

## Bean Salad

Thank you for downloading the science and mathematics activity packet! Below you will find a list of contents with a brief description of each of the items. This activity packet contains all the information (including any handouts) you will need to run this activity in your own classroom or at a science festival.

Please note: some activities might require the need for a facilitator to be present to oversee the activity. Activities that require a facilitator will be clearly noted.

-Community Resources for Science



# Bean Salad

## ACTIVITY PACKET CONTENTS

1. Organizer Instructions for the person running the activity
  - Print suggestion: 1 for the facilitator
  - Includes information for setup prior to the event (e.g., materials prep)
2. What's Going On? (tabletop sign/printout)
  - Print suggestion: 1 to put in a plastic sign holder
  - Explains the science and background information behind the activity
3. Participant Instructions (tabletop sign/printout)
  - Print suggestion: 1-2 to put in a plastic sign holder
4. Activity Printout(s) for participants
  - Print suggestion: number of expected participants, plus any extras for participants to take home
  - Printouts needed for participants to do the activity (e.g., cutout templates)
5. Take home activity sheet for participants
  - Print suggestion: number of expected participants
  - Easy-to-follow materials list and instructions for participants to try the activity at their homes



# Bean Salad

## ORGANIZER INSTRUCTIONS

**Grade(s):** 1-5

**Standard connections:**

- **CCSS.Math.Practice.MP1:** Make sense of problems and persevere in solving them
- **CCSS.Math.Practice.MP2:** Reason abstractly and quantitatively
- **CCSS.Math.Practice.MP4:** Model with mathematics

**Next Generation Science Standards:** Science and Engineering Practices

- **Constructing Explanations and Designing Solutions:** Use evidence (e.g., measurements, observations, patterns) to construct or support an explanation or design a solution to a problem
- **Using Mathematics and Computational Thinking:** Use counting and numbers to identify and describe patterns in the natural and designed world(s)

**Objective:** Students will use mathematic models, along with abstract, deductive thinking, to solve ratio word problems

**Activity overview and background:** Student-directed activity that can be completed independently or with a partner. The activity involves working with ratios and proportions to create specific groups of objects. Students will use deductive logic and operational skills to find correct ratios of beans in a salad.

**Estimated cost for activity supplies:** \$6-8 for three kinds of beans

**Note:** Can determine ahead of time if you want to do 2 or 3 bean salad activity for participants

**Materials:**

- 30 counters or beans (e.g., 10 red, 10 black, and 10 green; \$6)
  - Use different kinds of beans (see handout; e.g., black-eyed peas, red beans, lima beans)
- Crayons (if needed to draw diagrams)
- Handout with directions and story
- Pencil and paper for calculations, if needed

**Setup:**

- Give each student a handout, pencil, paper, and a handful of counters or beans
- Students may also use the paper and crayons to simply draw diagrams of each salad



### Instructions

1. Select a “salad menu”
  - The two beans salads are simpler
  - The three-bean salads are more challenging
2. Work with your partner or take turns following the “recipe” for each numbered salad
3. As you are doing the activity....
  - Estimate how many beans will there be in this salad
  - Compare how many of each beans are in this salad
    - E.g., are there more red or black-eyed beans?
  - Count how many beans are in this salad
4. Take turns writing and following each other’s recipes



## Two Bean Salads

*Each salad contains two kinds of counters or beans*

1. This salad contains:
  - a. 6 red beans
  - b. 14 in all
2. This salad contains:
  - a. 8 black-eyed peas
  - b.  $\frac{1}{2}$  as many red beans as black-eyed peas
3. This salad contains:
  - a. An even number of red beans and an odd number of black-eyed peas
  - b. There are a total of 13 beans
4. This salad contains:
  - a. 12 beans
  - b. There are twice as many black-eyed peas as red beans
5. This salad contains:
  - a. 16 beans
  - b. There are an equal amount of both beans
6. This salad contains:
  - a. At least 14 beans
  - b. It has 5 more red beans than black-eyed peas
7. This salad contains:
  - a. 12 beans
  - b. There are 6 less black-eyed peas than red beans
8. This salad contains:
  - a. 15 beans
  - b. There are more red beans than black-eyed peas
  - c. You reach the red bean number by counting by 25 and the black-eyed pea number by counting by 5s



*Make up a different salad!*

*Write instructions for someone else to make your salad*

## Three Ban Salads

*Each salad contains three counters or beans*

1. This salad contains:
  - a. 2 lima beans
  - b. Twice as many red beans as lima beans
  - c. 10 beans in all
2. This salad contains:
  - a. 4 red beans
  - b.  $\frac{1}{2}$  as many black-eyed peas as red beans
  - c. 10 beans in all
3. This salad contains:
  - a. Lima beans make up  $\frac{1}{2}$  of this salad
  - b. The salad has exactly 2 red beans
  - c. The number of lima beans is double the number of red beans
4. This salad contains:
  - a. The same number of red beans as lima beans
  - b. 3 more black-eyes than red beans
  - c. a total of 18 beans
5. This salad contains:
  - a. 12 beans
  - b.  $\frac{1}{2}$  of the beans are red
  - c. Lima beans make up  $\frac{1}{4}$  of the salad
6. This salad contains:
  - a. At least 12 beans
  - b. It has one more lima bean than red beans
  - c. It has one more red bean than black-eyes
7. This salad contains:
  - a. 3 times as many red beans as black-eyes
  - b. One more lima bean than red beans
  - c. 8 beans in all
8. This salad contains:
  - a. An equal number of red beans and black-eyes
  - b. 5 more lima beans than red beans
  - c. No more than 20 beans

