**Lower Elementary:**

*Question:* A woolly mammoth weighs 6 tonnes. A tonne is 1000 kilograms. If a caveman weighs 100 kilograms, then how many kilograms 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 tonnes. A tonne is 1000 kilograms. If a caveman weighs 100 kilograms, then how many kilograms heavier is the woolly mammoth than the caveman?

*Answer:* 5900 kilograms

*Solution:* The woolly mammoth weighs 1000 + 1000 + 1000 + 1000 + 1000 + 1000 = 6000 kilograms, which is 6000 - 100 = 5900 kilograms heavier than the 100-kilogram 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 – 1800 = 37 200 BCE.