AUTHOR/ ILLUSTRATOR:

Rod Clement

This is the story of a boy who sees the world a little differently than most people. He is always calculating how many of something will fit into a large space. How many of his dog Frank will fit into his bedroom? How long would it take to fill the entire bathroom with water?

Ages: 5 to 9 years

Lexile: 780L

ATOS Reading Level: 3.8

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Counting on Frank

How many Franks would fit in your classroom?

Topics: measurement, volume, estimation, multiplication, rate of growth

Activities To Do Together:

Use *Counting on Frank* to introduce the idea of estimation. This book is a hilarious take on an old contest idea: Guess how many jelly beans are in the jar. The boy in the story is always calculating how many of something would fit in a huge space. For example, how many peas will it take to fill the kitchen? How many Humpback whales would fit in his entire house?

Before reading the book:

- Discuss with your child what an estimate is. Notice that an estimate is not just a wild guess; estimating in math is a way of approximately calculating an answer using information you have (getting a 'rough answer').

- Ask your child to estimate the weight of a pet, or the height of family member. Then check to see how close their estimate was.

While reading the book:

- Discuss with your child one of the estimates that the boy makes in the story. Does your child think the boy's estimate is accurate? How does your child think they could check the accuracy of the estimate? How do they think they could find the information they need?

When you have finished reading the book:

- Ask your child to estimate a measurement and then check to see how close they were. For example, how many spoons can be laid end to end across a table?

- At the grocery store, encourage your child to keep an estimate of the running total of the price of the items in your cart. At the checkout, find out how close they were to the actual total.

- Ask your child what they would like to estimate and then make that estimate. Discuss ways you could find out the actual measurement.
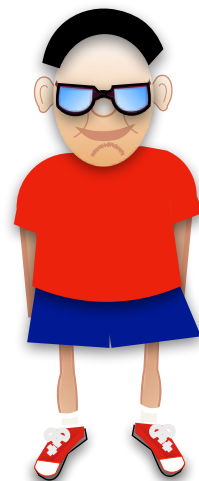
Questions for Mathematical Thinking:

1. How would you estimate how many boxes of cereal would fit into a cabinet? What would you need to consider when making your estimate?

2. Estimate your current age in months, days, and minutes? Determine your actual age in months, days, and minutes. How close was your estimate?

3. When you are fifty years old, how many months old will you be? How many minutes old will you be? How many seconds old will you be?

4. Supposing you dropped 15 peas on the floor every night, how could you figure out how long it would take for the peas to reach the ceiling? What measurements would you need to know to answer this question and what math would you use to find out the answer?

Early Math Project Resources:

Click Activities for Counting on Frank or visit www.earlymathca.org/counting-on-frank

Follow this link or visit earlymathca.org/external-resources for additional online resources.
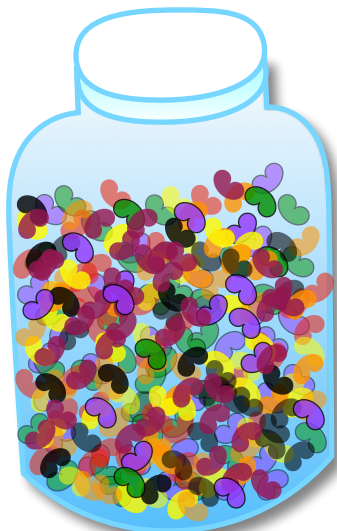
Vocabulary

Math words found in the story: as big as, average, calculate, even, forty-five minutes, four million times bigger, hours, nine feet tall, one-tenth, seven thousand feet, six feet wide, speed

Related math words: measurement, scale, volume, estimation

Words to build reading comprehension: aircraft, childish, endanger, humpback whale, jumbo jet

Related Books: *How Much is a Million*? by David M. Schwartz; *How Big Is a Foot?* by Rolf Myller; *Betcha* by Stuart J. Murphy

Click this link to the World Catalog or enter bit.ly/3L5jzF0 to find *Counting on Frank* in the public library.
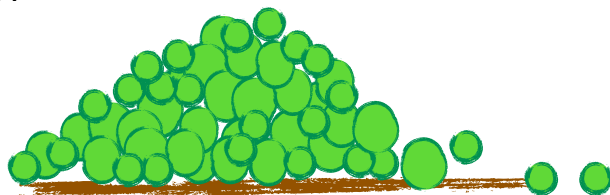

Early Math Project

Math Connections: Use *Counting on Frank* to practice the skill of estimation. Estimation is a useful skill in mathematics. Your child can use estimation to determine if their answer to a problem is reasonable. For example, A class of 32 students are going to make paper airplanes. If each student needs 4 sheets of paper, how many sheets will be needed for the whole class? One way to estimate the number of sheets would be, 32 is close to 30 and 4 is close to 5, so a reasonable answer would be close to 150 sheets. (30 x 5 = 150)

Estimation is also useful at the store to ensure you have enough money to pay for your purchases. Keeping an estimate of the total as you shop will help you keep within your budget. Practice this running-total estimation together next time you go shopping with your child.

After reading the story with your child, go back to a couple of scenarios and talk about how your child thinks the boy figured out how many would fit. For example, the scenario with the peas - how do you think he figured the peas would be table-top height? What are some things to take into consideration? Does the size of the room make a difference? Does it matter how big the peas are?

Practice estimating with your child by estimating how many small stuffed animals will fit in a small box, such as a shoe box. Encourage your child to explain their reasoning while they were estimating. Then ask your child to check their estimate by placing the stuffed animals in the box. Ask your child how they would go about estimating the number of jelly beans are in a container or the number of Franks that would fit in a room.

Ask your child how long they think it will take to fill one cup of water from the faucet, then time it to see how close they were. From that measurement, ask your child to estimate how long it would take to fill the largest pan you have with water from the faucet. Time it to see how close their estimate was. If the estimate is way off, ask your child to go back to how they figured their estimate. What can they change to make their estimate closer?

Early Math Project

Age Level	Related CA State Standards
Kindergarten	**Counting and Cardinality K.CC.1, K.CC.2** Know number names and the count sequence. **K.CC.4, K.CC.5** Count to tell the number of objects. **Operations and Algebraic Thinking K.OA.1, K.OA.2** Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from. **Measurement and Data K.MD 1**, **K.MD 2** Describe and compare measurable attributes.
Grade 1	**Number and Operations in Base Ten 1.NBT.1** Extend the counting sequence. **Measurement and Data 1.MD.2** Measure lengths indirectly and by iterating length units.
Grade 2	**Operations and Algebraic Thinking 2.OA.3** , **2.OA.4** Work with equal groups of objects to gain foundations for multiplication. **Number and Operations in Base Ten 2.NBT.7.1** Use estimation strategies to make reasonable estimates in problem solving. **Measurement and Data 2.MD.1 , 2.MD.2, 2.MD.3, 2.MD.4** Measure and estimate lengths in standard units.
Grade 3	**Operations and Algebraic Thinking 3.OA.1, 3.OA.2, 3.OA.3, 3.OA.4** Represent and solve problems involving multiplication and division. **3.OA.5, 3.OA.6** Understand properties of multiplication and the relationship between multiplication and division. **3.OA.7** Multiply and divide within 100. **Number and Operations in Base Ten 3.NBT.1, 3.NBT.2, 3.NBT.3** Use place value understanding and properties of operations to perform multi-digit arithmetic. **Measurement and Data 3.MD.2** Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.

Early Math Project