



1000 B.C. Approximate beginning of the Iron Age



2000 B.C. Beginning of the Middle Kingdom in Egypt



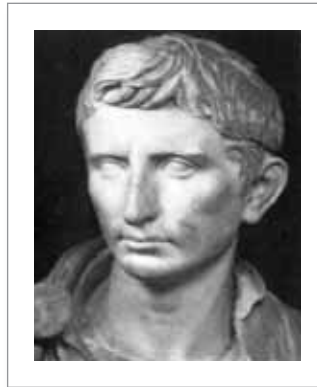
3000 B.C. Stonehenge is built in England.



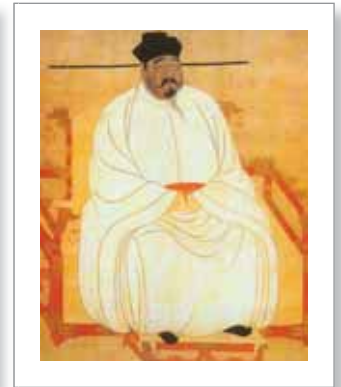
4000 B.C. Civilization begins to develop in Mesopotamia.

EXAMPLE 2 Describing an Exponential Pattern

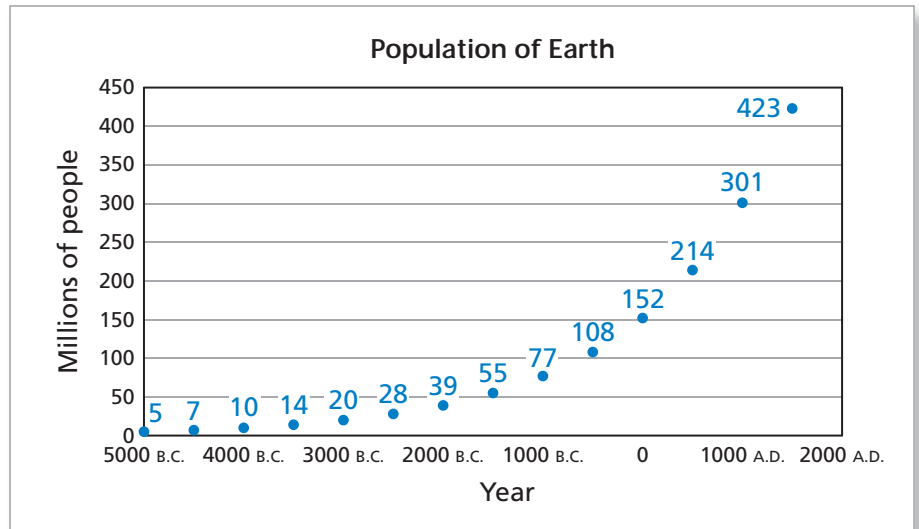
From 5000 B.C. through 1500 A.D., the population of Earth followed a growth pattern that was roughly exponential. Describe the growth pattern in words.



1 B.C. Augustus Caesar controlled most of the Mediterranean world.



1000 A.D. The Song Dynasty in China had about one-fifth of the world's population.



SOLUTION

Begin by finding the ratios of consecutive populations.

$$\begin{array}{ccccc} \frac{7}{5} = 1.40 & \frac{10}{7} \approx 1.43 & \frac{14}{10} = 1.40 & \frac{20}{14} \approx 1.43 & \frac{28}{20} = 1.40 \\ \frac{39}{28} \approx 1.39 & \frac{55}{39} \approx 1.41 & \frac{77}{55} = 1.40 & \frac{108}{77} \approx 1.40 & \frac{152}{108} \approx 1.41 \\ \frac{214}{152} \approx 1.41 & \frac{301}{214} \approx 1.41 & \frac{423}{301} \approx 1.41 & & \end{array}$$

From these Earth population estimates, you can say that Earth's population was increasing by about 40% every 500 years.

✓ Checkpoint

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Did the growth pattern described in Example 2 continue through the next 500 years, up through the year 2000? If not, why didn't the pattern continue?