

Linear Sequences



Generate Linear Number Sequences

The formula $2n + 1$ can be used to calculate the value of these terms in this sequence:

3 5 7 9 11 13

What is $2n + 1$ when $n = 13$?

27

What is $2n + 1$ when $n = 50$?

101



Generate Linear Number Sequences

The formula $n - 3$ can be used to calculate the value of these terms in this sequence:

-2 -1 0 1 2 3

What is $n - 3$ when $n = 17$?

14

What is $n - 3$ when $n = 70$?

67



Generate Linear Number Sequences

The formula $6n - 5$ can be used to calculate the value of these terms in this sequence:

1 7 13 19 25 31

What is $6n - 5$ when $n = 15$?

85

What is $6n - 5$ when $n = 90$?

535



Generate Linear Number Sequences

The formula $7n + 4$ can be used to calculate the value of these terms in this sequence:

11 18 25 32 39

What is $7n + 4$ when $n = 8$?

60

What is $6n + 4$ when $n = 30$?

184



Generate Linear Number Sequences

The formula $8n - 2$ can be used to calculate the value of these terms in this sequence:

6 14 22 30 38

What is $8n - 2$ when $n = 12$?

94

What is $8n - 2$ when $n = 40$?

318



Generate Linear Sequences



The following linear sequence shows the first four terms.

4 7 10 13

What is the 10th term and the 20th term?

10th term = **31** 20th term = **61**

Write the formula for the nth term:

$$3n + 1$$

Generate Linear Sequences



The following linear sequence shows the first four terms.

1 5 9 13

What is the 10th term and the 20th term?

10th term = **37** 20th term = **77**

Write the formula for the nth term:

$4n - 3$

Generate Linear Sequences



The following linear sequence shows the first four terms.

11 18 25 32

What is the 10th term and the 20th term?

10th term = **74** 20th term = **144**

Write the formula for the nth term:

$$7n + 4$$

Generate Linear Sequences



The following linear sequence shows the first four terms.

14 19 24 29

What is the 7th term, 12th term and the 20th term?

7th term = **44** 12th term = **69** 20th term = **109**

Write the formula for the nth term:

$$5n + 9$$

Generate Linear Sequences



The following linear sequence shows the first four terms.

2 11 20 29

What is the 7th term, 12th term and the 20th term?

7th term = **56** 12th term = **101** 20th term = **173**

Write the formula for the nth term:

$$9n - 7$$

Describe Linear Sequences

Here is a linear sequence:

3 5 7 9

The 1st term is: **3**

The 4th term is: **9**

The step is: **2**

The 5th term will be: **11**

The 10th term will be: **21**

Describe Linear Sequences

Here is a linear sequence:

2 7 12 17

The 1st term is: **2**

The 4th term is: **17**

The step is: **5**

The 5th term will be: **22**

The 10th term will be: **47**

Describe Linear Sequences

Here is a linear sequence:

2 5 8 11

The step is: **3**

The first term is: **2**

The first term = **the step – 1**

Describe Linear Sequences

Here is a linear sequence:

6 10 14 18

The step is: **4**

The first term is: **6**

The first term = **the step + 2**

Describe Linear Sequences

Here is a linear sequence:

3 8 13 18

The 1st term is: **3**

The step is: **5**

The 1st term = **step - 2**

The nth term = **5n - 2**

The 16th term = **78**

Describe Linear Sequences

Here is a linear sequence:

5 8 11 14

The 1st term is: **5**

The step is: **3**

The 1st term = **step + 2**

The nth term = **$3n + 2$**

The 12th term = **38**

Describe Linear Sequences

Here is a linear sequence:

4 7 10 13

The 5th term is: **16**

The nth term is: **$3n + 1$**

The 16th term is: **49**

Describe Linear Sequences

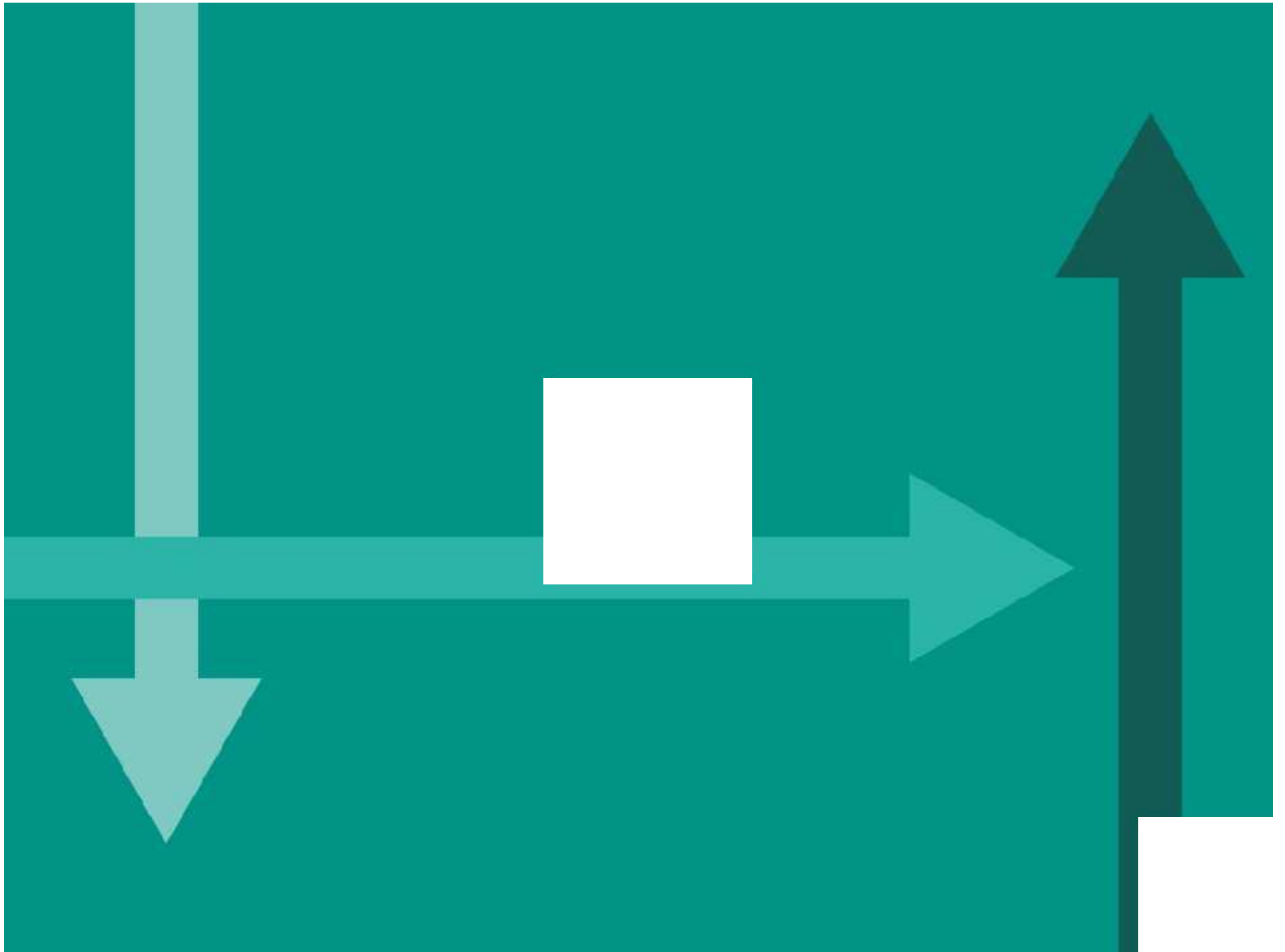
Here is a linear sequence:

1 8 15 22

The 5th term is: **29**

The n^{th} term is: **$7n - 6$**

The 12th term is: **78**



Describe Linear Sequences

Aim: I can describe linear sequences.

Here is a linear sequence: **3, 5, 7, 9**

The step is **2**

The 1st term is **3**

The 4th term is **9**

The 5th term will be **11**

The 10th term will be **21**

Complete the following:

1. Here is a linear sequence: **2, 5, 8, 11**

The step is ____

The 1st term is ____

The 4th term is ____

The 5th term will be ____

The 10th term will be ____

2. Here is a linear sequence: **4, 6, 8, 10**

The step is ____

The 1st term is ____

The 4th term is ____

The 5th term will be ____

The 10th term will be ____

3. Here is a linear sequence: **2, 5, 8, 11**

The step is ____

The 1st term is ____

The 4th term is ____

The 5th term will be ____

The 10th term will be ____

4. Here is a linear sequence: **5, 9, 13, 17**

The step is ____

The 1st term is ____

The 4th term is ____

The 5th term will be ____

The 10th term will be ____

5. Here is a linear sequence: **1, 6, 11, 16**

The step is ____

The 1st term is ____

The 4th term is ____

The 5th term will be ____

The 10th term will be ____

6. Here is a linear sequence: **7, 13, 19, 25**

The step is ____

The 1st term is ____

The 4th term is ____

The 5th term will be ____

The 10th term will be ____

Here is a linear sequence: **2, 5, 8, 11**

The step is **3**

The first term is **2**

The formula for the first term = the step - **1**

Complete the following:

7. Here is a linear sequence: **4, 6, 8, 10**

The step is ____

The first term is ____

The formula for the first term = _____

8. Here is a linear sequence: **5, 9, 13, 17**

The step is ____

The first term is ____

The formula for the first term = _____

9. Here is a linear sequence: **3, 8, 13, 18**

The step is ____

The first term is ____

The formula for the first term = _____

10. Here is a linear sequence: **9, 15, 21, 27**

The step is ____

The first term is ____

The formula for the first term = _____

11. Here is a linear sequence: **2, 7, 12, 17**

The step is ____

The first term is ____

The formula for the first term = _____

12. Here is a linear sequence: **6, 13, 20, 27**

The step is ____

The first term is ____

The formula for the first term = _____

13. Here is a linear sequence: **8, 12, 16, 20**

The step is ____

The first term is ____

The formula for the first term = _____

14. Here is a linear sequence: **7, 16, 25, 34**

The step is ____

The first term is ____

The formula for the first term = _____

15. Here is a linear sequence: **10, 17, 24, 31**

The step is ____

The first term is ____

The formula for the first term = _____

Describe Linear Sequences Answers

1. The step is **3**
The 1st term is **2**
The 4th term is **11**
The 5th term will be **14**
The 10th term will be **29**
2. The step is **2**
The 1st term is **4**
The 4th term is **10**
The 5th term will be **12**
The 10th term will be **22**
3. The step is **3**
The 1st term is **2**
The 4th term is **11**
The 5th term will be **14**
The 10th term will be **29**
4. The step is **4**
The 1st term is **5**
The 4th term is **17**
The 5th term will be **21**
The 10th term will be **41**
5. The step is **5**
The 1st term is **1**
The 4th term is **16**
The 5th term will be **21**
The 10th term will be **46**
6. The step is **6**
The 1st term is **7**
The 4th term is **25**
The 5th term will be **31**
The 10th term will be **61**
7. The step is **2**
The first term is **4**
The formula for the first term is **the step + 2**
8. The step is **4**
The first term is **5**
The formula for the first term is **the step + 1**
9. The step is **5**
The first term is **3**
The formula for the first term is **the step - 2**
10. The step is **6**
The first term is **9**
The formula for the first term is **the step + 3**
11. The step is **5**
The first term is **2**
The formula for the first term is **the step - 3**
12. The step is **7**
The first term is **6**
The formula for the first term is **the step - 1**
13. The step is **4**
The first term is **4**
The formula for the first term is **the step + 4**
14. The step is **9**
The first term is **7**
The formula for the first term is **the step - 2**
15. The step is **7**
The first term is **10**
The formula for the first term is **the step + 3**

Describe Linear Sequences

Aim: I can describe linear sequences.

Here is a linear sequence: **3, 8, 13, 18**

The step is **5**

The 1st term is **3**

The formula for the first term = **step - 2**

The nth term = **5n - 2**

The 16th term = **78** (5×16) - 2 = 78

Complete the following:

1. Here is a linear sequence: **7, 11, 15, 19**

The step is ____

The 1st term is ____

The formula for the first term = _____

The nth term = _____

The 12th term = ____

2. Here is a linear sequence: **8, 11, 14, 17**

The step is ____

The 1st term is ____

The formula for the first term = _____

The nth term = _____

The 12th term = ____

3. Here is a linear sequence: **9, 11, 13, 15**

The step is ____

The 1st term is ____

The formula for the first term = _____

The nth term = _____

The 15th term = ____

4. Here is a linear sequence: **1, 7, 13, 19**

The step is ____

The 1st term is ____

The formula for the first term = _____

The nth term = _____

The 11th term = ____

5. Here is a linear sequence: **4, 11, 18, 25**

The step is ____

The 1st term is ____

The formula for the first term = _____

The nth term = _____

The 9th term = ____

6. Here is a linear sequence: **2, 11, 20, 29**

The step is ____

The 1st term is ____

The formula for the first term = _____

The nth term = _____

The 14th term = ____

For your own linear sequences, complete the following:

7. Write a linear sequence: _____

The step is ____

The 1st term = ____

The formula for the first term = _____

The nth term = _____

The 14th term = ____

8. Write a linear sequence: _____

The step is ____

The 1st term = ____

The formula for the first term = _____

The nth term = _____

The 17th term = ____

9. Write a linear sequence: _____

The step is ____

The 1st term = ____

The formula for the first term = _____

The nth term = _____

The 18th term = ____

10. Write a linear sequence: _____

The step is ____

The 1st term = ____

The formula for the first term = _____

The nth term = _____

The ____th term =

11. Write a linear sequence: _____

The step is ____

The 1st term = ____

The formula for the first term = _____

The nth term = _____

____th

12. Write a linear sequence: _____

The step is ____

The 1st term = ____

The formula for the first term = _____

The nth term = _____

____th ____

Describe Linear Sequences Answers

1. The step is **4**
The 1st term is **7**
The formula for the first term is **step + 3**
The nth term = **$4n + 3$**
The 12th term = **51**
2. The step is **3**
The 1st term is **8**
The formula for the first term is **step + 5**
The nth term = **$3n + 5$**
The 12th term = **41**
3. The step is **2**
The 1st term is **9**
The formula for the first term is **step + 7**
The nth term = **$2n + 7$**
The 15th term = **37**
4. The step is **6**
The 1st term is **1**
The formula for the first term is **step - 5**
The nth term = **$6n - 5$**
The 11th term = **61**
5. The step is **7**
The 1st term is **4**
The formula for the first term is **step - 3**
The nth term = **$7n - 3$**
The 9th term = **60**
6. The step is **9**
The 1st term is **2**
The formula for the first term is **step - 7**
The nth term = **$9n - 7$**
The 14th term = **119**

Questions 7 - 12.

Accept any reasonable answer.

Describe Linear Sequences

Aim: I can describe linear sequences.

Here is a linear sequence: **4, 7, 10, 13**

The 5th term is **16**

The n^{th} term is **$3n + 1$**

The 16th term is **49**

Complete the following:

1. Here is a linear sequence: **1, 6, 11, 16**

The 5th term is ____

The n^{th} term is _____

The 12th term is ____

2. Here is a linear sequence: **7, 11, 15, 19**

The 5th term is ____

The n^{th} term is _____

The 18th term is ____

3. Here is a linear sequence: **2, 5, 8, 11**

The 5th term is ____

The n^{th} term is _____

The 16th term is ____

4. Here is a linear sequence: **4, 13, 22, 31**

The 5th term is ____

The n^{th} term is _____

The 11th term is ____

5. Here is a linear sequence: **4, 11, 18, 25**

The 5th term is ____

The n^{th} term is _____

The 14th term is ____

6. Here is a linear sequence: **11, 19, 27, 35**

The 5th term is ____

The n^{th} term is _____

The 15th term is ____

7. Here is a linear sequence: **2, 8, 14, 20**

The 5th term is ____

The n^{th} term is _____

The 13th term is ____

8. Here is a linear sequence: **12, 17, 22, 27**

The 5th term is ____

The n^{th} term is _____

The 19th term is ____

9. Here is a linear sequence: **5, 16, 27, 38**

The 5th term is ____

The nth term is _____

The 12th term is ____

10. Here is a linear sequence: **17, 29, 41, 53**

The 5th term is ____

The nth term is _____

The 15th term is ____

Challenge

Write an explanation, with an example, of how to turn a linear sequence into an expression for the nth term.

Compare your answer with a partner. How can you improve your explanation?

Describe Linear Sequences Answers

1. The 5th term is **21**
The n th term is **$5n - 4$**
The 12th term is **56**
2. The 5th term is **23**
The n th term is **$4n + 3$**
The 18th term is **75**
3. The 5th term is **14**
The n th term is **$3n - 1$**
The 16th term is **47**
4. The 5th term is **40**
The n th term is **$9n - 5$**
The 11th term is **94**
5. The 5th term is **32**
The n th term is **$7n - 3$**
The 14th term is **95**
6. The 5th term is **43**
The n th term is **$8n + 3$**
The 15th term is **123**
7. The 5th term is **26**
The n th term is **$6n - 4$**
The 13th term is **74**
8. The 5th term is **32**
The n th term is **$5n + 7$**
The 19th term is **102**
9. The 5th term is **49**
The n th term is **$11n - 6$**
The 12th term is **126**
10. The 5th term is **65**
The n th term is **$12n + 5$**
The 15th term is **185**