Name _____ Class _____ Date _____

6-1 Practice

Form G

Arithmetic and Geometric Sequences

1. **Reasoning** Explain the relationship between the term number and common ratio for geometric sequences. The nth term of a sequence is the result of multiplying the initial term by the common ratio n-1 times.

2. How can you identify an arithmetic sequence?
In an arithmetic sequence the difference between any two consecutive terms is always the same number.

3. Explain the difference between common ratio and common difference.
The constant ratio helps describe a geometric sequence by providing the quotient of any two consecutive terms! $\frac{a_n}{a_{n-1}}$. The constant difference helps describe an arithmetic sequence.

4. Tell the significance of the common difference to an arithmetic sequence.
The common difference describes the pattern of an arithmetic sequence.

5. What is the procedure for determining an unknown value in a geometric sequence?
The general term A(n), of a geometric sequence is described by the formula $A(n) = A(1) \cdot r^{n-1}$.

Tell whether the sequence is geometric. If it is, identify the common ratio.

6. 2, 4, 6, 8, . . . (+2, +2, +2)
Not geometric

7. 3, 6, 12, 24, . . . (×2, ×2, ×2)
geometric $r = 2$

8. 1, 4, 9, 16, . . . (+3, +5, +7)
Not geometric

9. 1, 2, 5, 7, . . . (+1, +3, +2)
Not geometric

10. –2, 2, 6, 10, . . . (+4, +4, +4)
Not geometric

11. 5, –10, 20, –40, . . . (×−2, ×−2, ×−2)
geometric $r = -2$

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Tell whether the sequence is arithmetic

12) 2, 4, 6, 8 (+2, +2, +2)

Arithemtic $d = 2$

13) 2.4, 3.6, 4.8, 6.0 (+1.2, +1.2, +1.2)

Arithemtic $d = 1.2$

14) 4, -1.2, 3.6, -10.8 (-3, -3, -3)

Arithemtic $d = -3$

15) 7, 4.5, 2, -0.5 (+-2.5, +-2.5)

Arithmetic $d = -2.5$

16) 6, 12, 18, 24 (+6, +6, +6)

Arithmetic $d = 6$

17) 2, 3, 5, 8 (+1, +2, +3)

Not Arithmetic

18) -1, 8, 17, 26 (+9, +9, +9)

Arithmetic $d = 9$

19) 8, 12, 18, 27 (+4, +6, +9)

No Arithmetic d=

20) 2, 4, 8, 16 (+2, +4, +8)

Not Arithmetic

2, 4, 8, 16 (×2, ×2, ×2)

geometric r = 2

Name _____ Class _____ Date _____

6-1 Practice

Form K

Arithmetic and Geometric Sequences

Describe a pattern in each sequence. What are the next two terms of each sequence?

1. 3, 7, 11, 15, … 19 23

+4 +4 +4

d = 4

2. 1, 3, 9, 27, … 81 243

×3 ×3 ×3

r = 3

3. 32, –16, 8, –4, … 2 -1

×-½ ×-½ ×-½

r = -½

4. 24, 22, 20, 18, … 16, 14

-2 -2 -2

d = -2

5. –13, –7, –1, 5, … 11 17

+6 +6

d = 6

6. 4, 20, 100, 500, … 2500 12,500

×5 ×5 ×5 ×5

r = 5

Tell whether the sequence is arithmetic. If it is, identify the common difference.

7. 3, 9, 15, 21, …

+6 +6 +6

Arithmetic d = 6

8. 1, 3, 6, 10, …

+2 +3 +4

No Arithmetic

9. 2, 4, 12, 48, …

+2 +8

Not Arithmetic

10. 25, 21, 17, 13, …

+-4 +-4 +-4

Arithmetic

d = -4

Tell whether the sequence is geometric. If it is, identify the common ratio.

11. 5, 10, 20, 40, …

×2 ×2 ×2

Geometric r = 2

12. 7, 13, 19, 25, …

+6 +6 +6

Not geometric Arithmetic

d = 6

-3 -3 -3

13. 160, –80, 40, –20, …

×-½ ×-½ ×-½

geometric r = -½

14. 12, 9, 6, 3, …

Not geometric

Arithmetic

d = -3

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6-1 Practice (continued)

Form K

Arithmetic and Geometric Sequences

Write the explicit formula for the *n*th term of each arithmetic sequence. Then find the sixth term of each sequence.

15. 9, 16, 23, 30, ...

16. 5, 1, −3, −7, ...

17. $f(1) = 3, d = 5$

18. $f(1) = 9, d = -2.5$

Write the explicit formula for the *n*th term of each geometric sequence. Then find the seventh term of each sequence.

19. 3, 12, 48, 192, ...

20. 7, −14, 28, −56, ...

21. $f(1) = 81, r = -3$

22. $f(1) = 7, r = 5$

23. **Writing** Matthew is given a $25 music gift card for his birthday. He downloads one song, and the value of the gift card is $23.50. After two downloads, its value is $22. Write an explicit formula to represent the remaining value on the card as an arithmetic sequence. What is the value of the gift card after 10 downloads?

24. **Open-Ended.** Write an arithmetic sequence that has $f(1) = 4$. Identify the common difference.

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