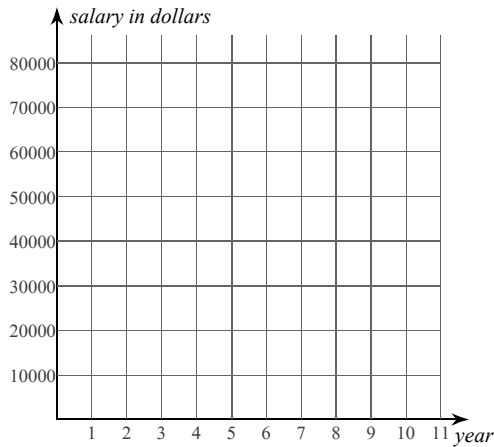


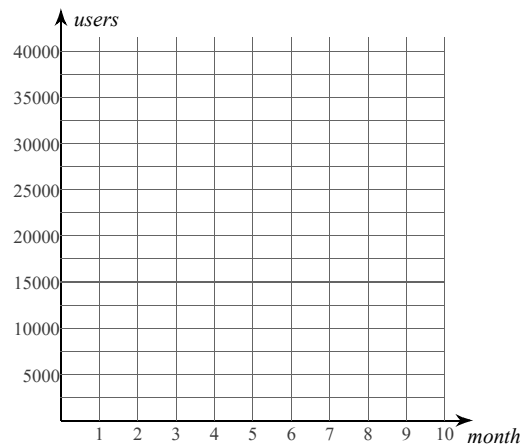
Discrete Exponential Growth and Decay

Solve each discrete exponential growth/decay problem. You may use the provided graph to plot points or sketch the exponential function.

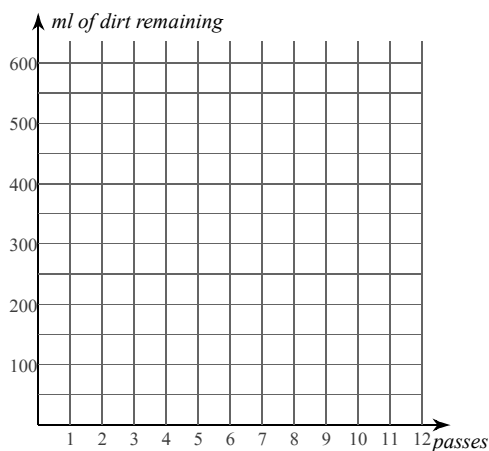
- 1) An employee receives a 2% raise once per year. If the employee's initial salary is \$60,000.00, what will the employee's salary be after 9 years?



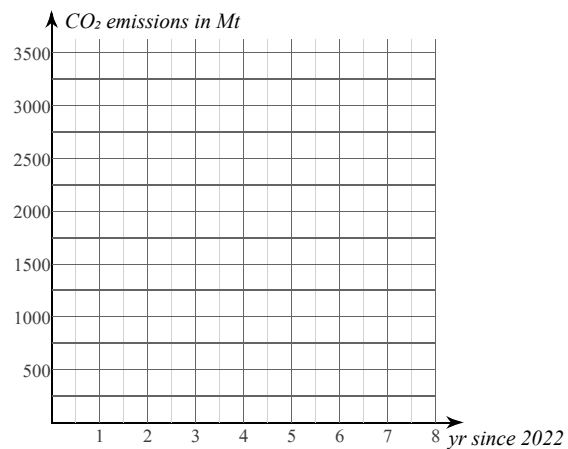
- 2) A new social media site is increasing its user base by approximately 6% per month. If the site currently has 21,740 users, what will the approximate user base be 8 months from now?



- 3) A robot vacuum cleans a dirty floor using multiple passes. During each pass, 22% of the dirt is removed. If the floor initially has 530.0 ml of dirt, how much dirt will remain after 10 passes?



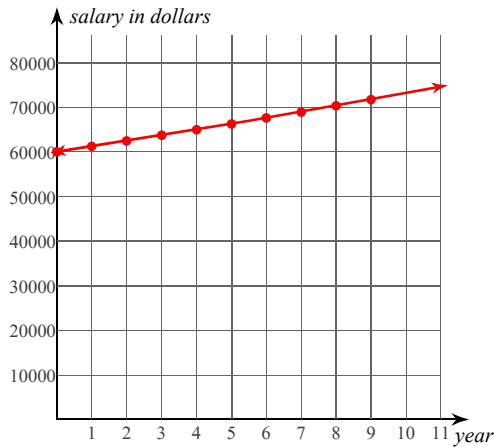
- 4) A country pledges to reduce its annual CO₂ emissions by 3% per year. If the emissions in 2022 are 3,030 Mt (metric megatons), what are the maximum allowable emissions in the year 2028?



Discrete Exponential Growth and Decay

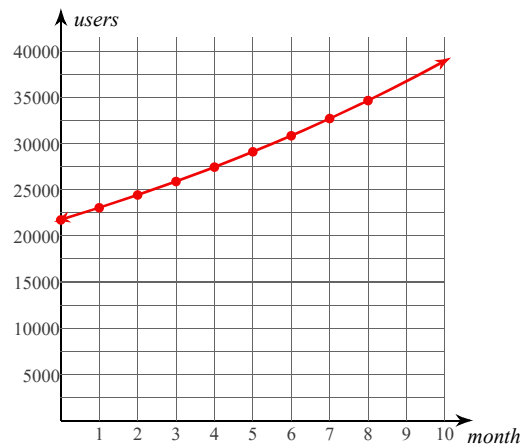
Solve each discrete exponential growth/decay problem. You may use the provided graph to plot points or sketch the exponential function.

- 1) An employee receives a 2% raise once per year. If the employee's initial salary is \$60,000.00, what will the employee's salary be after 9 years?



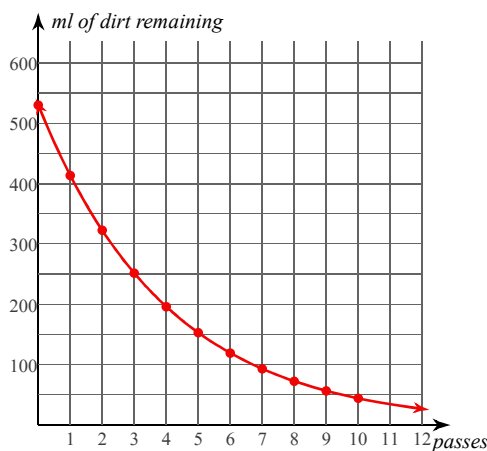
$$60000 \cdot 1.02^9 \approx \$71,705.55$$

- 2) A new social media site is increasing its user base by approximately 6% per month. If the site currently has 21,740 users, what will the approximate user base be 8 months from now?



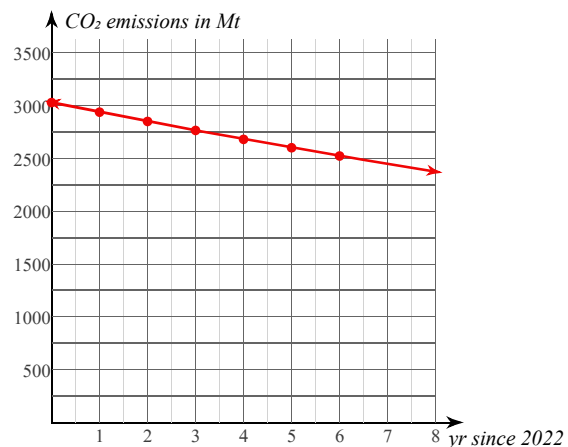
$$21740 \cdot 1.06^8 \approx 34,650 \text{ users}$$

- 3) A robot vacuum cleans a dirty floor using multiple passes. During each pass, 22% of the dirt is removed. If the floor initially has 530.0 ml of dirt, how much dirt will remain after 10 passes?



$$530 \cdot 0.78^{10} \approx 44.2 \text{ ml}$$

- 4) A country pledges to reduce its annual CO₂ emissions by 3% per year. If the emissions in 2022 are 3,030 Mt (metric megatons), what are the maximum allowable emissions in the year 2028?



$$3030 \cdot 0.97^6 \approx 2,524 \text{ Mt}$$