



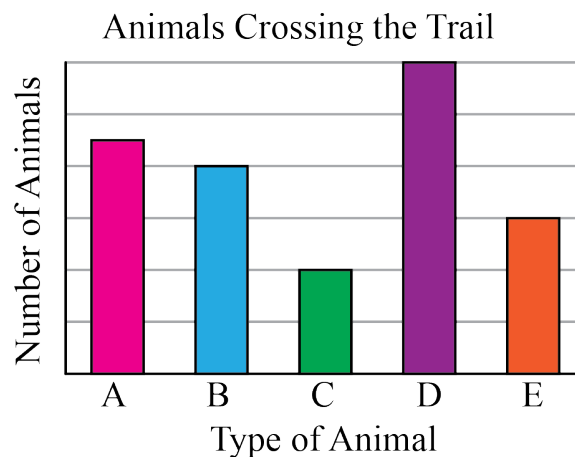
Problem of the Week

Problem A and Solution

Animals on Parade

Problem

The staff at a provincial park set up a trail camera. Over 24 hours they captured the number of foxes, chipmunks, mice, raccoons, and rabbits that crossed the trail. The bar chart below was drawn on lined paper and shows the results of their tallies, where the letters A, B, C, D, and E along the horizontal axis each represent one type of animal; however, the numbers on the vertical axis are missing.



Use the following clues to match the letters in the bar chart to the correct animal.

- There were half as many foxes as there were chipmunks
- The number of chipmunks is the median of the data. (Note: The *median* is defined below.)
- There were twice as many mice as there were raccoons.
- There are more rabbits than raccoons.

NOTE: The *Median* of a data set refers to the middle number after the numbers have been arranged in order. If a data set has an even number of values, then there are two “middle numbers”. In this case we calculate the sum of the two numbers and divide by 2 to determine the median.



Solution

If the bars were ordered from shortest to tallest, then the bar labelled **B** would be in the middle. Thus, the bar labelled **B** represents the middle number of the data. Since the number of chipmunks is the median (middle) of the data, then bar **B** represents the number of chipmunks.

Since there were half as many foxes as there were chipmunks, then the bar representing the number of foxes must be half as tall as bar **B**. Since bar **C** is half the height of bar **B**, bar **C** represents the number of foxes.

Since there are more rabbits than raccoons, and there are twice as many mice as raccoons, then the shortest bar of the remaining bars **A**, **D**, and **E** must represent the number of raccoons. Therefore, bar **E** represents the number of raccoons. Since bar **D** is twice the height of bar **E** and there were twice as many mice as there were raccoons, bar **D** represents the number of mice.

Bar **A** is the only one not yet connected to an animal. This means that bar **A** must represent the number of rabbits. The height of bar **A** indicates that there are more rabbits than raccoons, which matches the last clue. Note that we did not need the last clue in any of the earlier logic, but it is a good check for us and it is important that the last clue is actually true for consistency.