**Lower Elementary:**

*Question:* A woolly mammoth weighs 6 tons. A ton is 2,000 pounds. If a caveman weighs 200 pounds, then how many pounds heavier is the woolly mammoth than the caveman?

**Upper Elementary:**

*Question:* The probability that a saber-toothed tiger catches its prey is 3 out of 4. If a saber-toothed tiger has caught the past 3 rhinos it chased after, what is the probability that it will catch the next rhino it chases?

**Middle School:**

*Question:* A Neanderthal hunting party caught between 20 and 30 animals. If a sixth of the animals were reindeer, a fourth of them were goats, a third of them were sheep, and the rest were rabbits, then how many rabbits did the Neanderthals catch?

**Algebra and Up:**

*Question:* The Siberian unicorn, a ginormous prehistoric rhinoceros-like animal, survived until *around* 37,000 BCE. Assume the population of Siberian unicorns was exactly 262,144 in the year 39,000 BCE and followed the model *f*(***t***) = 262,144(2)-***t***, a function of ***t*** time in centuries. According to the model, what year did the population of Siberian unicorns decline to exactly 1? You may use your calculator to solve this problem.

**Lower Elementary:**

*Question:* A woolly mammoth weighs 6 tons. A ton is 2,000 pounds. If a caveman weighs 200 pounds, then how many pounds heavier is the woolly mammoth than the caveman?

*Answer:* 11,800 pounds

*Solution:* The woolly mammoth weighs 2,000 + 2,000 + 2,000 + 2,000 + 2,000 + 2,000 = 12,000 pounds, which is 12,000 - 200 = 11,800 pounds heavier than the 200-pound caveman.

**Upper Elementary:**

*Question:* The probability that a saber-toothed tiger catches its prey is 3 out of 4. If a saber-toothed tiger has caught the past 3 rhinos it chased after, what is the probability that it will catch the next rhino it chases?

*Answer:* 3 out of 4

*Solution:* The probability that the saber-toothed tiger catches the next rhino is still 3 out of 4. The first three catches don’t affect whether or not the saber-toothed tiger catches the next rhino, just like the probability of a flipped penny landing on heads isn’t affected by the penny landing on tails three times in a row.

**Middle School:**

*Question:* A Neanderthal hunting party caught between 20 and 30 animals. If a sixth of the animals were reindeer, a fourth of them were goats, a third of them were sheep, and the rest were rabbits, then how many rabbits did the Neanderthals catch?

*Answer:* 6 rabbits

*Solution:* Since the animals can be divided into sixths, fourths, and thirds, we know that the total must be a multiple of 6, 4, and 3. The only number between 20 and 30 that is a multiple of 6, 4, and 3 is 24. If we subtract the reindeer (24 ÷ 6 = 4), the goats (24 ÷ 4 = 6), and the sheep (24 ÷ 3 = 8) sheep from the total, we find that the Neanderthals caught 24 – 18 = 6 rabbits.

**Algebra and Up:**

*Question:* The Siberian unicorn, a ginormous prehistoric rhinoceros-like animal, survived until *around* 37,000 BCE. Assume the population of Siberian unicorns was exactly 262,144 in the year 39,000 BCE and followed the model *f*(***t***) = 262,144(2)-***t***, a function of ***t*** time in centuries. According to the model, what year did the population of Siberian unicorns decline to exactly 1? You may use your calculator to solve this problem.

*Answer:* 37,200 BCE

*Solution:* One way to solve this problem is to notice that since 262,144 is being multiplied by 2 raised to a negative power, the population will halve itself each century. We can find out how many centuries by finding what power we raise 2 to in order to get 262,144. Since 218 = 262,144, it takes 18 centuries for the population to fall from 262,144 to 1, making the year 39,000 – 1,800 = 37,200 BCE.