Food for Thought from Jay's Diner

The Midas Touch

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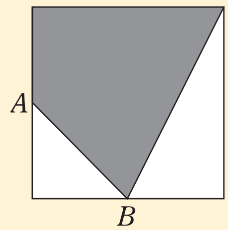
THE EDITORIAL PANEL IS PRESENTING the following problem to stimulate submissions to "The Thinking of Students" department. We encourage teachers to try this problem with students and analyze the different ways that they use to solve the problem. Please send the following if students generated unique strategies:

- A brief analysis of the specific strategy and
- Examples of students' work

Send submissions to Gladis Kersaint, College of Education, University of South Florida, 4202 E. Fowler Ave., EDU162, Tampa, FL 33620-5650, by **February 15, 2004.** She will select items for *MTMS.*

Suppose the square piece of gold shown here is worth \$1000. A and B are the midpoints of adjacent sides of the square. What would be the value of the shaded part? □



(Source: *Awesome Math Problems for Creative Thinking* by Linda Jensen Sheffield, Carole E. Greenes, Carol R. Findell, and M. Katherine Gavin. Published by Creative Publications. All rights reserved.)

(Solution on page 267)

tions + (1/3)(1/2)x questions, or x questions = 20 questions + (2/3)x questions. Solving for x gives 60 questions. **11.** 5 cups. Letting B = bottle, C = cup, S = saucer, and P = pot, write the three equations for the given conditions: (1) $B + C = P$; (2) $B = C + S$; and (3) $3S = 2P$. Multiply equation (1) by 2 to get $2(B + C) = 2P$, or $2B + 2C = 2P$. Substitute from equation (3) to get equation (4): $2B + 2C = 3S$. Solve equation (2) for S and multiply by 3 to get $3S = 3B - 3C$. Substitute for $3S$ in equation (4) to get $2B + 2C = 3B - 3C$, and rearrange to solve for $B = 5C$. **12.** 2 people. 850 (85% of 1000) of the people have a telephone. At one extreme, assume that the 150 people without a telephone each have a CD player. This is the maximum number of people who can have a CD player but not a telephone. Then the minimum number of people who have both a telephone and a CD player is 550 (700 – 150). In this scenario, 450 people have either a telephone or a CD player but not both; 452 people have a computer. If each of the 450 people who have only one of the other two devices also has a computer, then only two people (452 – 450) have all three devices. At least this many people must have all three. In the other extreme case, 452 of the people who have both a telephone and a CD player also have a computer. In this scenario, 452 people have all three devices. In the actual situation, the number of people who have all three devices probably lies between these two extremes. **13.** 103,680. Within the Robot category, you have 4 ways to choose the first novel, 3 ways for the second, 2 for the third, and 1 for the fourth, so the total number of possibilities is $4 \times 3 \times 2 \times 1 = 4!$ (4 factorial). A similar argument holds for each of the other categories. Each possibility within any category can be combined with all the possibilities in the other two categories, so the total number of different ways is [possibilities within Robots × possibilities within Empire × possibilities within Foundation] = $(4 \times 3 \times 2 \times 1) \times (3 \times 2 \times 1) \times (6 \times 5 \times 4 \times 3 \times 2 \times 1) = 4! \times 3! \times 6! = 103{,}680$. □

Solutions to January's "Cartoon Corner"

(Continued from page 268)

The Meal Mat

Note: The answers were found by using the π key. If 3.14 is used, the answers will be slightly different.

1. Circumference
2. 31.4 feet
3. 7.66 $ft.^2$. The area of the entire rug is 78.54 $ft.^2$ ($A = 5^2\pi$); the area of the part without the border is 70.88 $ft.^2$ (3 in. = 0.25 ft.; the radius is 5 – 0.25 = 4.75 ft.; $A = 4.75^2\pi$); the area of border is 78.54 – 70.88 = 7.66 $ft.^2$.
4. 43.6 percent. The area of the room is 180 $ft.^2$. The area of the rug is 78.54 $ft.^2$. The probability of being on the rug is 78.54/180 = .436. □

Solutions to January's "Food for Thought from Jay's Diner"

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The value of the shaded part is \$625. □

Do You Want to Add *Your* Two Cents?

You may have opinions about articles or departments mentioned in this issue. Perhaps you have a classroom activity to share that is related to one of them. If so, please share them with other teachers by writing to "Readers Write," NCTM, 1906 Association Dr., Reston, VA 20191-1502.