Flash!

Lesson 104

Lesson Overview

Students flash collections of single blocks for partners to recognize and/or count. They flash each collection a second time by packing blocks into holders to form an equivalent representation in a block-of-10 and some single blocks.

Objectives

Thinking Skills: Students use visual and spatial skills to recognize quantities of blocks. They also make connections between a collection of single blocks and an equivalent representation made up of a block-of-10 and some single blocks.

Mastery Skills: Students learn how to represent a number between 10 and 20 with one block-of-10 and some single blocks. They learn to identify visual patterns that help them "see" a quantity without having to count all the blocks one by one.

Materials

For the class demonstration:
- Overhead projector
- 2 blocks-of-10

Each pair of students needs:
- 2 blocks-of-10
- 1 " Flash" activity sheet
- 1 piece of construction paper (a flashing "screen")
- 1 counter

Hold up one block-of-10. Ask a student volunteer to review what they already know about the block. Most students should know:
- Exactly 10 single blocks are inside.
- It is called a "block-of-10."
- If you unpacked the block, you would have 10 single blocks.

Gather students together so everyone can see the overhead projector screen. Tell students you are going to flash some blocks on the screen for 5 seconds. Their job is to determine the number of blocks.

Before turning the light on, put 4 single blocks on the overhead. Turn on the light and flash the blocks for 5 seconds. Then turn off the projector. Ask students if they think they know the number of blocks (but have them keep it a "secret" while others think.) Repeat by flashing again if necessary. Have students share the number of blocks they saw and how they could tell:
- Did they count all the blocks one at a time?
- Did they "see" a pattern (for example, 2 on top and 2 on bottom) that helped them know right away without counting?

Repeat with 3 blocks and 5 blocks.

Challenge students to recognize quantities of blocks between 5 and 10. "Flash" each quantity at least twice:
- Show a disorganized quantity with no clear patterns.
- Separate the first five blocks from the rest and show the quantity as 5 and some more (i.e., 5 and 3 is easily recognized as 8.)
- Try other patterns (doubles, etc.) that students can more readily recognize.
- Ask students to describe any patterns they see.

Now, flash 10 single blocks. Pack the blocks and flash 1 block-of-10. This is the key moment in the lesson:
- Are students surprised that these are the "same"?
- Do students immediately recognize the block-of-10?

Repeat with 11 blocks, 13 blocks, and so on up to 19.
- Each time flash a collection of single blocks first.

- Then pack the blocks and flash the number a second time as a block-of-10 with some loose single blocks. Have students <u>describe</u> how they know what number is represented.
  - Do they know immediately the number represented by a block-of-10 and some ones?
  - Do they need to count 10, and then count on the ones (10 - 11, 12, etc.)?
  - Do they need you to uncover the block-of-10 so they can count all the single blocks inside and outside of the holder (1, 2, ..9, 10, 11, ...etc.)?
- Emphasize how much easier it is to recognize the quantity when it is packed.

Finish by flashing 20 single blocks. Then pack the blocks and flash two blocks-of-10.

The goal of this activity is for students to "see" patterns that help them easily recognize a quantity of blocks. The most important "pattern" to see is how much easier it is to recognize blocks packed into blocks-of-10 than a bunch of loose, disorganized blocks.

Student Activity   (10 - 15 minutes)

Pass out the "Flash" activity sheet, blocks, holders, and the construction paper "screen" to pairs of students.

Have student partners take turns flashing a collection of single blocks to their partner.
- Students should give just enough time for their partner to determine the number of blocks in the collection.
- Students should record the number they flashed on their activity sheet.

Each time, the blocks are packed and flashed a second time.
- Students should give a "quick" flash this time.
- Students should record the number of blocks-of-10 and single blocks in the second flash for each turn.

Closure   (5 minutes)

Have students share any new patterns they discovered. Discuss:

- **Which collections of single blocks pack to form at least one larger block?** (Collections with more than 9 single blocks.)
- **What is special about collections with 11 to 19 single blocks?** (They all pack to form *one* block-of-10 and some loose single blocks.)

Reverse the activity briefly:
- Show a block-of-10 and a few single blocks.
- Ask students to predict how many single blocks there would be if you unpacked it all.
- Unpack and count all the single blocks together as a class.

Assessment

As students work in pairs, observe their social skills:
- Do students understand and follow the directions for the activity?
- Are students productive and helpful with their partner?
- Do students give each other enough time when they flash the blocks?

While students work on recognizing collections of blocks, watch and note their methods:
- Do any students demonstrate difficulty counting using one-to-one correspondence?
- Do any students have difficulty counting to 20?
- Which students need to count all the blocks one by one to determine the total number of blocks in most collections?
- Which students have special patterns that they see? What are these patterns?
- If students have difficulty knowing the number represented by a block-of-10 and some ones, how do they count the blocks to determine the total? Do they count them all, count by tens and ones, or use some other counting method?
- Which students are beginning to "see" and know the number represented by a block-of-10 and some single blocks.

Extension

- Have students write in a math journal some of the "patterns" they discovered during the lesson.
- Have students predict the total number of single blocks in any collection represented by one block-of-10 and some single blocks.

❑ Continue the activity by flashing 2 - 9 blocks-of-10 and some single blocks. Ask students to say how many blocks-of-10 they see and how many single blocks they see. Have them identify the number represented by these blocks.