In All Probability

Investigations in Probability and Data Analysis

GEMS Teacher’s Guide® for Grades 3-5

Double Dice Derby
Activity 1

Session 1: Introducing Data

- What You Need
  - chart paper, plain (approximately 26 x 38 inches)
  - chart paper, square grids (approximately 26 x 38 inches)
  - markers
  - pennies
  - For each student:
    - 1 penny
    - math journal
  - Optional:
    - hand lens for each student or pair

Session 2: Penny Flip

- What You Need
  - graph of pennies organized by year minted (made in Session 1)
  - sticky notes (2 distinct colors, 2.5 by 2.5 inches square)
  - 11 Index cards, 3 x 5 inches
  - small clear container
  - extra pennies
  - For each student:
    - 1 penny
    - math journal

Session 3: Making "Cents" (Sense) of the Penny Data

- What You Need
  - graph of the results of the Penny Flip
  - centimeter (cm) grid paper (8.5 x 11 inches)
  - overhead transparencies and pens
  - For each student:
    - cm grid paper
    - math journal

Session 4: Graphing Heads and Tails

- What You Need
  - blank overhead transparencies and pens
  - centimeter (cm) grid transparencies (from Session 3)
  - (optional) cm grid paper
Session 5: Introducing Theoretical Probability

- **What You Need**
  - chart paper, plain (26 x 38 inches)
  - pens

Optional
  - book, *Cloudy with a Chance of Meatballs*
  - string (non-stretchable)

For each student
  - math journals

Activity 2

Session 1: Ready, Set, Spin!

- **What You Need**
  - cardstock, white
  - overhead transparencies
  - chart paper with grids
  - paper clips
  - tape
  - crayons or pens—one each red, yellow, blue

For each pair of students:
  - Track Meet board
  - 3 markers for track meet—one each red, yellow, blue
  - 2 Track Meet data sheets
  - 2 spinners
  - crayons—one each red, yellow, blue

For each student:
  - homework sheet, page 59

Session 2: What’s the Real Spin on the Spinners?

- **What You Need**
  - grid chart paper with 1-inch squares
  - scissors
  - tape
  - string

For each student:
  - scissors
Session 3: Spinner Investigation: Fair or Not Fair?

What You Need

- cardstock, white
- overhead transparencies
- chart paper with 1-inch grid
- paper clips
- tape
- crayons and pens
- 1 copy of Spinner C

For each pair of students:

- Track Meet Rematch board
- markers—one each yellow, blue, red, green
- crayons—one each yellow, blue, red, green
- Track Meet Rematch data sheet
- 2 copies of Spinner C (one for each student)
- 2 copies of Fair or Not Fair Assessment (one for each student)

Activity 3

Session 1: Roll of a Die

What You Need

Materials:

- cardstock
- overhead transparencies
- overhead pens
- 1 die
- 6 markers (beans, cm cubes, plastic circles)
- chart paper with 1-inch grids
- pens, 2 different dark colors

For each pair of students:

- 1 die
- 1 Horse Race board
- 6 markers (beans, cm cubes, plastic circles)

For each student:

- math journal

Optional:

- 1 giant-sized pair of standard dice
Session 2: Off to the Races!

What You Need

Materials:
- cardstock
- paper
- overhead transparencies
- overhead pens
- 12 markers (beans, cm cubes, plastic circles)
- 2 dice
- chart paper with 1-inch grids
- pens, 2 different dark colors

For each pair of students:
- 2 dice
- 1 Double Dice Derby board
- 12 markers (beans, cm cubes, plastic circles)

For each student:
- math journal

Optional:
- 1 giant-sized pair of standard dice

Session 3: Keeping Track

What You Need

Materials:
- overhead transparencies
- overhead pens
- pens, 2 different dark colors
- chart paper or sentence strips

For each student:
- 1 copy of Keeping Track data sheet
- math journal

Activity 4

What You Need

For the class:
- 8 tongue depressors or craft sticks 3/4-inch wide by 6 inches long
- 10 counters
- colored markers
- chart paper

For the each student:
- 4 tongue depressors or craft sticks 3/4-inch wide by 6 inches long
- 10 counters, plus some for homework
- math journal