EXPLORE AND EXTEND SEQUENCES

BUILDING BLOCKS

NAME _____ CLASS _____ DATE _____

KEY IDEA

A sequence is a list of numbers or shapes in order.
Each one is called a term.

Look at how it changes to find the next term.



1 Draw the next two shapes in the pattern.



2 Continue each sequence.

a) 5, 10, 15, ☐, ☐

b) 3, 6, 9, ☐, ☐

c) 22, 20, 18, ☐, ☐

d) 50, 45, 40, ☐, ☐

3 Here is a sequence made from counters.

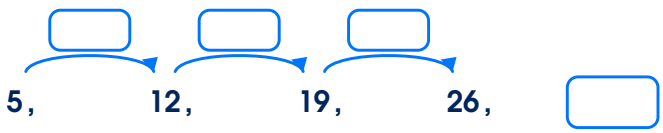


a) Draw the 4th term.

b) How many counters are in the 4th term? ☐

c) Each time, ☐ counters are added.

4 Fill in the jumps. Then write the next term.



EXPLORE AND EXTEND SEQUENCES

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

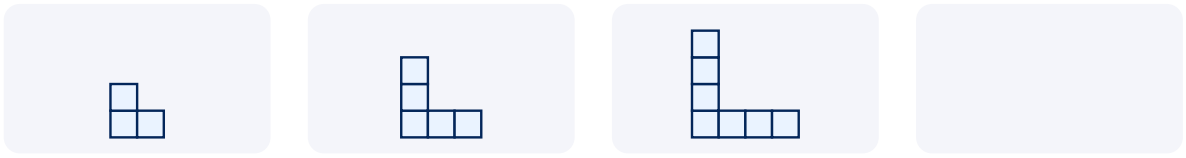
Describe how a sequence changes from one term to the next.

"To get the next term, I add 3 to the previous term."

+3 +3 +3

7, 10, 13, 16

1 Here is a sequence of patterns made from squares.



1st term | 2nd term | 3rd term | 4th term

a) Draw the 4th term.

b) Number of squares: 3, 5, 7, ☐, ☐

c) Each time, ☐ squares are added.

2 Fill in the jumps. Then write the next two terms.

a) ☐ ☐ ☐ 12, 17, 22, 27, ☐, ☐

b) ☐ ☐ ☐ 35, 30, 25, 20, ☐, ☐

3 Draw a line to match each sequence to its description.

3, 7, 11, 15, ...	goes up 2, then down 2
40, 37, 34, 31, ...	add 4 to the previous term
1, 3, 1, 3, ...	subtract 3 from the previous term

4 Describe how this sequence changes: 50, 45, 40, 35, ...

.....

EXPLORE AND EXTEND SEQUENCES

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

Describe the change in a full sentence, e.g. "add 4 to the previous term". Sequences can increase, decrease, or go up and down, and they do not always change by the same amount.

FLUENCY

1 Write the next two terms. Then describe how each sequence changes.

a) 7, 11, 15, 19, ☐, ☐

b) 64, 32, 16, 8, ☐, ☐

c) 2, 5, 3, 6, 4, ☐, ☐

d) 1.5, 2, 2.5, 3, ☐, ☐

2 Here is a sequence of patterns made from sticks.



Pattern 1 Pattern 2 Pattern 3

a) Complete the table.

PATTERN	1	2	3	4	5
Sticks	3	5	7	☐	☐

b) How does the number of sticks change each time?

REASONING

3 The 1st and 3rd terms of a sequence are shown. Each term has 2 more counters than the one before. Draw the 2nd and 4th terms.



1st term 2nd term 3rd term 4th term

4 Kai says, "The next term in 1, 2, 4, ... must be 8." Show that Kai could be wrong. Describe your sequence.

EXPLORE AND EXTEND SEQUENCES

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

If it is sometimes true, give an example of when it is true and when it is not.

a) If a sequence starts by going up, it keeps going up. ALWAYS SOMETIMES NEVER

b) If it goes down by 5 each time, a sequence will go below 0. ALWAYS SOMETIMES NEVER

c) The terms of a sequence are all whole numbers. ALWAYS SOMETIMES NEVER

d) If a sequence halves each time, it will reach zero. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 The sequence 5, 12, 5, 12, 5, ... continues in the same way.

a) What is the 20th term? ☐

b) What is the 35th term? ☐

c) What is the total of the first 10 terms? ☐

3 This pattern of shapes repeats.

▲ ● ■ ▲ ● ■ ...

a) What is the 25th shape? .....

b) How many circles are there within the first 30 terms? ☐

★ CHALLENGE FOR ALL

4 Sequence A starts at 3 and adds 5 each time. Sequence B starts at 50 and subtracts 4 each time.

Write the first 7 terms of each sequence.

Sequence A ☐ ☐ ☐ ☐ ☐ ☐ ☐

Sequence B ☐ ☐ ☐ ☐ ☐ ☐ ☐

In which term is Sequence A bigger than Sequence B for the first time? ☐

EXPLORE AND EXTEND SEQUENCES – ANSWERS

ANSWERS

BUILDING BLOCKS

Key idea: 10

1 square, circle

2 a) 20, 25 · b) 12, 15 · c) 16, 14 · d) 35, 30

3 a) 2 rows of 4 counters · b) 8 · c) 2

4 +7, +7, +7; next term 33

SUPPORT

1 a) L-shape: column of 5 squares with an arm of 4 more (9 squares) · b) 9, 11 · c) 2

2 a) +5, +5, +5; 32, 37 · b) –5, –5, –5; 15, 10

3 3, 7, 11, 15 → add 4 to the previous term · 40, 37, 34, 31 → subtract 3 from the previous term · 1, 3, 1, 3 → goes up 2, then down 2

4 It goes down by 5 each time (subtract 5 from the previous term)

CORE

1 a) 23, 27 (add 4) · b) 4, 2 (halve) · c) 7, 5 (alternately add 3 and subtract 2) · d) 3.5, 4 (add 0.5)

2 a) 9, 11 · b) the number of sticks goes up by 2 each time

3 2nd term: 5 counters (2 rows of 2, plus 1) · 4th term: 9 counters (2 rows of 4, plus 1)

4 e.g. 1, 2, 4, 7 (add 1, then 2, then 3), so the next term could be 7

GREATER DEPTH

1 a) Sometimes (1, 2, 3 vs 1, 3, 1, 3) · b) Always · c) Sometimes (1, 2, 3 vs 1.5, 2, 2.5) · d) Never (it halves forever but never reaches 0)

2 a) 12 · b) 5 · c) 85

3 a) triangle · b) 10

4 Sequence A: 3, 8, 13, 18, 23, 28, 33 · Sequence B: 50, 46, 42, 38, 34, 30, 26 · the 7th term