LT: I can write an arithmetic or a geometric sequences given a word problem. **p.9**

1. What is the next number in this sequence?

0.03, 0.12, 0.48, 1.92, _____

(A) 1.95
(B) 3.36
(C) 5.08
(D) 7.68

2. Which of the following is an arithmetic sequence?

Sequence R: 1,4,7,10,13
Sequence S: 1,5,25,125,625

(A) R
(B) S
(C) R and S
(D) None of the above

3. What is the next number in this sequence?

2, 16, 128, 1024, ____

(A) 1,920
(B) 8,192
(C) 11,256
(D) 16,384

4. Which of these is the equation that generalizes the pattern of the data in the table?

(A) f(x) = 3x
(B) f(x) = x + 3
(C) f(x) = 2x + 6
(D) f(x) = 3x + 4

x	f(x)
-3	-5
-1	1
2	10
5	19

5. As shown in the table, the monthly rent of an apartment depends on the number of bedrooms. If the pattern is extended, which of these is the likely cost of a 4-bedroom apartment?

(A) $715
(B) $725
(C) $750
(D) $775

Bedrooms	Rent
1	$550
2	$625
3	$700

6. During a science experiment, Kyle counted the number of bacteria present in a petri dish after every minute. Assuming the pattern continues, how many bacteria will there be after 20 minutes?

(A) 1048576
(B) 2097152
(C) 320
(D) 380

Number of Bacteria
2
4
8
16

7. What is the missing term in the sequence below?

-110, ___ , -146

(A) -120
(B) -130
(C) -128
(D) -140

8. Which sequence is arithmetic?

a) 1, 1, 2, 3, 5, 8, …
b) 12, 7, 2, -3, -8, ….
c) -2, 4, -6, 8, -10, …
d) -27, -9, -3, -1, $-\frac{1}{3}$, …

9. What sequence is generated by the equation $f(x) = -2x + 7$ for $x = 0, 1, 2, 3, \ldots$?

A. 0, 7, 14, 21, 28, . . .
B. −2, 5, 12, 19, 26, . . .
C. 7, 5, 3, 1, −1, −3, . . .
D. 7, 9, 11, 13, 15, . . .

10. What sequence is generated by the equation $f(x) = 9x - 5$ for $x = 0, 1, 2, 3, \ldots$?

A. 0, 9, 18, 27, 36, . . .
B. −5, 4, 13, 22, 31, . . .
C. 9, 4, −1, −6, −11, . . .
D. −5, −14, −23, −32, −41, . . .

11. What sequence is generated by the equation $f(x) = 4x + 1$ for $x = 0,1,2,3....$

(A) 5, 6, 7, 8
(B) -1, 0, 1, 2
(C) 1, 5, 9, 13
(D) 4, 5, 6, 7

12. The equation $f(x) = 5x - 3$ generates the arithmetic sequence −3, 2, 7, 12, 17, . . . for $x = 0, 1, 2, 3, \ldots$. What is the 31st term in the sequence?

A. 30
B. 147
C. 150
D. 152

13. The equation $f(x) = -10x + 27$ generates the arithmetic sequence 27, 17, 7, −3, −13, . . . for $x = 0, 1, 2, 3, \ldots$. What is the 26th term in the sequence? p.10

A. −287
B. −277
C. −233
D. −223

14. Which equation can be used to generate the arithmetic sequence −7, −4, −1, 2, 5, 8, . . . for $x = 0, 1, 2, 3, \ldots$?

A. $f(x) = -3x - 7$
B. $f(x) = 3x - 7$
C. $f(x) = -7x + 3$
D. $f(x) = 7x + 3$

15. Which equation can be used to generate the arithmetic sequence 54, 48, 42, 36, 30, . . . for $x = 0, 1, 2, 3, \ldots$?

A. $f(x) = 54x - 6$
B. $f(x) = 6x - 54$
C. $f(x) = -6x + 54$
D. $f(x) = -6x - 6$

16. The equation $f(x) = 4.2x - 3$ represents an arithmetic sequence. What is the common difference between consecutive terms?

A. −1
B. 1
C. 3
D. 4.2

17. Which of the following best describes the arithmetic sequence 2, 5, 8, 11, 14, . . . ?

A. Not a function
B. A linear function
C. A function, but not linear
D. $f(x) = 2x + 3$

18. Which sequence is geometric?

a) 1, 1, 2, 3, 5, 8, …
b) 12, 7, 2, -3, -8, ….
c) -2, 4, -6, 8, -10, …
d) -27, -9, -3, -1, $-\frac{1}{3}$, …

19. What sequence is generated by the equation $f(x) = -2(5)^x$ for $x = 0, 1, 2, 3, \ldots$?

A. 5, 10, 20, 40, 80, . . .
B. −2, −10, −50, −250, −1,250, . . .
C. −2, 10, −50, 250, −1,250, . . .
D. −5, 10, −20, 40, −80, . . .

20. What sequence is generated by the equation $f(x) = 81(-\frac{1}{3})^x$ for $x = 0, 1, 2, 3, \ldots$?

A. 81, 78, 75, 72, 69, . . .
B. −81, −27, −9, −3, −1, . . .
C. 81, 27, 9, 3, 1, . . .
D. 81, −27, 9, −3, 1, . . .

21. Which equation can be used to generate the geometric sequence 3, 6, 12, 24, 48, 96, . . . for $x = 0, 1, 2, 3, \ldots$?

A. $f(x) = 2(3)^x$
B. $f(x) = 3(2)^x$
C. $f(x) = 3(3)^x$
D. $f(x) = 96(\frac{1}{2})^x$

22. The equation $f(x) = 128(\frac{1}{2})^x$ generates the arithmetic sequence 128, 64, 32, 16, 8, . . . for $x = 0, 1, 2, 3, \ldots$. What is the 10^{th} term in the sequence?

A. 1
B. $\frac{1}{2}$
C. $\frac{1}{4}$
D. $\frac{1}{8}$

23. **p.11**

Which sequence is geometric?

(A) 9, 7, 5, 3, 1, ...
(B) 0.5, 1, 2, 4, ...
(C) -9, -7, -5, -3, -1, ...
(D) -4, -2, 0, 2, 4, ...

24. In the function $f(x) = 3^x$, if a positive value of x is increased by 2, what is the effect on the value of the function?

A. It is $\frac{1}{3}$ the original amount.
B. It is 6 times the original amount.
C. It is 9 times the original amount.
D. It is equal to the original amount.

25. Which of the following best describes the geometric sequence 2, 4, 8, 16, 32, 64, . . . ?

A. Not a function
B. A linear function
C. A function, but not linear
D. $f(x) = 2(\frac{1}{2})^x$

26. Certain bacteria can double in number over 1 hour. Suppose a collection of 60 bacterium cells is placed in a petri dish. Which equation can be used to find how many cells, c, there would be after x hours?

A. $c = 60(x)^2$
B. $c = 60(2)^x$
C. $c = 2(60)^x$
D. $c = 2(x)^{60}$

27. Which equation can be used to generate the arithmetic sequence 54, 18, 6, 2, $\frac{2}{3}$, . . . for $x = 0, 1, 2, 3, \ldots$?

A. $f(x) = 54(\frac{1}{3})^x$
B. $f(x) = -54(\frac{1}{3})^x$
C. $f(x) = 54(-\frac{1}{3})^x$
D. $f(x) = 54(3)^{\frac{1}{2}x}$

IF Box 4 Checking: p. 6-8

Is this sequence below arithmetic or geometric? How do you know?

x	1	2	3	51
y	1,	4,	16,	64,...

Write an equation for the sequence. What is the 51st term?

$f(x)=1(4)^{50}$

Geometric sequence

$f(x)=a(b)^{x}$ ← term # ; b ← growth ; a ← starting

1.3×10^{30}

Arithmetic sequen

CW p. (

Geometric Sequences

$f(x) = a(b)^x$

p.6-8 answers

1) 4, 12, 36, 108, ...

x	0	1	2	3
y	4	12	36	108
#	1st	2nd	3rd	4th

$f(x) = 4(3)^b$

Rule for Sequence (b): 3

Starting Amount (a): 4

Equation: $f(x) = 4(3)^x$

7th term: 2916

(so X = 6 for the 7th term)

6 − 1

---

2) 0.25, 0.5, 1, 2, ...

x	0	1	2	3
y	0.25	0.5	1	2
#	1st	2nd	3rd	4th

$f(6) = 0.25(2)^6$

Rule for Sequence (b): 2

Starting Amount (a): 0.25

Equation: $f(x) = 0.25(2)^x$

7th term: 16

(so X = 6 for the 7th term)

6 − 1

---

3) 4, 2, 1, 0.5, ...

x	0	1	2	3
y	4	2	1	0.5
#	1st	2nd	3rd	4th

$f(6) = 4(\frac{1}{2})^6$

Rule for Sequence (b): $\frac{1}{2}$

Starting Amount (a): 4

Equation: $f(x) = 4(\frac{1}{2})^x$

7th term: 0.0625

(so X = 6 for the 7th term)

6 − 1

---

4) 8, 2, 0.5, 0.125, ...

x	0	1	2	3
y	8	2	0.5	0.125
#	1st	2nd	3rd	4th

$f(6) = 8(\frac{1}{4})^6$

Rule for Sequence (b): $\frac{1}{4}$

Starting Amount (a): 8

Equation: $f(x) = 8(\frac{1}{4})^x$

7th term: 1/512 or 0.00195

(so X = 6 for the 7th term)

6 − 1

---

5) $4, 16x, 64x^2, 256x^3, \ldots$

x	0	1	2	3
y	4	$16x$	$64x^2$	$256x^3$
#	1st	2nd	3rd	4th

$f(6) = 4(4x)^6$

$f(6) = 4(4^6 x^6)$

$f(6) = 16384x^6$

Rule for Sequence (b): $4x$

Starting Amount (a): 4

Equation: $f(x) = 4(4x)^x$

7th term: $16384x^6$

(so X = 6 for the 7th term)

6 − 1

---

6) 2, 2, 2, 2, ...

$f(6) = 2(1)^6$

$f(6) = 2$

Rule for Sequence (b): 1

Starting Amount (a): 2

Equation: $f(x) = 2(1)^x$

7th term: 2

(so X = 6 for the 7th term)

6 − 1

Geometric Sequences

$f(x) = a(b)^x$

x | 0 | 1 | 2

7) $\frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \ldots$ (1st, 2nd, 3rd)

Rule for Sequence (b): $\cdot 1/3$

Starting Amount (a): $1/3$

Equation: $f(x) = \frac{1}{3}(\frac{1}{3})^x$

$f(6) = \frac{1}{3}(\frac{1}{3})^6$

7th term: $\frac{1}{2187} = 0.00045$

(so X = 6 for the 7th term) ← −1

---

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

Rule for Sequence (b): $\cdot 2$

Starting Amount (a): 1

Equation: $f(x) = 1(2)^x$

$f(6) = 1(2)^6$

7th term: 64

(so X = 6 for the 7th term) ← −1

---

9) $5, 5x^2, 5x^4, 5x^6 \ldots$

Rule for Sequence (b): $\cdot x^2$

Starting Amount (a): 5

Equation: $f(x) = 5(x^2)^x$

$f(6) = 5(x^2)^6$

$= 5(x^{12})$

7th term: $5x^{12}$

(so X = 6 for the 7th term) ← −1

---

10) 7, 35, 175, 875....

Rule for Sequence (b): $\cdot 5$

Starting Amount (a): 7

Equation: $f(x) = 7(5)^x$

$f(6) = 7(5)^6$

7th term: 109375

(so X = 6 for the 7th term) ← −1

---

11) $a^2, 2a^2, 4a^2, 8a^2 \ldots$

Rule for Sequence (b): $\cdot 2$

Starting Amount (a): a^2

Equation: $f(x) = a^2(2)^x$

$f(6) = a^2(2)^6$

7th term: $a^2 64 \Rightarrow 64a^2$

(so X = 6 for the 7th term) ← −1

---

12) 320, 80, 20, 5...

Rule for Sequence (b): $\cdot \frac{1}{4}$

Starting Amount (a): 320

Equation: $f(x) = 320(\frac{1}{4})^x$

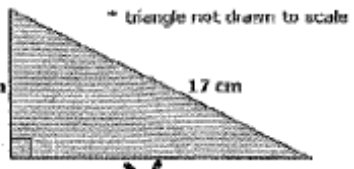
$f(6) = 320(\frac{1}{4})^6$

7th term: $320(\frac{1}{4096}) = 0.078$

(so X = 6 for the 7th term) ← −1

X 15
175
150
225

13. Find the base of the right triangle below.



$8^2 + x^2 = 17^2$

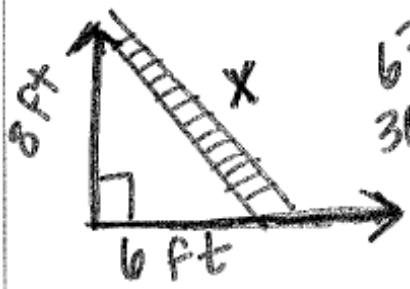
$64 + x^2 = 289$

$-64 \quad -64$

$\sqrt{x^2} = \sqrt{225}$

$x = 15$

14. The base of a ladder is placed 6 feet from a wall. The top of the ladder rests 8 feet up on the wall. How long is the ladder?



$6^2 + 8^2 = x^2$

$36 + 64 = x^2$

$\sqrt{100} = \sqrt{x^2}$

$10 = x$ feet

15. Find the point of intersection by equation.

$\begin{cases} y = 6 - 2x \\ y = 3(2x + 4) \end{cases}$

$y = 6 - 2(-0.75)$

$y = 6 + 1.5$

$6 + 2x = 3(2x + 4)$

$6 + 2x = 6x + 12$

$-2x \quad -2x$

$6 = 4x + 12$

$-12 \quad -12$

$-6 = 4x$

$\frac{-6}{4} = \frac{4x}{4}$

$-0.75 = x$

$y = 7.5$

$(-0.75, 7.5)$

16. What is the slope between the two points (8, 3) and (8, -1)?

$x_1, y_1 \quad x_2, y_2$

$\frac{-1+3}{8-8} = \frac{-4}{0}$ = undefined

Unit 10 Sequences Name: _____ Hour: ___

pg. #	Learning Targets	CW (teacher sign)	Practice assignment	Practice assignment (teacher sign)	Understanding?
1-4	I can identify, write, and use a function for an arithmetic sequence.		2-4		
5-8	I can identify, write, and use a function for a geometric sequence.		6-8		
9-11	I can write an arithmetic or a geometric sequence given a word problem.		9-11		

CW p.9-11 (1-27)

P Correct mistakes

Enter answers in clicker

LT: I can write an arithmetic or a geometric sequences given a word problem. p.9

1. What is the next number in this sequence?

0.03, 0.12, 0.48, 1.92, ____ (×4 ×4 ×4 ×4)

(A) 1.95
(B) 3.36
(C) 5.08
(D) 7.68

D

2. Which of the following is an arithmetic sequence?

Sequence R: 1,4,7,10,13 (+3)
Sequence S: 1,5,25,125,625 (×5)

(A) R
(B) S
(C) R and S
(D) None of the above

A

3. What is the next number in this sequence?

2, 16, 128, 1024, ____ (×8 ×8 ×8 ×8)

(A) 1,920
(B) 8,192
(C) 11,256
(D) 16,384

B

4. Which of these is the equation that generalizes the pattern of the data in the table?

(A) f(x) = 3x
(B) f(x) = x + 3
(C) f(x) = 2x + 6
(D) f(x) = 3x + 4

D

x	f(x)
-3	-5
-1	1
2	10
5	19

$m = \frac{19-10}{5-2} = \frac{9}{3} = 3$

5. As shown in the table, the monthly rent of an apartment depends on the number of bedrooms. If the pattern is extended, which of these is the likely cost of a 4-bedroom apartment?

(A) $715
(B) $725
(C) $750
(D) $775

D

Bedrooms	Rent
1	$550
2	$625
3	$700

(+75, +75)

6. During a science experiment, Kyle counted the number of bacteria present in a petri dish after every minute. Assuming the pattern continues, how many bacteria will there be after 20 minutes?

$f(x) = a \cdot b^x$
$f(x) = 2(2)^{19}$
$f(x) = 1048576$ mins

(A) 1048576
(B) 2097152
(C) 320
(D) 380

A

x	Number of Bacteria	#
0	2	1st
1	4	2nd
2	8	3rd
3	16	4th

7. What is the missing term in the sequence below?

-110, ___ , -146

(A) -120
(B) -130
(C) -128
(D) -140

C

8. Which sequence is arithmetic?

B

a) 1, 1, 2, 3, 5, 8, …

b) 12, 7, 2, -3, -8, … -5

c) -2, 4, -6, 8, -10, …

d) -27, -9, -3, -1, $-\frac{1}{3}$, …

9. What sequence is generated by the equation $f(x) = -2x + 7$ for $x = 0, 1, 2, 3, \ldots$?

A. 0, 7, 14, 21, 28, . . .

B. −2, 5, 12, 19, 26, . . .

C. 7, 5, 3, 1, −1, −3, . . .

D. 7, 9, 11, 13, 15, . . .

C

10. What sequence is generated by the equation $f(x) = 9x - 5$ for $x = 0, 1, 2, 3, \ldots$?

A. 0, 9, 18, 27, 36, . . .

B. −5, 4, 13, 22, 31, . . .

C. 9, 4, −1, −6, −11, . . .

D. −5, −14, −23, −32, −41, . . .

B

11. What sequence is generated by the equation $f(x) = 4x + 1$ for $x = 0,1,2,3....$

(A) 5, 6, 7, 8

(B) -1, 0, 1, 2

(C) 1, 5, 9, 13

(D) 4, 5, 6, 7

C

12. The equation $f(x) = 5x - 3$ generates the arithmetic sequence −3, 2, 7, 12, 17, . . . for $x = 0, 1, 2, 3, \ldots$. What is the 31st term in the sequence?

A. 30

B. 147

C. 150

D. 152

$f(30) = 5(30) - 3$

$f(30) = 150 - 3$

$f(30) = 147$

B

13. The equation $f(x) = -10x + 27$ generates the arithmetic sequence 27, 17, 7, −3, −13, . . . for $x = 0, 1, 2, 3, \ldots$. What is the 26th term in the sequence? p.10

A. −287

B. −277

C. −233

D. −223

$f(25) = -10(25) + 27$

$f(25) = -250 + 27$

$f(25) = -223$

D

14. Which equation can be used to generate the arithmetic sequence −7, −4, −1, 2, 5, 8, . . . for $x = 0, 1, 2, 3, \ldots$?

A. $f(x) = -3x - 7$

B. $f(x) = 3x - 7$

C. $f(x) = -7x + 3$

D. $f(x) = 7x + 3$

B

15. Which equation can be used to generate the arithmetic sequence 54, 48, 42, 36, 30, . . . for $x = 0, 1, 2, 3, \ldots$?

A. $f(x) = 54x - 6$

B. $f(x) = 6x - 54$

C. $f(x) = -6x + 54$

D. $f(x) = -6x - 6$

C

16. The equation $f(x) = 4.2x - 3$ represents an arithmetic sequence. What is the common difference between consecutive terms?

A. −1

B. 1

C. 3

D. 4.2

D

17. Which of the following best describes the arithmetic sequence 2, 5, 8, 11, 14, . . . ?

A. Not a function

B. A linear function

C. A function, but not linear

D. $f(x) = 2x + 3$

B

18. Which sequence is geometric?

a) 1, 1, 2, 3, 5, 8, ...
b) 12, 7, 2, -3, -8, ...
c) -2, 4, -6, 8, -10, ...
d) $-27, -9, -3, -1, -\frac{1}{3}, \ldots$ ÷3

D

19. What sequence is generated by the equation $f(x) = -2(5)^x$ for $x = 0, 1, 2, 3, \ldots$?

A. 5, 10, 20, 40, 80, ...
B. −2, −10, −50, −250, −1,250, ...
C. −2, 10, −50, 250, −1,250, ...
D. −5, 10, −20, 40, −80, ...

B

20. What sequence is generated by the equation $f(x) = 81(-\frac{1}{3})^x$ for $x = 0, 1, 2, 3, \ldots$?

A. 81, 78, 75, 72, 69, ...
B. −81, −27, −9, −3, −1, ...
C. 81, 27, 9, 3, 1, ...
D. 81, −27, 9, −3, 1, ...

D

21. Which equation can be used to generate the geometric sequence 3, 6, 12, 24, 48, 96, ... for $x = 0, 1, 2, 3, \ldots$?

A. $f(x) = 2(3)^x$
B. $f(x) = 3(2)^x$
C. $f(x) = 3(3)^x$
D. $f(x) = 96(\frac{1}{2})^x$

B

22. The equation $f(x) = 128(\frac{1}{2})^x$ generates the arithmetic sequence 128, 64, 32, 16, 8, ... for $x = 0, 1, 2, 3, \ldots$. What is the 10th term in the sequence?

A. 1
B. $\frac{1}{2}$
C. $\frac{1}{4}$
D. $\frac{1}{8}$

$f(9) = 128(\frac{1}{2})^9$
$f(9) = 128 \cdot \frac{1}{2^9}$
$f(9) = 128 \cdot \frac{1}{512}$
$f(9) = \frac{1}{4}$

C

p 11

23. Which sequence is geometric?

(A) 9, 7, 5, 3, 1, ...
(B) 0.5, 1, 2, 4, ... ×2
(C) -9, -7, -5, -3, -1, ...
(D) -4, -2, 0, 2, 4, ...

B

24. In the function $f(x) = 3^x$, if a positive value of x is increased by 2, what is the effect on the value of the function?

A. It is $\frac{1}{3}$ the original amount.
B. It is 6 times the original amount.
C. It is 9 times the original amount.
D. It is equal to the original amount.

$f(x) = 3^1$ +2
$f(x) = 3^3$
3 → 27

C

25. Which of the following best describes the geometric sequence 2, 4, 8, 16, 32, 64, ...?

A. Not a function
B. A linear function
C. A function, but not linear
D. $f(x) = 2(\frac{1}{2})^x$

C

26. Certain bacteria can double in number over 1 hour. Suppose a collection of 60 bacterium cells is placed in a petri dish. Which equation can be used to find how many cells, c, there would be after x hours?

A. $c = 60(x)^2$
B. $c = 60(2)^x$
C. $c = 2(60)^x$
D. $c = 2(x)^{60}$

B

27. Which equation can be used to generate the arithmetic sequence 54, 18, 6, 2, $\frac{2}{3}$, ... for $x = 0, 1, 2, 3, \ldots$?

A. $f(x) = 54(\frac{1}{3})^x$
B. $f(x) = -54(\frac{1}{3})^x$
C. $f(x) = 54(-\frac{1}{3})^x$
D. $f(x) = 54(3)^{\frac{1}{2}x}$

A