

MATHCOUNTS® Problem of the Week Archive

American Eagle Day – June 19, 2017

Problems & Solutions

June 20th is National American Eagle Day. The day is about honoring our national symbol and promoting awareness for protecting the Bald Eagle and assisting in recovering their natural habitats.



The population of Bald Eagle nesting pairs hit its lowest point in the contiguous United States (all states excluding Alaska and Hawaii) in 1963. The population at that time was approximately 500 nesting pairs. The Bald Eagle was listed as an endangered species and efforts to protect them led to a rise in population. In 2007, they were officially removed from the endangered species list. By 2014, the population had risen to approximately 15,000 nesting pairs. Using these approximate population numbers, what was the percent increase in the number of nesting pairs from 1963 to 2014?

From 500 nesting pairs, any additional 500 pairs represent a 100% increase. The increase in total number of nesting pairs was $15,000 - 500 = 14,500$. This is a $14,500 \div 500 \times 100 = 2900\%$ increase.

The number of calories any animal must consume daily to maintain weight and function is directly proportional to the amount of energy expended per day. A person who weighs 175 pounds needs to eat around 2800 calories per day. A Bald Eagle weighing 10 pounds needs to eat around 550 calories per day. How many more calories per pound does a bald eagle need to consume than a person?

A person needs to eat around $2800 \div 175 = 16$ calories per pound. A Bald Eagle needs to eat around $550 \div 10 = 55$ calories per pound. This means a Bald Eagle needs $55 - 16 = 39$ more calories per pound than a person.

The number of calories a Bald Eagle consumes makes sense when you hear that, during migration, they fly up to 125 miles in one day. If their average speed during flight is 30 miles per hour, up to how many hours do they fly per day? Express your answer to the nearest whole number.

If a Bald Eagle flies 125 miles at an average speed of 30 miles per hour, then it flies $125 \div 30 = \approx 4.167 \approx 4$ hours per day.

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