Commentary

Earth, XII

1. **(8)** Students may use several strategies to solve this problem. They might total all the animals found, then subtract all that escaped. Or they might subtract the number of each type that escaped from the total of that type, and add the remaining animals. Drawing a picture would help, and then the answer can be found by counting.

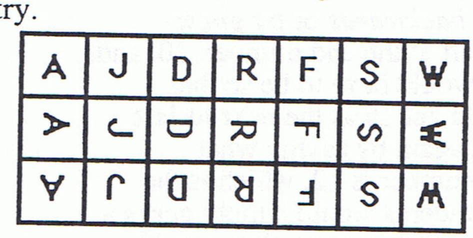
2. **(84)** There are two ways to solve this problem. Under *guess-check-revise*, you would "guess" a number and check to see if it is right. If not, revise your guess until the solution is found. For *working backwards*, the student starts with the answer 83 and asks "what was the previous number so that, after 7 is subtracted, 83 is left?" The number is 90. Then work backwards on the previous step asking, "what number did I start with so that, after adding 6, I got 90?" The number is 84. Still a third way to approach the problem is to notice that 6 is added and 7 is subtracted in the middle of the pond, meaning a total of 1 is subtracted. So the problem becomes, "what number do I start with, so that when 1 is subtracted, 83 is left?"

3. **(12)** Students can be encouraged to solve this problem by "making an organized list -- 26, 27, 28, 62, 67, 68, 72, 76, 78, 82, 86, 87. Notice the list starts with the smallest number, a 26, and then list all the others that start with 2 in the tens place. Then the list moves to the next largest number in the tens place, and so on.

4. **(first circle: $\frac{1}{4}$; second: $\frac{1}{3}$; third: $\frac{1}{2}$)**

   Through observation or using concrete examples, students should realize that there is one out of four equal parts shaded in the first circle; there is one out of three equal parts shaded in the second circle; and there is one out of two equal parts shaded in the last circle.

5. **(see below)** Visual discrimination is involved in solving this problem. Each letter in the top row is turned 90 degrees to get the letter below it, and another 90 degrees to get the third entry.



6. **(40; even)** Students can learn to count such collections by "counting by twos." If they do so, the collection is *even* if they can count the whole set and end on one of their counting by twos numbers. The collection is *odd* if they have one left over, counting by twos.

7. **(120 minutes)** 60 minutes in an hour + 60 minutes in an hour = 120 minutes in 2 hours.

8. **(see below)** Students have a chance to make their own pictograph in this problem. They will have to think of the money earned as dimes (for example 40¢ is 4 dimes).

Marsha: OOOO
Danny: OOOOO
Molly: OOOO
Bruce: OO