Commentary

Mars, VI

1. **(8)** Students might find this answer by drawing pictures of hot dogs and labeling each one "2 ounces", and counting by twos until they reach sixteen. The problem also relies on students knowing that 16 ounces is one pound -- many third graders might have to be told this.

2. **(7 + 5 - 9 + 3 = 6 is one solution)** Students can try writing the numbers and signs on small pieces of paper or index cards, and moving them around until they reach a solution. They might try lining up the numbers in a certain order, and just manipulating the signs to see if they can get a number sentence that works. If not, change the order of the numbers and try again.

3. **(83,472)** The problem has students unscramble the order of the numbers given, according to place value.

4. **(28)** The pattern involves increasing the number of cookies by four, for each new grade level.

5. **(40)** The problem tests students' number sense, in that 400 is far too many students for a school bus, and 4 is obviously too few. Therefore 40 is the only reasonable number.

6. **(26)** The four sides can be added together and that sum subtracted from the perimeter. Some students might prefer to subtract each number in turn from the perimeter.

7. **(The figure is shown below.)** The repeating pattern involves adding another vertical line to the circle, and then another horizontal line to the circle, each time you move to the right.

8. **(llama)** There are 4 llama cards and 2 giraffe cards out of the 13 in the box. This problem does not ask directly what is the probability of pulling each card out of the box, but gives a hint that there is some mathematical basis for such a question. The chances of pulling out a llama card is 4/13, while the chances of pulling out a giraffe card is 2/13.

9. **(6)** The problem involves several steps, and is a precursor to algebraic thinking. Students know a hat weighs 3 pounds from the scale on the right. On the scale to the left, the two hats would then weigh 6 pounds out of the 18 total, leaving 12 pounds for the two rabbits. Each rabbit then weighs 6 pounds. In later grades, equations such as "$2r + 2h = 18$ and $h = 3$" might be used to show the existing situations, and students would solve the equations for r.