

Name _____

Number Patterns

I Can make, describe, and extend patterns.

Florida's B.E.S.T.

- Algebraic Reasoning 4.AR.3.1, 4.AR.3.2
- Mathematical Thinking & Reasoning MTR.2.1, MTR.3.1, MTR.4.1, MTR.5.1, MTR.7.1



UNLOCK the Problem



Miksa 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	

Math Talk

MTR 5.1 Use patterns and structure.

Describe another number pattern in Miksa's quilt.

Which squares are blue? _____

So, there are _____ blue squares in the pattern.

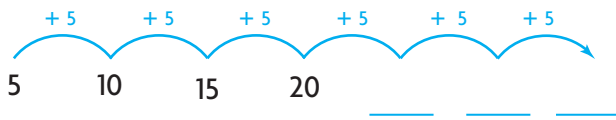
1. What patterns do you see in the arrangement of the blue squares?

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

Example Extend a pattern.

The rule for a pattern is *add 5*. The first term in the pattern is 5.

A Use the rule to extend the pattern.



5, 10, 15, 20, _____, _____, _____, _____, ...

B Describe other patterns in the numbers.

What do you notice about the digits in the ones place?

Describe the pattern using the words *odd* and *even*.

Describe the pattern using the word *multiples*.

Try This! Make a pattern.

To make a pattern, you need the first term and the rule. The rule for the pattern is *add 3, subtract 1*. The first term in the pattern is 6.



Describe another pattern in the numbers.

Share and Show

1. Describe a pattern.

4, 8, 16, 32, 64, ...

Rule: _____.

- ✓ 2. Use the rule to make the pattern.

Rule: Subtract 10. First Term: 100

100, _____, _____, _____, _____, ...

- ✓ 3. Identify a rule. Use it to extend the pattern.

12, 18, 24, 30, _____, _____, _____, _____

**Math
Talk****MTR** Use patterns and structure.
5.1

How do you use the first term in a pattern to find the next term?

On Your Own

4. Describe a pattern.

3, 10, 17, 24, 31, 38, 45, ...

Rule: _____.

5. Use the rule to make the pattern.

Rule: Add 2, add 1. First Term: 12

12, _____, _____, _____, _____, _____, _____, ...

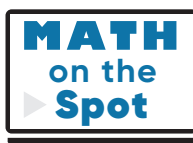
6. Identify a rule. Use it to extend the pattern.

56, 51, 46, 41, 36, _____, _____, _____, _____

7. **MTR** Zuza likes to collect stickers, but she also likes to give them away. Currently, Zuza has 87 stickers in her collection. If Zuza collects 5 new stickers each week and gives away 3 stickers each week, how many stickers will Zuza have in her collection after 5 weeks?

Problem Solving · Applications

8. 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?



9. Draw a check under the column that describes the number.

	Prime	Composite
81		
29		
31		
62		

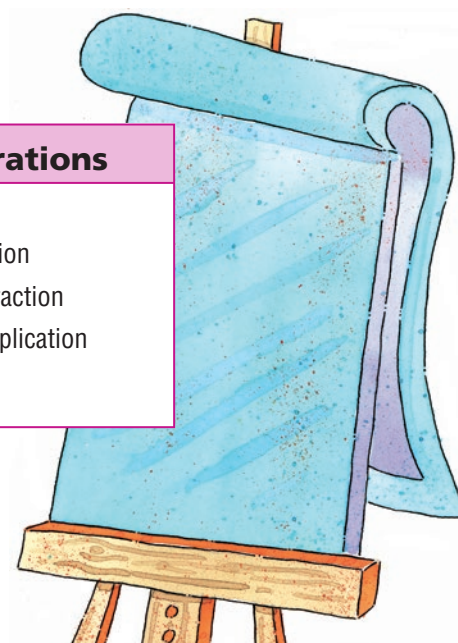
Pose a Problem

10. An activity at the Math Fair shows two charts.

Numbers
2
3
5
6
10

Operations
addition
subtraction
multiplication

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.

Number Patterns

Go Online

Interactive Examples

Use the rule to extend the pattern.

1. Rule:
- Add 8.*

First term: 5

Think: Add 8.

5, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, _____, ...

2. Describe a pattern.

4, 19, 9, 24, 14, 29, 19, 34, 24, 39, 29, 44, ...

Rule: _____.

3. Use the rule to make the pattern.

Rule: Subtract 7. First Term: 95

95, _____, _____, _____, _____, _____, _____, ...

4. Identify a rule. Use it to extend the pattern.

54, 63, 72, _____, _____, _____, _____

Problem Solving

5. Bella 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 a rule for the pattern?
- _____
- _____
6. 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?
- _____

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

Lesson Check

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

Spiral Review

10. To win a game, Idris needs to score 2,000 points. So far, he has scored 837 points. How many more points does Idris need to score?
11. Lia wants to use mental math to find 7×53 . Write an expression she could use.

12. Pat listed all the numbers that have 15 as a multiple. Write the numbers in Pat's list.
13. Complete the following sentence using the correct term.

14 is a _____ of 7 and 14.