

Homework 4.3 Real World Applications for Sequences

Suppose Leejay is a scientist observing bacteria decay. He records data and notices that the bacteria seems to be decaying geometrically. In his 1st observation, it was the bacterium was 80. It is decaying 70% per observation.

1. Find the sequence of this situation.

2. What type of sequence does this model?

3. Model the explicit formula?

4. Find how much bacterium was left on the 4th observation.

Suppose Dylan dropped a basketball from the top of Lithia Springs High School 300 feet off the ground. After it hits the ground, it rebounds 80% from its previous height.

5. Find the sequence of this situation.

6. What type of sequence does this model?

7. Model the explicit formula?

8. Find how much the ball will rebound after the third bound.

Vivian is a bungee jumper jumping off a bridge. Vivian's height above the ground is 500 feet. When she bungee jumps, she will decrease geometrically at 60% from the previous height.

9. Find the sequence of this situation.

10. What type of sequence does this model?

11. Model the explicit formula?

12. Find Vivian's height on her 7th bounce.

13. Miller stands on a trampoline and drops a golf ball. The model of this situation is decreasing geometrically. If the first bounce goes 20 feet high and the third bounce goes 12.8 feet. What is the second bounce? (Circle Answer)

- (a) 16 feet (b) 14 feet (c) 10 feet (d) 7 feet

Show work for number 13:

14. Elana is swinging a rope in a way that the length of the arc is decreasing geometrically. If the first arc is 60 feet long and the 33.75 feet long, what is the length of the second arc?
(a) 90.75 feet (b) 26.26 feet (c) 45 feet (d) 50 feet

Show work for number 14:

Karen visited the Grand Crayon and drop a penny off the edge of a cliff. The distance the penny will fall is 16 feet the 1st second, 48 feet the next second, 80 feet the 3rd second, and so on.

15. Find the sequence of this situation.

16. What type of sequence does this model?

17. Model the explicit formula.

18. Model the recursive formula.

19. What is the total distance the object will fall in 6 seconds?

Sandws has a bakery called The Bakhitiar Bakery. She has 5 cupcakes left over from last year and now she plans to make 30 more cupcakes a day.

20. Find the sequence of this situation.

21. What type of sequence does this model?

22. Model the explicit formula.

23. Model the recursive formula.

24. Find the number of cupcakes on the 23rd day.

The freshmen basketball team has about 17 games this year. In their first game they score 90 points. In their second game, they score 81 points. In the 3rd game, they score 73 points.

25. Find the sequence of this situation.

26. What type of sequence does this model?

27. Model the explicit formula.

28. Model the recursive formula.

29. Find the number of points on the 8th game.

30. Following the trend, find which game will they score 53 points --- Multiple choice

- (a) Game 4
- (b) Game 5
- (c) Game 6
- (d) Game 7

After knee surgery, Jordan's trainer tells you to return to your jogging for 12 minutes each day for the first week. Each week thereafter, he suggests that Jordan increase that time by 6 minutes per day.

31. Find the sequence of this situation.

32. What type of sequence does this model?

33. Model the explicit formula.

34. Model the recursive formula.

35. How many weeks will it be before Jordan is up to jogging 60 minutes per day?

Kyle is a mine worker who discovers an ore sample containing 500 mg of radioactive material. It is discovered that the radioactive material has a half-life of 1 day.

36. Find the sequence of this situation.

37. What type of sequence does this model?

38. Model the explicit formula.

39. Model the recursive formula.

40. Find the amount of radioactive material in the sample at the beginning of the 7th day.