

Math Picture Book Analysis Guide
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Math Picture Book Analysis Guide **for teachers**

This analysis guide will help you choose math storybooks to read with your students. Use the questions below to evaluate the quality of the literary and math elements of the book, but it is not an exhaustive list. In addition to evaluating the book, use your best judgment to decide whether the storybook will interest your students, present opportunities to make connections to their lives, and spark engaging conversations. While some books may present little math, they may otherwise be excellent books for non-math reasons.

Rater's name: _____ Date: _____

Book title: _____ Author(s): _____

Description of the story:

Some storybooks were written to intentionally teach children math. These storybooks include a significant amount of math that plays an important role in the story. Other storybooks were not written to teach children math. However, they can still address some math concepts in the text and illustrations. Both types of storybooks can be used to help children discuss and investigate math ideas.

1. Is the math content developmentally appropriate for my students?

| | My students are able to... | They may want to read books... |
|-----------------------------|---|---|
| Number | count small groups of objects | that focus on the numbers 1 - 10 |
| | count groups of at least 20 objects | about counting objects by 2s, 5s, or 10s |
| | fluently count forwards and backwards | about adding and subtracting one |
| | add and subtract simple numbers | that include larger numbers up to even 100 |
| | decide who has more when given small groups of objects | about more and less with larger groups of objects |
| Shape and spatial relations | name some shapes | that show various shapes and describe their features, such as the number of sides and corners |
| | distinguish between circles, squares, triangles, and rectangles | that show shapes in various orientations and sizes, such as upright and rotated |
| | describe and name shapes by their number of sides and corners | about more complex shapes, such as an octagon, or about 3-D shapes, such as a cone |
| | describe the location of objects using some words, such as <i>up</i> and <i>down</i> | that introduce a variety of spatial words, such as <i>beside</i> , <i>between</i> , <i>across</i> , <i>forwards</i> , and <i>flip</i> |
| Measurement | describe the dimensions of objects using some words, such as <i>big</i> and <i>small</i> | that show many examples of length, width, weight, time, or other examples of measurement |
| | talk about comparing differences in size, e.g., noticing which tower is <i>taller</i> or <i>shorter</i> during block play | that show formal and informal ways of measuring and comparing the length, width, weight, etc. of objects |

2. What type(s) of math are in the book?

- Numbers (for example: counting, adding, subtracting, comparing numbers, ordinal numbers)
- Measurement (for example: length, weight, cooking, time)
- Shapes
- Spatial relations (for example: concepts such as up, below, backwards, turn, between)
- Patterns
- Other: _____

3. How is the math presented?

- The math is shown as a set of procedures, skills, or facts (for example, the book asks the reader to count objects, teaches a new math skill, or defines math terms in a dictionary-format)
- The math is shown as general concepts or general ideas (for example, the book talks about measurement without showing too many specific examples)
- The math is shown as problem solving and ways of thinking (for example, characters or readers are asked to solve a problem, check their work, and reflect on what they think)

4. How can I use this book to help my students learn math?

- The book includes guidelines or tips for reading and talking about math.
- I can think about ways to talk about the math in this book during other parts of my students' day and over multiple readings.
- I can think about activities to do with my students that incorporate the math in this book.

5. Do the illustrations and the text convey the math content accurately?

- Do the illustrations, graphs, or diagrams accurately show the math content?
- Does the text explain the math accurately?
- Do the illustrations match the text and not distract from the math content?

When choosing a storybook to read with your students, consider the complexity of the words and images. Books that are beneficial for younger children have fewer words per page, more simple sentences, and clear illustrations. Older children can understand stories with longer sentences, a more complex plot, and more intricate illustrations. Good stories for children of all ages have characters and events that they can relate to. Keep in mind that children often enjoy reading stories more than once and they can understand more of the story every time you read with them.

6. Does the story have literary merit?

- Does the story have an interesting plot that would hold your students' attention?
- Would your students like it and want to read it more than once?
- Could your students identify with the characters and story?
- Does the writing sound smooth when read aloud?
- Are the illustrations attractive and engaging?

7. Does the story present negative ideas?

- Does the story present negative cultural stereotypes?
- Does the story present negative gender stereotypes?
- Does the story present negative values?

Scoring guide

Consider why you are reading this math book with your students. Based on how you evaluated the book, does it fulfill your goals? For example, if your goal is to teach students characteristics of shapes, you might want to read a shape book where the math is shown as a set of procedures, skills, or facts. However, if your goal is to teach students that there are different ways to measure the length of objects, you might want to read a measurement book where the math is shown as problem solving and ways of thinking.

Math quality: Consider your response to question #5: Do the illustrations and the text convey the math content accurately? If you checked all three items, the storybook is highly recommended for its math content, which is likely to promote math learning. If you checked one or two items, the storybook may not promote math learning. While it may have some qualities of a good math storybook, the math may be inaccurately described in the text and poorly reflected in the illustrations.

Literary quality: Consider your response to question #6: Does the story have literary merit? If you checked four or five items, the storybook is highly recommended for its literary quality. The story has vivid images, interesting characters, and an engaging plot that students can connect to their lives. If you checked three or fewer items, the storybook is not recommended and may not interest your students or connect to their lives.

Negative ideas: Consider your response to question #7: Does the story present negative ideas? If you checked any of the items, the storybook may be offensive to students (and others) and therefore should not be read.
