Name _

Number Patterns

Essential Question How can you make and describe patterns?

Unlock the Problem

Daryl is making a pattern for a quilt. The pattern shows 40 squares. Every fourth square is blue. How many blue squares are in the pattern?

A **pattern** is an ordered set of numbers or objects. Each number or object in the pattern is called a **term**.

Activity Find a pattern.

Materials color pencils

Shade the squares that are blue.

1	2	3	4	5	6	7	8	9	10	
11	12	13	14	15	16	17	18	19	20	
21	22	23	24	25	26	27	28	29	30	
31	32	33	34	35	36	37	38	39	40	

Which squares are blue? _

squares?

So, there are _____ blue squares in the pattern.

2. What patterns do you see in the numbers of the blue

1. What patterns do you see in the arrangement of the blue squares?

ALGEBRA Lesson 5.6

Common **Operations and** Core Algebraic Thinking—4.OA.C.5 **MATHEMATICAL PRACTICES** MP1, MP4, MP5, MP7

- Underline what you are asked to find.
- Circle what you need to use.



Example Find and describe a pattern.	
e rule for the pattern is <i>add</i> 5. The first term in the pattern is 5.	
Use the rule to write the numbers in the pattern.	
+5 +5 +5 +5 +5 +5	
5 10	
5, 10,,,,,,,,,	
Describe other patterns in the numbers.	
What do you notice about the digits in the ones place?	
Describe the pattern using the words <i>odd</i> and <i>even</i> .	
Describe the pattern using the word <i>multiples</i> .	
r	

Add 3. Subtra	act 1. Add 3.	
\sim		
6		_
oscribo ano	ther pattern in the numbers	
escribe ano	ther pattern in the numbers.	
escribe ano	ther pattern in the numbers.	
escribe ano	ther pattern in the numbers.	

Nar	ne		
S	hare and Show 🔀	ARD Math Talk	MATHEMATICAL PRACTICES 6
Use	the rule to write the number		Use Patterns How do you use the first term in
1.	Rule: Subtract 10.	First term: 100	a pattern to find the next term?
	100,,,,	,	
	e the rule to write the number scribe another pattern in the	•	
V 2.	Rule: Multiply by 2.	First term: 4	
	4,,,,,	,	
ð 3.	Rule: Skip-count by 6. 12,,,,,	First term: 12	
	On Your Own		
	e the rule to write the first twe other pattern in the numbers.	lve numbers in the pattern. Describe	
4.	Rule: Add 7.	First term: 3	
5.	Rule: Add 2, add 1.	First term: 12	

6. MATHEMATICAL **O** Use Patterns Marcie likes to collect stickers, but she also likes to give them away. Currently, Marcie has 87 stickers in her collection. If Marcie collects 5 new stickers each week and gives away 3 stickers each week, how many stickers will Marcie have in her

collection after 5 weeks?

Problem Solving • Applications 🌘

7. **THINKSMARTER** John is saving for his trip to see the Alamo. He started with \$24 in his savings account. Every week he earns \$15 for baby-sitting. Out of that, he spends \$8 and saves the rest. John uses



the rule *add* 7 to find out how much money he has at the end of each week. What are the first 8 numbers in the pattern?

- Personal Math Trainer

8. **THINK SMARTER** Draw a check under the column that describes the number.

	Prime	Composite
81		
29		
31		
62		

Operations

addition

subtraction

multiplication

0

Pose a Problem

9. CODEEPER An activity at the Math Fair shows two charts.



Use at least two of the numbers and an operation from the charts to write a pattern problem. Include the first five terms of your pattern in the solution to your problem.

Pose a problem.	Solve your problem.

• Describe other patterns in the terms you wrote.

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Nar	ne	Practice and Homework Lesson 5.6			
Nu	mber Patterns			LESSUI 5.0	
				Common COMMON CORE STANDARD — 4.OA.C . Generate and analyze patterns.	5
	e the rule to write the first two scribe another pattern in the		ne pattern.		
1.	Rule: <i>Add</i> 8.	First term: 5			
	Think: Add 8.				
	5 13	21	29	37	
	5, 13, 21, 29, 37, 45, 53, 61,	69, 77, 85, 93			_
	All the terms are odd num	ibers.			_
2.	Rule: Subtract 7.	First term: 95			
					-
3.	Rule: Add 15, subtract 10.	First term: 4			
					-

Problem Solving World

- 4. Barb is making a bead necklace. She strings 1 white bead, then 3 blue beads, then 1 white bead, and so on. Write the numbers for the first eight beads that are white. What is the rule for the pattern?
- **5.** An artist is arranging tiles in rows to decorate a wall. Each new row has 2 fewer tiles than the row below it. If the first row has 23 tiles, how many tiles will be in the seventh row?

6. **WRITE** Math Give an example of a rule for a pattern. List a set of numbers that fit the pattern.

Lesson Check (4.OA.C.5)

- 1. The rule for a pattern is *add* 6. The first term is 5. Write the first five terms in the pattern.
- **2.** What are the next two terms in the pattern 3, 6, 5, 10, 9, 18, 17, ...?

Spiral Review (4.OA.B.4, 4.NBT.B.4, 4.NBT.B.5)

- **3.** To win a game, Roger needs to score 2,000 points. So far, he has scored 837 points. How many more points does Roger need to score?
- 4. Sue wants to use mental math to find 7×53 . Write an expression she could use.

- **5.** Pat listed all the numbers that have 15 as a multiple. Write the numbers in Pat's list.
- **6.** Complete the following sentence using the correct term.

14 is a _____ of 7 and 14.



