

# PA5-1 Increasing and Decreasing 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  $\overset{+3}{\circ}$  5

b) 7  $\circ$  9

c) 15  $\circ$  19

d) 12  $\circ$  16

e) 21  $\circ$  26

f) 17  $\circ$  21

g) 22  $\circ$  29

h) 37  $\circ$  44

**BONUS** ▶

i) 72  $\circ$  75

j) 87  $\circ$  93

k) 109  $\circ$  112

l) 116  $\circ$  125

Sam wants to continue the sequence:

6 , 8 , 10 , 12 , ?

He finds the difference between the first two numbers.

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

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

$\overset{+2}{\circ}$   $\overset{+2}{\circ}$   $\overset{+2}{\circ}$   $\overset{+2}{\circ}$   
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) 2  $\overset{+3}{\circ}$   $\circ$   $\circ$   $\circ$   $\circ$   
2 , 5 , 8 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

b)  $\circ$   $\circ$   $\circ$   $\circ$   $\circ$   
1 , 7 , 13 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

c)  $\circ$   $\circ$   $\circ$   $\circ$   $\circ$   
2 , 7 , 12 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

d)  $\circ$   $\circ$   $\circ$   $\circ$   $\circ$   
3 , 7 , 11 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

e)  $\circ$   $\circ$   $\circ$   $\circ$   $\circ$   
3 , 13 , 23 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

f)  $\circ$   $\circ$   $\circ$   $\circ$   $\circ$   
8 , 16 , 24 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

g)  $\circ$   $\circ$   $\circ$   $\circ$   $\circ$   
50 , 53 , 56 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

h)  $\circ$   $\circ$   $\circ$   $\circ$   $\circ$   
91 , 97 , 103 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

3. A plant is 15 cm tall. It grows 2 cm each week. How tall will the plant be after 3 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)  $64 \bigcirc 57$

Jasmin 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)  $\overset{-3}{\bigcirc}$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   
18 , 15 , 12 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

b)  $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   
32 , 26 , 20 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

c)  $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   
52 , 47 , 42 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

d)  $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   
34 , 30 , 26 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

e)  $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   
51 , 46 , 41 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

f)  $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   
84 , 80 , 76 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

g)  $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   
62 , 51 , 40 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

h)  $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   
97 , 89 , 81 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

i)  $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   
71 , 64 , 57 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

j)  $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   $\bigcirc$   
84 , 72 , 60 , \_\_\_\_\_ , \_\_\_\_\_ , \_\_\_\_\_

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?

In an **increasing sequence**, each number is greater than the one before it. The sequence 6, 8, 10, 12 is an increasing sequence, and you need to **add 2** to each number to get the next number.

$$6, 8, 10, 12$$

$\begin{matrix} +2 \\ \circ \end{matrix}$ 
 $\begin{matrix} +2 \\ \circ \end{matrix}$ 
 $\begin{matrix} +2 \\ \circ \end{matrix}$

7. Extend the increasing sequence. Start by finding the difference between the numbers.

a) 2, 5, 8,  $\circ$ ,  $\circ$ ,  $\circ$       b) 31, 34, 37,  $\circ$ ,  $\circ$ ,  $\circ$

c) 92, 98, 104,  $\circ$ ,  $\circ$ ,  $\circ$       d) 80, 88, 96,  $\circ$ ,  $\circ$ ,  $\circ$

8. A plant that is 17 cm tall grows 2 cm each day. Use an increasing sequence to solve the problem.

- a) How tall will the plant be after 3 days? \_\_\_\_\_
- b) In how many days will the plant be 27 cm tall? \_\_\_\_\_

In a **decreasing sequence**, each number is less than the one before it. The sequence 25, 23, 21, 19 is a decreasing sequence, and you need to **subtract 2** from each number to get the next number.

$$25, 23, 21, 19$$

$\begin{matrix} -2 \\ \circ \end{matrix}$ 
 $\begin{matrix} -2 \\ \circ \end{matrix}$ 
 $\begin{matrix} -2 \\ \circ \end{matrix}$

9. Extend the decreasing sequence.

a) 18, 15, 12,  $\circ$ ,  $\circ$ ,  $\circ$       b) 62, 58, 54,  $\circ$ ,  $\circ$ ,  $\circ$

c) 82, 73, 64,  $\circ$ ,  $\circ$ ,  $\circ$       d) 113, 109, 105,  $\circ$ ,  $\circ$ ,  $\circ$

10. Use a decreasing sequence to solve the problem.

- a) Lela has \$49. She spends \$8 each day. How much money does she have left after 5 days?
- b) Ivan has a roll of 74 stamps. He uses 7 stamps each day for 4 days. How many stamps are left?



