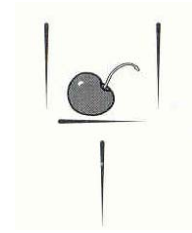


Solutions for the Activity Approach Puzzlers may be found in the Instructor's Resources

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**Puzzler 1.1**

By removing exactly two toothpicks, get the cherry out of the cup without changing the size and shape of the cup.

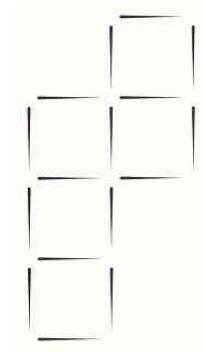


**Puzzler 1.2**

Use 12 toothpicks to make this figure of squares. By repositioning exactly 3 toothpicks, form a figure with exactly 3 squares, all the same size.



These toothpicks form five squares of the same size. Reposition exactly two toothpicks to get exactly four squares of the same size.



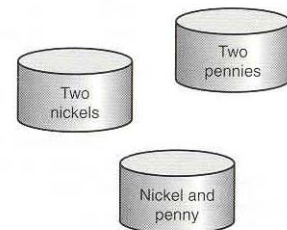
**Puzzler 1.3**

You and your friend each have some pennies. If you give your friend 1 penny, then you and your friend will have the same number of pennies. If your friend gives you 1 penny, then you will have twice as many pennies as your friend. How many pennies do each of you have?

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**Puzzler 2.1**

These three containers are all labeled incorrectly. But it is true that one contains two nickels, another two pennies, and another one nickel and one penny. How is it possible to determine the correct labels for all three containers by selecting one coin from one container?



**Puzzler 2.2**

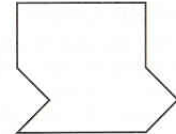
In the first diagram, a block is standing on end on the table and an identical block is on its side on the floor. The distance between the highest parts of both blocks is 32 inches.

In the second diagram, the blocks are in reversed position and the distance between them is 28 inches. How tall is the table?

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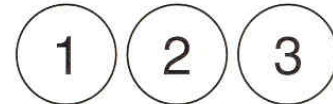
**Puzzler 2.3**

Divide this parcel of land into two parts that each have the same size and shape (i.e., two congruent pieces).



**Puzzler 3.2**

Three cardboard disks are numbered on both sides. When the disks are dropped onto a table, the sum of the three visible numbers will be 6, 7, 8, 9, 10, 11, 12, or 13. What number is written on the back of each disk?



**Puzzler 3.4**

What is the minimum number of coins needed to pay the exact amount for any item costing from 1 to 99 cents?

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**Puzzler 4.1**

Change the coins from the arrangement shown in the top row to the one shown in the bottom row by moving one pair of coins at a time. On each move, you may slide a pair of adjacent coins to a new position in the row without interchanging them or moving other coins in the row.



**Puzzler 4.2**

From a group of 10 people, can you form more different committees of 2 or more different committees of 8?

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**Puzzler 5.2**

At a certain college,  $\frac{1}{4}$  of the first-year women students are from homes where both parents are professionals. Of these,  $\frac{3}{5}$  are interested in the same profession as one of their parents. The latter group is composed of 18 students. How many first-year women students attend the college?

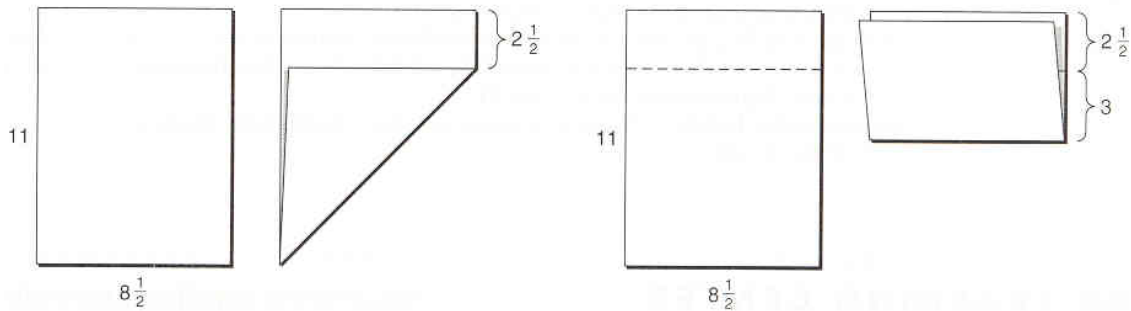
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**Puzzler 5.3**

Starting with a blank sheet of 8 -by-11-inch paper, you can determine a length of 2 inches in one fold. Then by folding the paper in half, you can determine a length of 3 inches. (Note: There are other ways to obtain a length of 3 inches.)

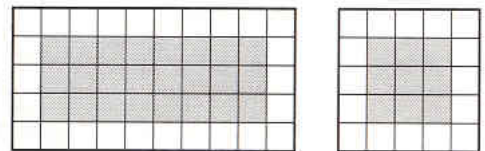
Try to find a way to obtain each remaining length in this list by one or more folds of the paper.

- 1     $1\frac{1}{2}$     2     $2\frac{1}{2}$     3     $3\frac{1}{2}$     4     $4\frac{1}{2}$     5     $5\frac{1}{2}$     6
- $6\frac{1}{2}$     7     $7\frac{1}{2}$     8     $8\frac{1}{2}$     9     $9\frac{1}{2}$     10     $10\frac{1}{2}$     11



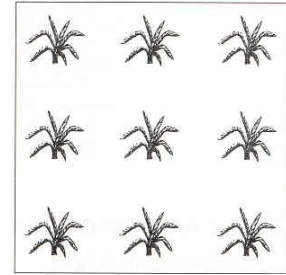
**Puzzler 6.3**

Which rectangle has the greater percent of its area shaded?

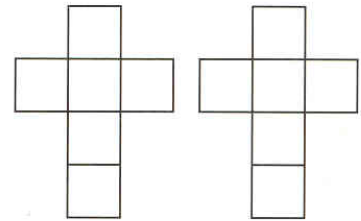


**Puzzler 6.4**

These nine plants are in a square fenced garden. Construct two more square fences so that each plant is contained inside its own fence.

**Puzzler 7.3**

Label all faces of two cubes so that when the cubes are rolled, the sum of the top two numbers will always be 0, 1, 2, or 3, and all of these sums are equally likely to occur.

**Puzzler 8.1**

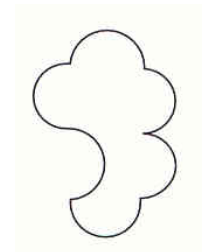
Have a friend grasp four identical shoelaces (or pieces of string) in the middle so that four ends extend on each side of the hand. If you tie them in pairs on each side of your friend's fist, are your chances of having one big loop when the laces are released greater or less than 50 percent?

**Puzzler 8.2**

If a string is cut at random into two pieces, what is the probability that one piece is less than or equal to half the length of the other?

**Puzzler 9.1**

Make one cut on this figure to create two congruent halves. (The cut does not have to be straight.)





**Puzzler 11.1**

You ride your bike straight across a strip of fresh wet paint 10 inches wide. What pattern of marks will your bike tires leave if you keep riding in a straight line?

