

**Title of Book:** Bean Thirteen  
**Author:** Matthew McElligott  
**Publisher/Year:** Penguin Young Readers Group/2007  
**ISBN:** 9780399245350

**Grade Levels for Recommended Use:** 5<sup>th</sup>

**TEKS:**

5.4 Algebraic reasoning. The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to:

(A) Identify prime and composite numbers.

**Brief Summary:** Ralph cautions Flora against selecting the thirteenth bean, widely regarded as unlucky. Now faced with the unfortunate choice, they ponder how to eliminate it. Even after dividing the beans in half, one remains. Inviting a friend to share results in each consuming four beans, yet one persists. Even with four friends each eating three beans, there's still one left. The pressing question lingers: How can they break free from the curse of Bean Thirteen?

**Materials needed:**

- Bean Thirteen
- 24 beans per small group
- Hundred Chart

**Suggested Activity:**

1. To commence the lesson, we'll begin by reading the book aloud. During this time, students are encouraged to make predictions about the number by which the thirteen beans can be divided to ensure equal sharing.
2. Moving on, we'll revisit the previous lesson on factors and multiples from prior grades. To enhance students' comprehension of factors, we'll organize the class into pairs, providing each group with 24 beans. Their task is to determine the factors of 24 by constructing arrays with the beans and dividing them into equal sets. Once a factor is identified, students are required to record the corresponding multiplication sentence next to it.

3. Subsequently, we will introduce the concept of prime and composite numbers. To deepen students' understanding, we will employ a mathematical tool known as a hundred chart.
4. Lastly, we will use the Sieve of Erastheneese to identify all prime numbers between 1-100.

**References:**

<https://www.youtube.com/watch?v=0-oGdOCcYBg&t=6s>

<https://www.teksresourcesystem.net/module/standards/Tools/Browse?LinkStandardId=181620&StandardId=181625>

<https://www.mathsthroughstories.org>

[https://www.youtube.com/watch?v=V08g\\_lkKj6Q](https://www.youtube.com/watch?v=V08g_lkKj6Q)

**Adapted By:** Okone Michael (2023)

## **Example Questions**

### Student Activity 1

How many friends should Ralph and Flora invite to break free from the curse of Bean Thirteen?

### Revision on number of divisors/factors - Student Activity 2

Find the number of factors/divisors that 24 has by building arrays of beans and splitting them into equal groups. Once a factor of 24 is found, write the multiplication sentence next to it.

### Prime and Composite Numbers

Prime Number:

A prime number is a number greater than 1 which has only 1 and itself as factors.

Composite Number:

A composite number is a number that has factors other than 1 and itself.

### Prime and Composite Numbers - Student Activity 3

While skip-counting, I reached the number 44. What might have been my starting point? Additionally, is 44 classified as a prime or composite number? Please provide explanations for your response to the preceding question. As a helpful tip, you can use a hundred chart and work together with your partner to skip count, such as counting in increments like twos.

### Prime and Composite Numbers - Student Activity 4

Follow the instructions on the chart titled sieve of Eratosthenes and the chart will reveal all the prime numbers up to 100.