

# *Problemoids*

Grade 6

Math Challenge

*Revised Edition*

Bill McCandliss  
Albert Watson

Royal Fireworks Press  
Unionville, New York

# 1. Number Factory

Can you solve the following math puzzles? Can you find more than one way to solve some of them?

- a. Write a math problem that uses only the digit 8 three times and equals 9.
- b. Write a math problem that uses only the digit 4 three times and equals 11.
- c. Write a math problem that uses only the digit 9 three times and equals 78.
- d. Write a math problem that uses only the digit 3 three times and equals 24.
- e. Write a math problem that uses only the digit 5 three times and equals 5.

## Hint 1

*Use trial and error and mathematical operations you know to solve a simpler problem. Make two 8s equal 1.*

## Hint 2

*Solve a simpler problem. Make two 9s equal 6.*

## 16. All for One

Jayden wants to weigh himself and his two younger sisters on the scale at the county fair, but they only have enough money left to use the weight scale once. Jayden knows that he weighs 30 pounds more than the weight of both of his sisters together and that his baby sister weighs 80% less than her older sister. So Jayden confidently tells his sisters, “Get on the scale with me, and I’ll calculate our individual weights after I know our combined weight.”

The scale shows that the siblings weigh 210 pounds together. How much does each person weigh?

### Hint 1

*Solve a simpler problem.* If a dog and a cat weigh 12 pounds together, and the cat weighs 50% less than the dog, how much does each animal weigh?

### Hint 2

*Find the information given in the problem.* Use the information to construct some equations.

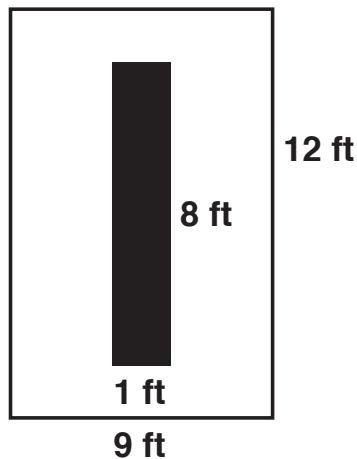
### Hint 3

*Use all given and implied information* to find what percentage of the older sister’s weight equals the weight of both sisters together.

## 46. Cutting a Rug

The principal of a small school needed a rug to fit into a playroom that measured 10 feet by 10 feet. He asked the school parents' association for the donation of a second-hand rug for the room until the school could purchase one. One of the parents offered to donate a rug that measured 9 feet by 12 feet with a hole in the middle that measured 1 foot by 8 feet. The principal didn't think that the rug would fit, and he was about to decline the donation when a student standing nearby suggested, "We can cut the rug into two pieces and sew them together to make it a perfect fit for our little playroom."

How was the student planning to cut the rug?



### Hint 1

*Solve a simpler problem.* Suppose the rug is 3 feet by 4 feet and has a 1-foot by 2-foot hole in it. How can the school cut the rug into two pieces that can be sewn together into a rug that measures 2 feet by 5 feet? *Draw a diagram* to help you visualize the solution.

### Hint 2

*Solve a simpler problem.* Can you cut a 10-foot by 12-foot rug with a 2-foot by 6-foot hole in the middle into two pieces that can be sewn together to make a 12-foot by 9-foot rug?