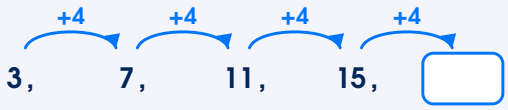
CONTINUE A LINEAR SEQUENCE

BUILDING BLOCKS

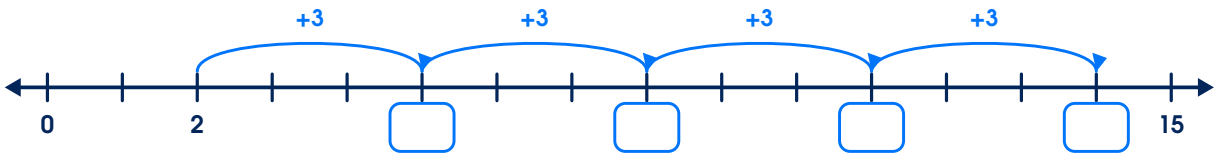
NAME _____ CLASS _____ DATE _____

KEY IDEA

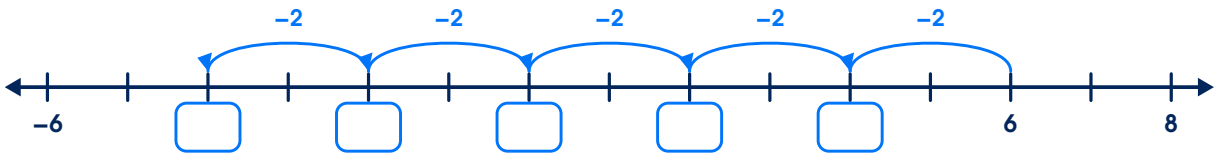
Count on or back in equal jumps.
The jump is the same every time.
Counting back can take you below zero.



1 Start at 2 and jump 3 each time. Fill in the boxes.



2 Start at 6 and jump back 2 each time. Fill in the boxes.



3 Continue each sequence.

a) 12, 24, 36, ____, ____

b) 8, 5, 2, ____, ____

c) 100, 75, 50, ____, ____

d) 7, 5, 3, ____, ____

4 Complete each chain.

a) 4 → + 7 → ____ → + 7 → ____ → + 7 → ____

b) 50 → − 9 → ____ → − 9 → ____ → − 9 → ____

CONTINUE A LINEAR SEQUENCE

SUPPORT

NAME _____ CLASS _____ DATE _____

KEY IDEA

Find the common difference: subtract a term from the next one.

37 − 14 = 23, so add 23 each time.
If the sequence goes down, subtract.

+23 +23 +23 +23

14, 37, 60, 83, 106

1 Find the common difference. Then write the next two terms.

SEQUENCE	COMMON DIFFERENCE	NEXT TERM	TERM AFTER
7, 12, 17, 22			
13, 22, 31, 40			
50, 44, 38, 32			
1.2, 1.5, 1.8, 2.1			
7, 5, 3, 1			

2 Write the first six terms of each sequence.

A 1st term 3, common difference 3 **3,** ____, ____, ____, ____, ____

B 1st term 3, common difference 6 **3,** ____, ____, ____, ____, ____

What is the same and what is different about A and B?

.....

3 Ben says, "The next term of 40, 35, 30 is 35 because the difference is 5." Explain Ben's mistake.

.....

4 A candle is 30 cm tall. It burns down 4 cm every hour. Complete the table.

HOUR	0	1	2	3	4	5
Height (cm)	30					

CONTINUE A LINEAR SEQUENCE

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

Find the common difference and keep adding it on. For a descending sequence the difference is negative. Terms can be decimals and can go below zero.

FLUENCY

1 Write the next three terms of each linear sequence.

a) **23, 35, 47, ☐, ☐, ☐**

b) **108, 96, 84, ☐, ☐, ☐**

c) **−14, −9, −4, ☐, ☐, ☐**

d) **3.5, 4.5, 5.5, ☐, ☐, ☐**

e) **2.8, 2.1, 1.4, ☐, ☐, ☐**

f) **1.05, 1.1, 1.15, ☐, ☐, ☐**

2 Here is a linear sequence: 23, 54, 85, 116, ...

a) What is the common difference? ☐

b) What is the next term? ☐

c) What is the 10th term? ☐

d) What is the next term of 116, 85, 54, 23, ... ? ☐

REASONING

3 Fill in the missing terms of each linear sequence.

a) 1st term 7, common difference −3: **7, ☐, ☐, ☐, ☐, ☐**

b) 3rd term 20, common difference 6: **☐, ☐, 20, ☐**

4 Meg is told, "The 1st term is 10 and the difference between terms is 4." She writes 10, 14, 18, 22. Write a different sequence that fits and explain why.

10, ☐, ☐, ☐ .....

CONTINUE A LINEAR SEQUENCE

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

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

a) Which term number is 81? ☐

b) Is 100 a term in the sequence? Explain.

.....

2 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) A descending linear sequence will reach negative terms. ALWAYS SOMETIMES NEVER

b) If the common difference is even, every term is even. ALWAYS SOMETIMES NEVER

c) If the difference is a whole number, every term is whole. ALWAYS SOMETIMES NEVER

d) Doubling every term of a linear sequence keeps it linear. ALWAYS SOMETIMES NEVER

.....

PROBLEM SOLVING

3 A taxi costs £4.70 for 1 mile, £5.90 for 2 miles and £7.10 for 3 miles. The cost keeps going up in the same way.

How far can you travel for £15.50? ☐ miles

★ CHALLENGE FOR ALL

4 Read each row left to right and each column top to bottom.

a) Every row and every column is a linear sequence. Fill in the grid.

b) Is the diagonal from top left to bottom right linear? Explain.

.....

2		8
10		24

CONTINUE A LINEAR SEQUENCE – ANSWERS

ANSWERS

BUILDING BLOCKS

Key idea: 19

1 5, 8, 11, 14

2 4, 2, 0, –2, –4

3 a) 48, 60 · b) –1, –4 · c) 25, 0 · d) 1, –1

4 a) 11, 18, 25 · b) 41, 32, 23

SUPPORT

1 7, 12, 17, 22: +5; 27, 32 · 13, 22, 31, 40: +9; 49, 58 · 50, 44, 38, 32: –6; 26, 20 · 1.2, 1.5, 1.8, 2.1: +0.3; 2.4, 2.7 · 7, 5, 3, 1: –2; –1, –3

2 A: 3, 6, 9, 12, 15, 18 · B: 3, 9, 15, 21, 27, 33 · same 1st term; B goes up twice as fast

3 The sequence is going down, so subtract 5: the next term is 25

4 26, 22, 18, 14, 10

CORE

1 a) 59, 71, 83 · b) 72, 60, 48 · c) 1, 6, 11 · d) 6.5, 7.5, 8.5 · e) 0.7, 0, –0.7 · f) 1.2, 1.25, 1.3

2 a) 31 · b) 147 · c) 302 · d) –8

3 a) 7, 4, 1, –2, –5, –8 · b) 8, 14, 20, 26

4 10, 6, 2, –2: the difference between terms is still 4, but the sequence goes down

GREATER DEPTH

1 a) the 12th term · b) No: 100 – 4 = 96, which is not a multiple of 7

2 a) Always · b) Sometimes (2, 4, 6 vs 1, 3, 5) · c) Sometimes (1, 2, 3 vs 0.5, 1.5, 2.5) · d) Always

3 10 miles

4 a) rows: 2, 5, 8 / 6, 11, 16 / 10, 17, 24 · b) No: 2, 11, 24 has differences 9 and 13