Multiple Towers

Lesson Overview	Mathematics Overview
Students use interlocking cubes to build towers to represent factors of numbers and place the towers in the appropriate places on a hundreds chart in order to look for patterns.	Students identify factor pairs of whole numbers and use patterns in the factor pairs to identify prime and composite numbers.
Grade 5 TEKS	**Materials**
5.5B, C (Patterns, relationships, and algebraic thinking) 5.3B, C, D (Number, operation, and quantitative reasoning) 5.14C, D (Underlying processes and mathematical tools) 5.15A, B (Underlying processes and mathematical tools) 5.16A, B (Underlying processes and mathematical tools)	- interlocking cubes (9 different colors) - hundreds chart - Multiple Towers worksheet
Lesson Resources	**Related Resources**
	The Math Solution by Marilyn Burns

Set-up *(to set the stage and motivate the students to participate)*

1. Have the students build towers of cubes on a hundreds chart. Explain that these towers will be built using the directions on the "Multiple Towers" worksheet. (5.3B, C, D; 5.14D)
2. Discuss the first step: Put a blue cube on multiples of 2. Ask, "How will you decide on which numbers to put the cubes? Who can explain what we mean by a multiple? Can you give other examples?" Then place the cubes on the appropriate numbers. (5.3B, C, D; 5.14D)
3. Let partners work together, following the directions on the worksheet and answering the questions on the sheet. As pairs finish their towers, ask them to design a recording system to show which cubes ended up on each number and then record their findings. (5.5C; 5.15A, B)

Guiding Questions *(to engage students in mathematical thinking during the lesson)*

- What is your strategy for finding multiples? (5.3B, C, D; 5.14C, D)
- Can you identify a pattern to help you? (5.5B, 5.14C, 5.16A)
- Do you think every number will have a tower? Why or why not? (5.3D; 5.5C; 5.16 A, B)
- How can you record your findings so that someone else will understand them? (5.14A, B)

Teacher Notes *(to personalize the lesson for your classroom)*

Multiple Towers Worksheet

You need: interlocking cubes (9 colors), a hundreds chart, a partner

Put a **blue** cube on multiples of **2**.

Put a **green** cube on multiples of **3**.

Put a **yellow** cube on multiples of **4**.
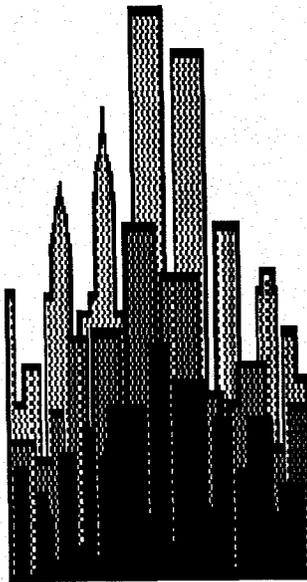
Put a **red** cube on all multiples of **5**.

Put a **brown** cube on multiples of **6**.

Put a **white** cube on multiples of **7**.

Put an **orange** cube on multiples of **8**.

Put a **black** cube on multiples of **9**.

Put a **maroon** cube on multiples of **10**.

Which numbers have the tallest towers?

Which numbers have no cubes?

Which have only one cube?

Now, remove the towers. (Be careful not to break any.)

Try to put them back on the correct numbers.

WRITE about how you did this.