Name _____ Date _____

The Password Is . . . Operations!
Arithmetic and Geometric Sequences

Vocabulary

Describe each given sequence using the terms arithmetic sequence, common difference, geometric sequence, and common ratio as they apply.

1. 10, 20, 30, 40, . . .

2. 1, 2, 4, 8, . . .

4

Problem Set

Determine the common difference for each arithmetic sequence.

1. 1, 5, 9, 13, . . .

$d = 5 - 1$

$d = 4$

2. 10, 3, −4, −11, . . .

3. 10.5, 13, 15.5, 18, . . .

4. $\frac{1}{3}, \frac{2}{3}, 1, \frac{4}{3}, \ldots$

5. 95, 91.5, 88, 84.5, . . .

6. 170, 240, 310, 380, . . .

7. 1250, 1190, 1130, 1070, . . .

8. −4.8, −6.0, −7.2, −8.4, . . .

9. $8\frac{1}{2}$, 9, $9\frac{1}{2}$, 10, . . .

10. −28, −13, 2, 17, . . .

Determine the common ratio for each geometric sequence.

11. 5, 10, 20, 40, . . .

$r = 10 \div 5$

$r = 2$

12. 2, 8, 32, 128, . . .

13. 3, −6, 12, −24, . . .

14. 800, 400, 200, 100, . . .

15. 10, −30, 90, −270, . . .

16. 64, −32, 16, −8, . . .

17. 5, 40, 320, 2560, . . .

18. 45, 15, 5, $\frac{5}{3}$, . . .

19. 0.2, −1, 5, −25, . . .

20. 150, 30, 6, 1.2, . . .

Name _____ Date _____

Determine the next 3 terms in each arithmetic sequence.

21. 8, 14, 20, 26, 32, 38, 44, . . .

22. 90, 75, 60, 45, _____, _____, _____, . . .

23. −24, −14, −4, 6, _____, _____, _____, . . .

24. $\frac{3}{5}, \frac{4}{5}, 1, \frac{6}{5}$, _____, _____, _____, . . .

25. 20, 11, 2, −7, _____, _____, _____, . . .

26. 12, 16.5, 21, 25.5, _____, _____, _____, . . .

27. −101, −112, −123, −134, _____, _____, _____, . . .

28. 3.8, 5.1, 6.4, 7.7, _____, _____, _____, . . .

29. −500, −125, 250, 625, _____, _____, _____, . . .

30. 24.5, 20.7, 16.9, 13.1, _____, _____, _____, . . .

Determine the next 3 terms in each geometric sequence.

31. 3, 9, 27, 81, 243, 729, 2187, . . .

32. 512, 256, 128, 64, _____, _____, _____, . . .

33. 5, −10, 20, −40, _____, _____, _____, . . .

34. 3000, 300, 30, 3, _____, _____, _____, . . .

35. 2, −2, 2, −2, _____, _____, _____, . . .

36. 0.2, 1.2, 7.2, 43.2, _____, _____, _____, . . .

37. −8000, 4000, −2000, 1000, _____, _____, _____, . . .

38. 0.1, 0.4, 1.6, 6.4, _____, _____, _____, . . .

39. 156.25, 31.25, 6.25, 1.25, _____, _____, _____, . . .

40. 7, −21, 63, −189, _____, _____, _____, . . .

Determine whether each given sequence is arithmetic, geometric, or neither. For arithmetic and geometric sequences, write the next 3 terms of the sequence.

41. 4, 8, 12, 16, . . .

The sequence is arithmetic. The next 3 terms are 20, 24, and 28.

42. 2, 4, 7, 11, . . .

43. 3, 12, 48, 192, . . .

44. 9, −18, 36, −72, . . .

45. 1.1, 1.11, 1.111, 1.1111, . . .

46. 4, −8, −20, −32, . . .

47. 7.5, 11.6, 15.7, 19.8, . . .

48. 1, −4, 9, −16, . . .

49. 5, −20, 80, −320, . . .

50. 9.8, 5.6, 1.4, −2.8, . . .