

## Investigation • Finding the Rule

Name \_\_\_\_\_ Period \_\_\_\_\_ Date \_\_\_\_\_

**Step 1** Complete each table. Find the differences between consecutive values.

a.

$n$	1	2	3	4	5	6	7	8
$n - 5$	-4	-3	-2					

b.

$n$	1	2	3	4	5	6	7	8
$4n - 3$	1	5	9					

c.

$n$	1	2	3	4	5	6	7	8
$-2n + 5$	3	1	-1					

d.

$n$	1	2	3	4	5	6	7	8
$3n - 2$	1	4	7					

e.

$n$	1	2	3	4	5	6	7	8
$-5n + 7$	2	-3	-8					

**Investigation • Finding the Rule (continued)**

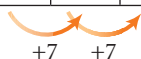
**Step 2** Did you spot the pattern? Complete these statements.

If a sequence has constant difference 4, then the number in front of  $n$  (the coefficient of  $n$ ) is \_\_\_\_\_.

In general, if the difference between the values of the consecutive terms of a sequence is always  $m$  (a constant), then the coefficient of  $n$  in the formula is \_\_\_\_\_.

Return to the sequence at the beginning of the lesson.

<b>Term</b>	1	2	3	4	5	6	7	...	$n$
<b>Value</b>	20	27	34	41	48	55	62	...	


  
 +7    +7

The constant difference is 7, so you know part of the rule is  $7n$ .  
How do you find the rest of the rule?

**Step 3** The first term ( $n = 1$ ) of the sequence is 20, but if you apply the part of the rule you have so far, using  $n = 1$ , you get  $7n = 7(1) = 7$ , not 20. So how should you fix the rule? How can you get from 7 to 20? What is the rule for this sequence?

**Step 4** Check your rule by trying the rule with other terms in the sequence.