

OA5-1 Sequences

Find the **difference** between 15 and 18 by counting on your fingers.



Say: 15 16 17 18

When you say "18," you have 3 fingers up. So the difference between 15 and 18 is 3.

1. Find the difference between the numbers. Write your answer in the circle.

a) $2 \overset{3}{\bigcirc} 5$

b) $7 \bigcirc 9$

c) $15 \bigcirc 19$

d) $12 \bigcirc 16$

e) $21 \bigcirc 26$

f) $17 \bigcirc 21$

g) $22 \bigcirc 29$

h) $37 \bigcirc 44$

BONUS ▶

i) $72 \bigcirc 75$

j) $87 \bigcirc 93$

k) $109 \bigcirc 112$

l) $116 \bigcirc 125$

Sam wants to continue the sequence:

6 , 8 , 10 , 12 , ?

He finds the difference between the first two numbers.

$\overset{2}{\bigcirc}$
6 , 8 , 10 , 12 , ?

The difference between any number and the next is 2.
The sequence is made by adding 2 each time.

$\overset{2}{\bigcirc}$ $\overset{2}{\bigcirc}$ $\overset{2}{\bigcirc}$ $\overset{2}{\bigcirc}$
6 , 8 , 10 , 12 , ?

Sam adds 2 to the last number in the sequence.

6 , 8 , 10 , 12 , 14

2. Find the difference between the numbers. Then extend the sequence.

a) $\overset{3}{\bigcirc} \bigcirc \bigcirc \bigcirc \bigcirc$
2 , 5 , 8 , _____ , _____ , _____

b) $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
1 , 7 , 13 , _____ , _____ , _____

c) $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
2 , 7 , 12 , _____ , _____ , _____

d) $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
3 , 7 , 11 , _____ , _____ , _____

e) $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
3 , 13 , 23 , _____ , _____ , _____

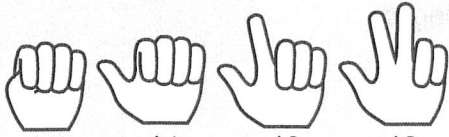
f) $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
8 , 16 , 24 , _____ , _____ , _____

g) $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
50 , 53 , 56 , _____ , _____ , _____

h) $\bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$
91 , 97 , 103 , _____ , _____ , _____

3. A plant is 15 cm tall. It grows 2 cm each week. How tall will the plant be after three weeks?

Find the **difference** between 15 and 12 by counting backwards.



Say: 15 14 13 12

When you say "12," you have 3 fingers up. So the difference between 15 and 12 is 3.

4. Find the difference between the numbers. Write your answer in the circle.

a) $12 \overset{-3}{\bigcirc} 9$

b) $17 \bigcirc 13$

c) $15 \bigcirc 9$

d) $12 \bigcirc 8$

e) $21 \bigcirc 16$

f) $37 \bigcirc 31$

g) $52 \bigcirc 49$

h) $64 \bigcirc 57$

Camille wants to continue the sequence:

16 , 14 , 12 , 10 , ?

She finds the difference between the numbers in the sequence. The sequence was made by subtracting 2 each time.

$\overset{-2}{\bigcirc}$
16 , 14 , 12 , 10 , ?

She subtracts 2 from the last number in the sequence.

$\overset{-2}{\bigcirc}$ $\overset{-2}{\bigcirc}$ $\overset{-2}{\bigcirc}$ $\overset{-2}{\bigcirc}$
16 , 14 , 12 , 10 , 8

5. Extend the sequence by subtracting the same number each time.

a) $18 \overset{-3}{\bigcirc} \bigcirc \bigcirc \bigcirc \bigcirc$

b) $32 \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

c) $52 \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

d) $34 \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

e) $51 \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

f) $84 \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

g) $62 \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

h) $97 \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

i) $71 \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

j) $84 \bigcirc \bigcirc \bigcirc \bigcirc \bigcirc$

6. To solve the problem, write a sequence made by subtracting the same number.

a) Alex has saved \$49. He spends \$8 each day. How much money does he have left after 5 days?

b) Jennifer has a roll of 74 stamps. She uses 7 each day for 4 days. How many are left?

OA5-2 Rules for Sequences

1. Continue the sequence by adding the given number.

a) Add 3: 41, 44, 47, _____, _____

b) Add 5: 60, 65, _____, _____, _____

c) Add 2: 74, 76, _____, _____, _____

d) Add 10: 20, 30, _____, _____, _____

e) Add 4: 61, 65, _____, _____, _____

f) Add 9: 31, 40, _____, _____, _____

g) Add 6: 20, 26, _____, _____, _____

2. Continue the sequence by subtracting the given number.

a) Subtract 2: 24, 22, _____, _____, _____

b) Subtract 3: 25, 22, _____, _____, _____

c) Subtract 5: 85, 80, _____, _____, _____

d) Subtract 10: 70, 60, _____, _____, _____

e) Subtract 4: 56, 52, _____, _____, _____

f) Subtract 7: 56, 49, _____, _____, _____

g) Subtract 11: 141, 130, _____, _____, _____

BONUS ► Use addition or subtraction to make a rule for a sequence. Then make a sequence to fit your rule.

My rule: _____, _____, _____, _____, _____

3. Which one of the following sequences was made by adding 4? Circle it.

Hint: Check all the numbers in the sequence.

A. 4, 8, 10, 14

B. 4, 8, 12, 16

C. 3, 9, 11, 15

4. Greg says the sequence 72, 63, 55, 46, 38, ... was made by subtracting 8 each time. Ava says it was made by subtracting 9. Are their answers correct? Explain.

5. What number was added each time to make the sequence?

- a) 2, 6, 10, 14 Add _____ b) 2, 5, 8, 11 Add _____
c) 18, 24, 30, 36 Add _____ d) 40, 47, 54, 61 Add _____
e) 81, 86, 91, 96 Add _____ f) 69, 72, 75, 78 Add _____

6. What number was subtracted each time to make the sequence?

- a) 38, 36, 34, 32 Subtract _____ b) 65, 60, 55, 50 Subtract _____
c) 200, 199, 198, 197 Subtract _____ d) 91, 88, 85, 82 Subtract _____
e) 67, 64, 61, 58 Subtract _____ f) 399, 397, 395, 393 Subtract _____

7. State the rule for the sequence.

- a) 119, 112, 105, 98, 91 Subtract _____ b) 11, 19, 27, 35, 43, 51 Add _____
c) 301, 305, 309, 313 _____ d) 210, 198, 186, 174 _____
e) 633, 622, 611, 600, 589 _____
f) 733, 763, 793, 823, 853 _____
g) 821, 830, 839, 848, 857 _____

A complete rule for the sequence also tells you where to start.

Example: Start at 2 and add 3 each time. The sequence is 2, 5, 8, 11, ...

8. State the rule for the sequence. Then continue the sequence.

- a) 22, 27, 32, 37, 42, 47 The rule is: Start at 22 and add 5 each time.
b) 38, 45, 52, _____, _____, _____ The rule is: _____
c) 124, 136, 148, _____, _____, _____ The rule is: _____

 9. Look at the sequence: 5, 9, 13, 17, 21,

Jake says the rule is: "Start at 5 and subtract 4 each time."

Anika says the rule is: "Start at 5 and add 5 each time."

Ethan says the rule is: "Start at 5 and add 4 each time."

- a) Whose rule is correct?
b) What mistakes did the others make?

OA5-3 T-tables

Mona creates a **growing pattern** with squares. She records the number of squares in each figure in a T-table. She also records the number of squares she adds each time she makes a new figure.



Figure 1

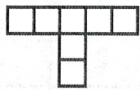


Figure 2

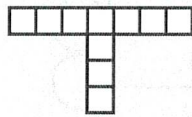


Figure 3

Figure	Number of Blocks
1	4
2	7
3	10

3
3
Number of squares added each time

The number of squares in the figures are 4, 7, 10, ...

Mona writes a rule for the number of squares: *Start at 4 and add 3 each time.*

1. Mona makes other growing patterns with squares. How many squares does she add to make each new figure? Write your answer in the circles. Then write a rule for the number of squares.

a)

Figure	Number of Squares
1	2
2	7
3	12

5
5

Rule: Start at 2 and
add 5 each time.

b)

Figure	Number of Squares
1	2
2	9
3	16

○
○

Rule: _____

c)

Figure	Number of Squares
1	1
2	4
3	7

○
○

Rule: _____

d)

Figure	Number of Squares
1	1
2	7
3	13

○
○

Rule: _____

e)

Figure	Number of Squares
1	5
2	12
3	19

○
○

Rule: _____

f)

Figure	Number of Squares
1	13
2	21
3	29

○
○

Rule: _____

g)

Figure	Number of Squares
1	3
2	11
3	19

○
○

h)

Figure	Number of Squares
1	7
2	11
3	15

○
○

i)

Figure	Number of Squares
1	8
2	14
3	20

○
○

2. Extend the sequence. How many squares would be used in Figure 6?

a)

Figure	Number of Squares
1	3
2	11
3	19
4	
5	
6	

b)

Figure	Number of Squares
1	2
2	6
3	10

c)

Figure	Number of Squares
1	6
2	11
3	16

3. After making Figure 3, Mona has only 16 squares left. Does she have enough squares to complete Figure 4 in the sequence? Answer yes "✓" or no "X."

a)

Figure	Number of Squares
1	4
2	9
3	14

b)

Figure	Number of Squares
1	5
2	9
3	13

c)

Figure	Number of Squares
1	3
2	7
3	11

4. The snow is 4 inches deep at 5 p.m. Two inches of snow fall each hour. How deep is the snow at 9 p.m.?

Time	Depth of Snow
5 p.m.	4 in

5. Philip has saved \$28 by the end of June. Each month he saves \$7. How much will he have by the end of October?

Month	Savings
June	\$28

6. A boating business rents rowboats at \$15 for the first hour and \$12 for each hour after that. How much will it cost to rent a boat for 6 hours?

7. A bean plant is 10 cm tall. It grows 7 cm every week. How tall is the plant after 5 weeks?

OA5-4 Comparing Sequences

1. Extend the sequence by adding or subtracting the same number each time.

a) Subtract 3: 21, 18, 15, 12

b) Subtract 3: 65, _____, _____, _____

c) Add 5: 2, _____, _____, _____

d) Add 2: 2, _____, _____, _____

2. Which two sequences in Question 1 have the same rule? _____ and _____

Why are the sequences different? _____

3. Extend both sequences in the T-table.

a)

Add 3	Subtract 2
1	31
4	29
7	27
10	25

b)

Add 2	Add 2
0	3

c)

Add 3	Subtract 3
1	25

d)

Add 3	Add 5
21	21

e)

Add 5	Add 2
0	1

f)

Subtract 4	Subtract 3
24	24

4. Extend both sequences. What number do you add to the numbers in the first sequence to get the numbers in the second sequence?

a)

Add 3	Add 3
1	3
4	6
7	9

↪
Add 2

b)

Add 2	Add 2
0	1

↪
Add _____

c)

Subtract 4	Subtract 4
20	24

↪
Add _____

5. Extend both sequences. What number do you subtract from the numbers in the first sequence to get the numbers in the second sequence?

a)

Subtract 3	Subtract 3
51	43

Subtract 8

b)

Add 5	Add 5
10	1

Subtract _____

c)

Subtract 8	Subtract 8
80	74

Subtract _____

6. Extend the sequences. What is the rule for how you get the numbers in the second sequence from the first sequence?

a)

Add 10	Add 10
1	3

b)

Add 5	Add 5
0	1

c)

Subtract 2	Subtract 2
35	29

7. Maria extended both sequences using the rules. Then she hid the numbers between the first and the last rows! What is the missing number in the last row?

Hint: What is the rule for getting the numbers in the second sequence from the first?

a)

Add 10	Add 10
4	9
124	129

Add 5

b)

Add 5	Add 5
35	21
115	

c)

Subtract 3	Subtract 3
87	75
15	

8. Copy the table shown and add two more rows to it. How is this table different from other tables on this page? What is the rule for getting the numbers in the second sequence from the first? Explain.

Add 2	Add 5
1	1

OA5-5 Comparing Sequences (Advanced)

1. Extend the sequences in the first and second columns. Then add the numbers in each row.

a)

Add 3	Subtract 3	Sum
1	24	25
4	21	25

b)

Subtract 2	Add 2	Sum
31	5	

c)

Add 5	Subtract 5	Sum
10	100	

d)

Subtract 10	Add 10	Sum
95	32	

What do you notice about the third column in the table? _____

2. Extend the first and second sequences. Add the numbers in each row. Write a rule to get the numbers in the second sequence from the sum and the first sequence.

a)

Add 5	Subtract 5	Sum
3	55	58
8	50	58
13	45	58
18	40	58

Subtract first sequence from 58
 or *58 – first sequence*

b)

Subtract 2	Add 2	Sum
43	2	

c)

Add 3	Subtract 3	Sum
1	40	41

d)

Subtract 20	Add 20	Sum
356	4	

e) Explain your rules from parts a) to d).

