**Lower Elementary:**

*Question:* Sofia Kovalevskaya was born in Russia in 1850. When she was 17, she traveled 2,500 kilometers from Moscow to Heidelberg, Germany, because girls were not allowed to study math in Russia at the time. When she was 33, she moved another 1,750 kilometers to Stockholm, Sweden, to teach math at a university. How many kilometers did Sofia travel to get from Moscow to Heidelberg to Stockholm?

**Upper Elementary:**

*Question:* Hypatia was a Greek mathematician, philosopher, astronomer, and lecturer. In the morning, she gave 2–hour lectures about mathematics. Midday, she lectured about philosophy for 2 hours and 45 minutes. In the afternoon, she gave hour–and–a–half lectures about astronomy. In the evening, she again lectured about mathematics for 2 hours and 50 minutes. How much time did Hypatia spend lecturing each day?



**Middle School:**

*Question:* Hedy Lamarr was born in 1914. She was a mathematician and inventor—without her, there would be no Wi-Fi or Bluetooth technology! She was also a famous actress. Her first film was released in 1930. Twenty-nine more films and 26 years later, her final film was released. What was the average number of films Hedy Lamarr released each calendar year during her film–making career? (Give your answer as a fraction in lowest terms.)

**Algebra and Up:**

*Question:* Most of us remember Florence Nightingale for her service as a wartime nurse, but did you know she was also an influential statistician? Her mathematical analysis of health conditions in India resulted in a decrease in mortality among soldiers of an average 12.5% each year. At the beginning of her campaign, there were 69 mortalities per 1,000 soldiers. What was the mortality rate at the end of her 10–year campaign? (Round to the nearest whole number per 1,000.)

**Lower Elementary:**

*Question:* Sofia Kovalevskaya was born in Russia in 1850. When she was 17, she traveled 2,500 kilometers from Moscow to Heidelberg, Germany, because girls were not allowed to study math in Russia at the time. When she was 33, she moved another 1,750 kilometers to Stockholm, Sweden, to teach math at a university. How many kilometers did Sofia travel to get from Moscow to Heidelberg to Stockholm?

*Answer:* 4,250 kilometers

*Solution:* To find the distance from Moscow to Stockholm with a stop in Heidelberg in between we need to add the distance Sofia traveled to get to Heidelberg to the distance she traveled to get to Stockholm. That’s 2,500 + 1,750 = 4,250 kilometers.

**Upper Elementary:**

*Question:* Hypatia was a Greek mathematician, philosopher, astronomer, and lecturer. In the morning, she gave 2–hour lectures about mathematics. Midday, she lectured about philosophy for 2 hours and 45 minutes. In the afternoon, she gave hour–and–a–half lectures about astronomy. In the evening, she again lectured about mathematics for 2 hours and 50 minutes. How much time did Hypatia spend lecturing each day?

*Answer:* 9 hours and 5 minutes

*Solution:* If we add the number of whole hours Hypatia lectured, we get 2 + 2 + 1 + 2 = 7 hours. If we add the minutes, we get 45 + 30 + 50 = 125 minutes, or 2 hours and 5 minutes. That means that Hypatia lectured for 7 hours + 2 hours + 5 minutes = 9 hours and 5 minutes.



**Middle School:**

*Question:* Hedy Lamarr was born in 1914. She was a mathematician and inventor—without her, there would be no Wi-Fi or Bluetooth technology! She was also a famous actress. Her first film was released in 1930. Twenty-nine more films and 26 years later, her final film was released. What was the average number of films Hedy Lamarr released each calendar year during her film–making career? (Give your answer as a fraction in lowest terms.)

*Answer:* 11/9 films

*Solution:* Hedy Lamarr released 1 + 29 = 30 films over 27 years—we also have to count the year she started. If we divide the number of films by the number of years, we get 30/27, which is 13/27 as a mixed number and 11/9 films per year when reduced.

**Algebra and Up:**

*Question:* Most of us remember Florence Nightingale for her service as a wartime nurse, but did you know she was also an influential statistician? Her mathematical analysis of health conditions in India resulted in a decrease in mortality among soldiers of an average 12.5% each year. At the beginning of her campaign, there were 69 mortalities per 1,000 soldiers. What was the mortality rate at the end of her 10–year campaign? (Round to the nearest whole number per 1,000.)

*Answer:* 18 per 1,000 mortalities

*Solution:* To find the number of mortalities per 1,000 at the end of Florence’s campagin, we can use the expression ***m***(1–***p***)***t*** in which ***m*** is the initial mortality rate, ***p*** is the percent decrease, and ***t*** is the number of years. Using this expression, we find that after 10 years, the mortality rate was 69(.875)10 = 18.1522... or ~18 per 1,000.