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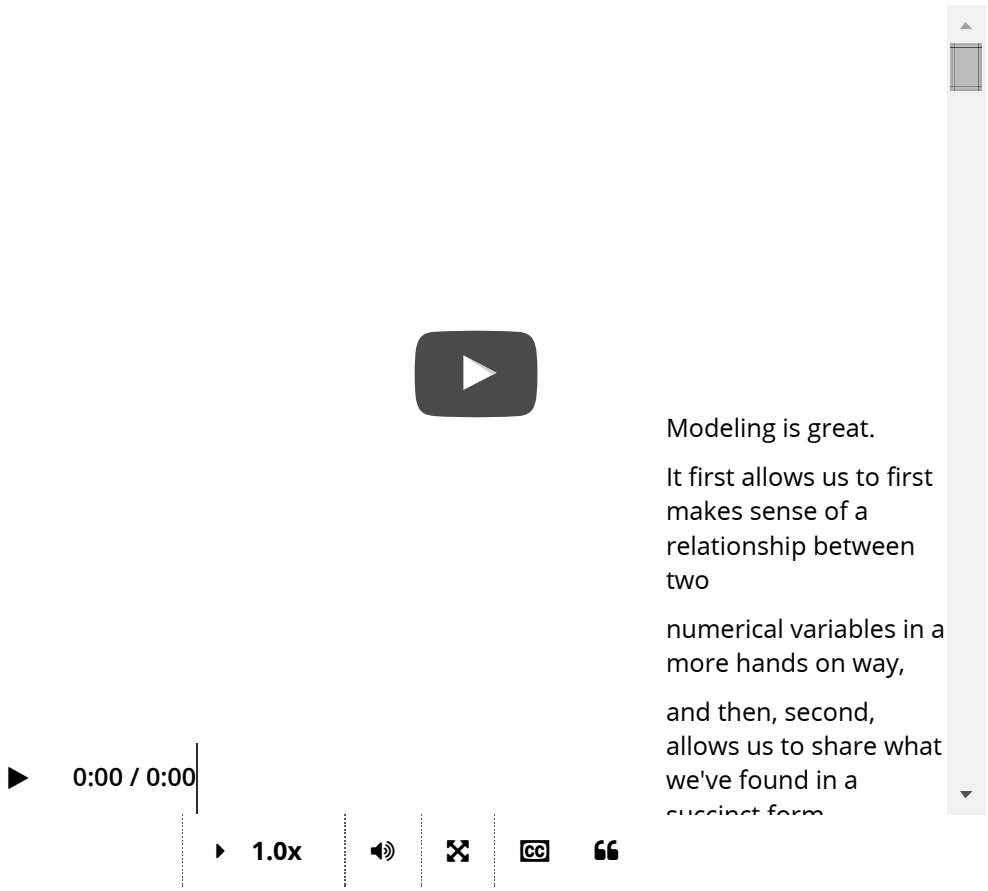
Exponential Growth and Decay



Comprehension Check

1. What is the growth factor in each of the following scenarios? *(Assume time is measured in the units given; round answers to 2 decimal places.)*

1a. Water usage is increasing by 3% per year. *(Round answers to 2 decimal places.)*

1.03 ✔

1.03

1b. A city grows by 28% per decade. *(Round answers to 2 decimal places.)*

1.28 ✔

1.28

1c. A diamond mine is depleted by 1% per day. *(Round answers to 2 decimal places.)*

0.99 ✔

0.99

1d. A forest shrinks 80% per century. *(Round answers to 2 decimal places.)*

0.20 ✔

0.20

2. The amount (in milligrams) of a drug in the body **t** hours after taking a pill is given by:

$$A(t) = 25(0.85)^t$$

2a. What is the initial dose given (in milligrams)?

25 ✔

25

2b. What percent of the drug leaves the body each hour? *(Report without the* **%** *sign.)*

15 ✔

15

2c. What is the amount of the drug left after 10 hours? *(Round to 2 decimal places; report in milligrams.)*

4.92 ✔

4.92

3. If the population grows by 10 people per year, what is the formula for the population, P, at time t?

(1/1 point)

- ◉ $P(t) = 100 + 10t$ ✔
- ○ $P(t) = 100t^{10}$
- ○ $P(t) = 100(1.10)^t$

- $P(t) = 100 + 1.10t$

4. If the population grows by 10% each year, what is the formula for the population, P, at time t?

(1/1 point)

- $P(t) = 100 + 10t$
- $P(t) = 100t^{10}$
- $P(t) = 100(1.10)^t$ ✔
- $P(t) = 100 + 1.10t$

5. Which scenario will result in a larger population in 10 years?

a. 10% growth per year

b. an increase of 10 people per year

(1/1 point)

- 10% growth ✔
- 10 people per year
- 10% growth will outpace the 10 people per year, but then 10 people per year will grow faster.

- They will be the same.