

11-3**Real-Life Career Activity****Actuary**

Actuaries are people who analyze statistics to determine how much insurance companies should charge for different insurance policies. Actuaries use statistics to calculate probabilities, such as the likelihood of personal injury or illness, automobile accidents, or property damage due to a catastrophe.

In 1995, there were about 56,000 United States residents who were at least 100 years old. They were classified according to racial descent. Of those people, 45,000 were classified as being of European descent, 7,000 were of African descent, 2,000 were of Hispanic origin, 1,000 were classified as Native American, Eskimo, or Aleut, and the remaining 1,000 were classified as Asian and Pacific Islanders.

Suppose an actuary wants to calculate the probability that a person at least 100 years old is African American. The actuary uses the probability formula.

$$\begin{aligned} P(\text{African American}) &= \frac{7,000}{56,000} \\ &= \frac{1}{8} \end{aligned}$$

The probability is $\frac{1}{8}$ that a person at least 100 years old is African American.

Solve. Express each probability as a fraction in simplest form.

1. Find the probability that a person at least 100 years old is of Hispanic origin.
2. Find the probability that a person at least 100 years old is of European descent.
3. Find the probability that a person at least 100 years old is Asian or a Pacific Islander.

