Commentary

Mars, VII

1. **(3)** The first number in each pair is 4 times the second number. Students who have mastered their multiplication facts might have discovered this pattern. Other students might be having trouble if they are looking for an addition or subtraction relationship.

2. **(9)** Some students might choose to draw marks or use counters. If so, they will find that 8 boxes are needed for 48 golf balls, with 4 balls left over. This means a ninth box is needed.

3. The student should first add to find the sum of the diagonal which has all three numbers showing. Then each box can be solved by adding the two numbers and subtracting to find the missing number. See the magic squares below:

6	1	8
7	5	3
2	9	4

12	7	14
13	11	9
8	15	10

4. **(9, 5)** The *guess and check* method is one that can be used. A quicker method is to think of the fact families of 14.
Then you look for a difference of 4 between the numbers.
The numbers 9 and 5 meet both conditions.

$7 + 7 = 14$ but $7 - 7 = 0$
$8 + 6 = 14$ but $8 - 6 = 2$
$9 + 5 = 14$ and $9 - 5 = 4$ √
$10 + 4 = 14$ but $10 - 4 = 6$

5. **(28)** Students should be encouraged to approach this problem in an organized way. For example, they might count all of the small rectangles first, those made by the individual lines, and get 7. Then they count all the next larger size, those formed by putting two small rectangles together -- this gives 6. They proceed in this fashion, finding 5 of the next size, 4 of the next, then 3, 2, and 1, which is the whole card itself.

6. **(7)** Either *guess-check-revise* or *work backwards* strategies can be used to find the starting number. With *working backward*, you would ask yourself "What number multiplied by 3 gives 30?" The answer is 10. You would then ask "What number, less 4, gives 10?" The answer is 14. Finally, "What number, when 7 has been added, gives 14?" The answer is 7.

7. **(6)** Once students organize their plan, finding these 6 numbers will be easy.
Starting with the 2 as the hundreds digit : 234, 243
Starting with the 3 as the hundreds digit: 324, 342
Starting with the 4 as the hundreds digit: 423, 432
The condition of using each number only once limits the number to 6.

8. **(20, 10, 20)** Students with good number sense can intuitively find half of numbers such as 40 and 20 at this time. Other students might need to actually make 40 or 20 marks on a sheet of paper, or work with cubes or other concrete materials to represent the beads, and divide them into two piles with the same amount in each.