

Birthday Balloon Bash

Created by Patti Freeman and Linda Gillen
George Mason University, COMPLETE Math
Fall 2015



The Task

Mr. Al Gebra's class wanted to surprise him on his birthday by filling his classroom with inflated balloons. How many balloons did they need?

Big Ideas

- Estimation of weight and/or volume
- Calculation of weight and/or volume
- Measurement

Standards of Learning for Grades 3-4-5

- 3.9 The student will estimate and use US Customary and metric units to measure
a) length b) liquid volume c) weight/mass d) area and perimeter.
- 4.6a The student will estimate and measure weight/mass.
- 5.8d The student will estimate and then measure to solve problems using US Customary and metric units.

Standards of Learning for Grades 6-7-8

- 6.9 The student will make ballpark comparisons between measurements in US Customary System and metric system.
- 6.10 The student will describe and determine the volume of a rectangular prism.
- 7.4 The student will solve multistep practical problems, using proportional reasoning.
- 7.5b The student will solve practical problems involving the volume of rectangular prisms.
- 8.3a The student will solve practical problems involving rational numbers, percents, ratios, and proportions.
- 8.7a The student will investigate and solve practical problems involving volume of prisms.

Process Goals

- Problem Solving and Reasoning – Students will apply volume and estimation skills to determine how many inflated balloons will fill a classroom.
- Connections and Representations – Students will recognize and use mathematical connections to extend or generalize patterns. Students will use abstract or symbolic representation to record and their findings and solve the problem.

- Communication – Students will justify their findings and present their results to the class with precise mathematical language.

Related Task – Million Dollar Question

Your friend has sent you a text saying you can become a millionaire! He tells you that he won \$2 million in a contest. The money was sent to him in two suitcases, each containing \$1 million in one-dollar bills. He will give you one suitcase of money if you can go to the airport and pick up both suitcases. Is it possible that you could get the suitcases at the airport and get them home?

Related Task – Bucket of Trouble

The ceiling of Betty's kitchen has a leak. She hears 10 drips of water in 15 seconds. She puts a bucket under the leak and frantically calls the plumber. The plumber can't be there for 5 hours. Will Betty need to empty the bucket? How much water will she waste?

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Lesson Plan

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Materials

- The task
- Balloons (uninflated)
- Paper
- Yard or meter sticks
- String or Yarn
- Calculators
- One large presentation paper per group

Facilitating Task

- Class will be divided into groups of 3-4 students.
- Read the task together and answer clarifying questions.
- Groups will be given materials upon request.
- Give students individual think time and then work together in groups.
- Groups present findings during last 10-15 minutes of class.

Misconceptions

- Balloons could be inflated to different fullness; does it matter?
- Will every cubic inch of space be occupied?

Suggested Prompts or Questions

- How much space does one balloon occupy?
- Which measure is needed for 'space occupied'?
- What measures capacity?
- What does it mean to 'fill' the room?

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Name _____

Date _____

Mr. Al Gebra's class wanted to surprise him on his birthday by filling his classroom with balloons. How many balloons did they need?

Answer the question using pictures, words, tables, graphs, and/or symbols.