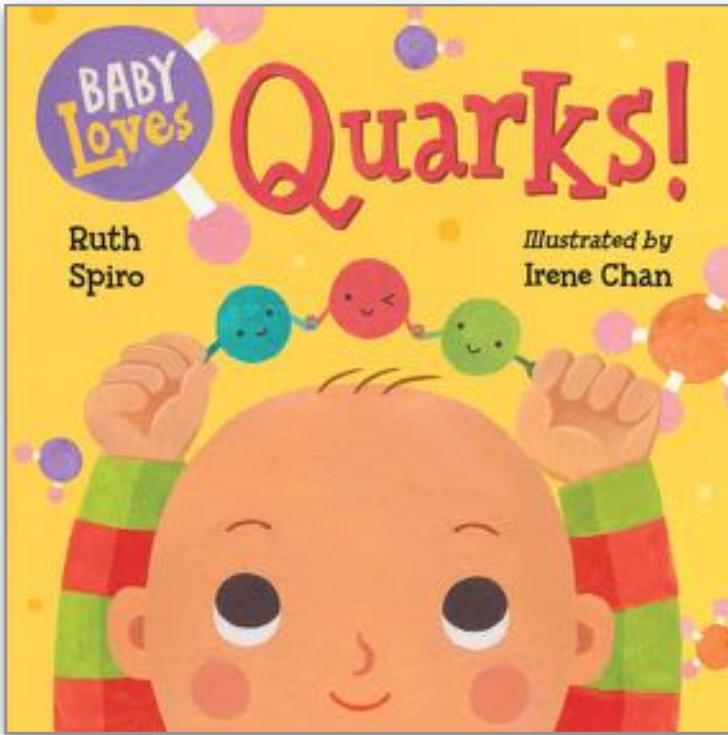


Baby Loves Quarks!

An Activity Guide

created by Marcie Colleen
based upon the book

written by **Ruth Spiro** and illustrated by **Irene Chan**
Published by Charlesbridge



How to Use This Guide: This activity guide for *Baby Loves Quarks!* is designed for parents, caregivers, and educators of infants, toddlers, preschool and kindergarten children. It is assumed that those using this guide will adapt each activity to suit individual needs and abilities.

Jump Start STEM: The skills that young children develop from exploring Science, Technology, Engineering and Math (STEM) help them to become better problem solvers, contributing to their success both in school and as life-long learners. Each section of this guide includes simple, developmentally appropriate activities to encourage these skills.

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Hello!

As author of the **Baby Loves Science** books, my goal is to help make complex science concepts both accessible and meaningful, and also share ideas about how parents and caregivers can turn everyday experiences into fun learning opportunities for their little ones.

Aren't babies and toddlers too young to understand science?



Surprisingly, no. In a recent study at Johns Hopkins, researchers showed 11-month-old babies “tricks” in which a toy seemed to defy gravity. The babies showed a keen interest – their surprise and extended attention was an indication they already have an understanding of basic physics.

According to Roberto J. Rodriguez, Deputy Assistant to the President for Education, “Research indicates that as early as infancy, young children start developing and testing hypotheses for how the world around them works. They understand probability and make predictions. They take in information from trusted sources around them, and use that information to guide their behavior. And all that begins in the first year of life.”

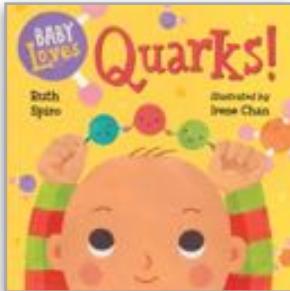
But there's no need for flash cards or formal instruction – and especially not for babies! Instead, focus on having fun while adding some beneficial activities to playtime:

- **Talk** – Name objects, gesture and describe what you're doing to grow vocabulary
- **Sing and clap** – A sense of rhythm helps with language acquisition
- **Count, match and sort** – These lay the foundation for early math

Most importantly, model a love of learning by sharing observations and asking questions about things you see every day – in other words, think like a scientist. Explore the world along with your child, and have fun making discoveries together!

A handwritten signature in black ink that reads "Ruth Spiro". The signature is fluid and cursive, with a slight flourish at the end.

Ruth Spiro, Author



Activity Guide for Infants (0-1 Year)

Infants love to hear your voice, and it's never too early to begin reading together! At this stage, a book is less about the story and more about the tone of your voice, the rhythm of your speech and the visual stimulation of the pictures.

What Do We See?

Point to the illustrations on each page as you read, naming the objects and colors.

For example:

<u>Animals</u>	<u>Shapes</u>	<u>Colors</u>	<u>Nature</u>
Butterfly	Circle	Yellow	Rainbow
Duck	Square	Blue	Mountain
Pig	Triangle	Red	Carrot
Elephant	Star	Green	Apple
Rabbit		Purple	
Dog		Orange	

Babies LOVE Babies!

Hold up the book and ask, "Where's the Baby?"



Point to a picture of Baby. "There's the Baby!"

Then, cover the picture with a small blanket or burp cloth.

Ask, "Where's the Baby?"

Uncover the picture and say, "There's the Baby!"

Identify the parts of Baby's body, including:

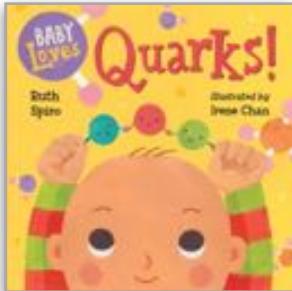
Eyes	Hand	Hair	Mouth
Nose	Feet	Ears	Smile

Jump Start STEM

Research shows that playing with blocks helps develop motor skills, spatial reasoning and even early reading ability. Introduce infants to blocks made from cloth or soft foam. Let baby hold a block as you read.

Demonstrate stacking the blocks, encouraging older babies to try stacking on their own. Then, have fun smashing your block towers!





Activity Guide for Toddlers (1-2 Years)

Many toddlers are ready to take a more active role in story time. They can repeat words, count along with you, and begin to identify shapes and colors.

Reading Comprehension

As you read, ask, "Where is the...?" Your toddler can respond by pointing to the illustration.

Animals
Butterfly
Duck
Pig
Elephant
Rabbit
Dog

Shapes
Circle
Square
Triangle
Star

Colors
Yellow
Blue
Red
Green
Purple
Orange

Nature
Rainbow
Mountain
Carrot
Apple



Practice more shape and color recognition. Say, "I spy something _____. " Fill in the blank with any color or shape in the room. Your child can then guess what you spy.

Body Awareness

Point to and name the parts of Baby's body, then ask your toddler to point to his or her own:

Eyes
Nose

Hand
Feet

Hair
Ears

Mouth
Smile

Counting Threes

Three quarks make a proton or a neutron. Create groups of three using toys and items around the house or classroom.

Playtime
LEGO bricks
Building blocks
Small toys

Snack Time
Cheerios
Apple slices
Small finger foods

Bedtime
Stuffed animals
Socks
Books

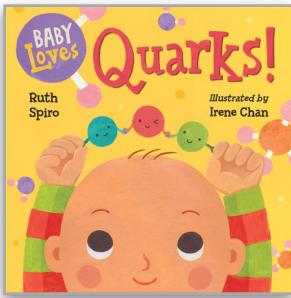
Jump Start STEM

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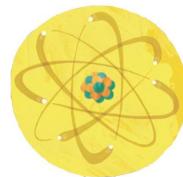
Demonstrate stacking the blocks, encouraging older babies to try stacking on their own. Then, have fun smashing your block towers!

(*NOTE: If a block will pass through the inside of a toilet tissue roll, it's a choking hazard and should not be used by a toddler without supervision.*)





Activity Guide for Preschool/Kindergarten (3-5 Years)



Reading Comprehension

Ask questions throughout the exploration of the book. Encourage your preschooler to help tell the story.

- Baby likes to build a tower with blocks. Do you like to build towers? What else can you use to build a tower?
- Nature likes to build things, too. What does nature like to build?

Symmetry

The wings of a butterfly are symmetric, meaning one wing is the mirror image of the other wing. Using LEGO bricks, create a butterfly. Be sure to use the same colored and shaped LEGO in the same spot on each side of the butterfly's body to create symmetry.

Exploring Your World

Everything in the world is made up of smaller parts called atoms and molecules. A scientist uses a powerful microscope to see these tiny parts. But we can explore with a magnifying glass.

You can easily make your own magnifying glass if you do not have a real or toy one.

- Take a small, clean cylindrical glass jar with the label removed
- Fill the jar with water to the very top.
- Screw on the lid tightly.
- Hold the jar on its side and look through it to magnify objects.

It's time to explore!

- Experiment with looking at things that would be difficult to see without the magnifier. The patterns on your fingertips are a good example. Can you see something new with the magnifying glass?
- Head outside to get a close up look at objects with tiny parts or details that are difficult to see such as leaves, flowers, shells, etc.

Jump Start STEM

Research shows that playing with blocks helps develop motor skills, spatial reasoning and even early reading ability. At this stage, children are ready to build more complex structures with blocks of varying size, shape and material. Through this play, they are exploring concepts of geometry, symmetry and measurement.



NOTE: As their structures become more elaborate, children may want to save their work rather than smashing it! Consider designating a spot where their creations may be left undisturbed.

