February 2nd is Groundhog Day. Every year, on this day, Punxsutawney Phil comes out to predict either another 6 weeks of winter or an early spring. If he sees his shadow, that is a prediction of more winter. If he doesn’t see his shadow, that is a prediction of an early spring. This past Groundhog Day, Phil came out, he stood up straight and saw a shadow 3 feet 3 inches long. If his handler, who was standing right beside him, had a shadow of 9 feet and is 6 feet tall, how many inches tall is Phil?

The ratio of the handler’s height to is shadow is 6/9 = 2/3. One-third of the length of Phil’s shadow would be 1 foot 1 inch. So, two-thirds would be 2 feet 2 inches. This means Phil is 2 feet 2 inches tall or 26 inches.

Punxsutawney Phil is claimed to be over 120 years old. His handlers say he gets his longevity from a magic elixir Phil drinks daily. In his recorded history, Phil has predicted 102 long winters and 18 early springs. However, only 40% of Phil’s predictions have been correct. Assuming he correctly predicts long winters and early springs with the same accuracy. Of the 120 years Phil made a prediction, what percentage of the years were long winters and what percent were early springs? Round your answers to the nearest whole number.

If Phil is 40% correct on all predictions, then of the 102 long winters he predicted 0.4 × 102 = 40.8 ≈ 41 were long winters and 102 – 41 = 61 were early springs. Similarly, of the 18 early springs predicted, 0.4 × 18 = 7.2 ≈ 7 were early springs and 18 – 7 = 11 were long winters. So, the actual count would be closer to 41 + 11 = 52 long winters and 61 + 7 = 68 early springs. Of the 120 years, 52/120 × 100 ≈ 43% were long winters and 68/120 × 100 ≈ 57% were early springs.

Punxsutawney Phil’s name is very long and quite a mouthful. Punxsutawney is the name of the town in Pennsylvania where Phil lives. Using the letters of the name Punxsutawney, how many different arrangements can be made?

There are 12 letters total in the name Punxsutawney, however there are two letters that appear twice, u and n. The number of different arrangements is 12! / (2! × 2!) = 119,750,400 arrangements.
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