $42 \cdot 2^{x-1}$ for $x = \frac{3}{4}$ _____ | 16. $20 \cdot 2^{2x}$ for $x = 1.75$ _____ |
| 17. $15(\frac{1}{2})^{2x-1}$ for $x = 2$ _____ | 18. $66(\frac{1}{2})^x$ for $x = 3$ _____ |
| 19. $512(2)^{3x}$ for $x = 0.1$ _____ | 20. $12(2)^{x-2}$ for $x = 6.5$ _____ |

Predict the result in each situation.

21. The population of a city in 1990 was 1,215,112. The population was growing at a rate of about 5% per decade. Predict the population of the city

a. in the year 2000.

b. in the year 2005.

22. The initial population of bacteria in a lab test is 400. The number of bacteria doubles every 30 minutes. Predict the bacteria population at the end of

a. two hours.

b. three hours.

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SOLUTIONS

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Lesson 6.1

1. 1.01 2. 0.9 3. 0.93 4. 1.12 5. 1.1
6. 0.97 7. 0.948 8. 1.075 9. 1.004
10. 0.941 11. 1.414 12. 15.874 13. 0.016
14. 28 15. 35.318 16. 226.274 17. 1.875
18. 8.25 19. 630.346 20. 271.529
- 21a. 1,275,868
 b. 1,307,375
- 22a. 6400
 b. 25,600