

Solutions to Five Problems

1. This problem seems suited to working backward.

	Oldest	Middle	Youngest
End	16	16	16
Step 1	32	8	8
Step 2	28	16	4
Start	26	14	8

The youngest was 8, the middle child was 14. The oldest was 26.

2. 38 heads, 38 animals. Assume that all were hens. This accounts for 76 feet. There are 24 extra feet, which is 12 pairs of extra feet. Thus 12 are hogs and 26 (38 – 12) are hens.
3. There are lots of ways to approach this problem. One method is to first, assume that the teams play once and double the result. Making a list will solve this quickly.

1 - 2 1 - 3 1 - 4 1 - 5 1 - 6 1 - 7 1 - 8
 2 - 3 2 - 4 2 - 5 2 - 6 2 - 7 2 - 8
 3 - 4 3 - 5 3 - 6 3 - 7 3 - 8
 4 - 5 4 - 6 4 - 7 4 - 8
 5 - 6 5 - 7 5 - 8
 6 - 7 6 - 8
 7 - 8

There are 28 games shown. Doubling that, there are 56 games.

A second method assumes that each team will play 14 games. There are 8 teams.
 $8 * 14 = 112$. However, there are 2 teams per game. Dividing by 2 there are 56 games.

There are other methods, also.

4. This problem seems suited to working backward, also.

	Fourth Man	Third Man	Second Man	First Man
Ending #	6	8	12	18
Starting #	8	12	18	27

There were 27 coconuts to start.

5. Since there was no cutting, assume that before giving apples to the brothers, Troy had an ODD number of apples.

	Third Brother	Second Brother	First Brother
Ending #	0	1	3
Starting #	1	3	7

Troy started with 7 apples.