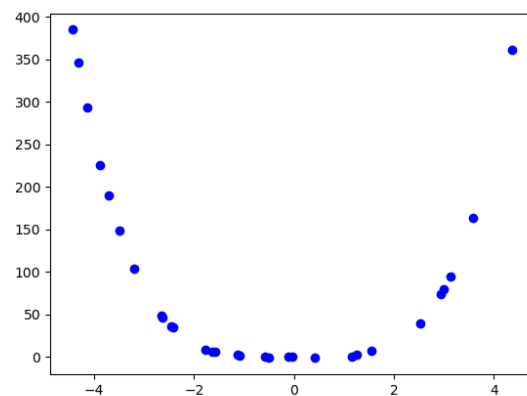
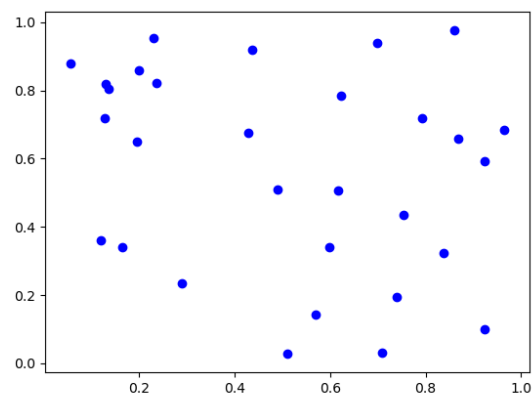


1. Determine the appropriate model for the graph of points below.



- A. Exponential model
- B. Non-linear Power model
- C. Linear model
- D. Logarithmic model
- E. None of the above

-
2. Determine the appropriate model for the graph of points below.



- A. Exponential model
- B. Non-linear Power model
- C. Linear model

- D. Logarithmic model
 - E. None of the above
-

3. Using the scenario below, model the situation using an exponential function and a base of $\frac{1}{2}$. Then, solve for the half-life of the element, rounding to the nearest day.

The half-life of an element is the amount of time it takes for the element to decay to half of its initial starting amount. There is initially 920 grams of element X and after 4 years there is 131 grams remaining.

- A. About 0 days
 - B. About 365 days
 - C. About 1825 days
 - D. About 730 days
 - E. None of the above
-

4. Solve the modeling problem below, if possible.

A new virus is spreading throughout the world. There were initially 4 many cases reported, but the number of confirmed cases has doubled every 4 days. How long will it be until there are at least 1000000 confirmed cases?

- A. About 72 days
 - B. About 50 days
 - C. About 27 days
 - D. About 24 days
 - E. There is not enough information to solve the problem.
-

5. Solve the modeling problem below, if possible.

In CHM2045L, Brittany created a 29 liter 24 percent solution of chemical χ using two different solution percentages of chemical χ . When she went to write her lab report, she realized she forgot to write the amount of each solution she used! If she remembers she used 18 percent and 37 percent solutions, what was the amount she used of the 37 percent solution?

- A. 19.84
- B. 9.16
- C. 13.84
- D. 14.50
- E. There is not enough information to solve the problem.

6. Solve the modeling problem below, if possible.

A new virus is spreading throughout the world. There were initially 3 many cases reported, but the number of confirmed cases has tripled every 4 days. How long will it be until there are at least 1000 confirmed cases?

- A. About 13 days
- B. About 24 days
- C. About 22 days
- D. About 14 days
- E. There is not enough information to solve the problem.

7. For the scenario below, use the model for the volume of a cylinder as $V = \pi r^2 h$.

Pringles wants to add 35 percent more chips to their cylinder cans and minimize the design change of their cans. They've decided that the best way to minimize the design change is to increase the radius and height by the same percentage. What should this increase be?

- A. About 11 percent
 - B. About 3 percent
 - C. About 18 percent
 - D. About 16 percent
 - E. None of the above
-

8. For the scenario below, use the model for the volume of a cylinder as $V = \pi r^2 h$.

Pringles wants to add 44 percent more chips to their cylinder cans and minimize the design change of their cans. They've decided that the best way to minimize the design change is to increase the radius and height by the same percentage. What should this increase be?

- A. About 13 percent
 - B. About 20 percent
 - C. About 22 percent
 - D. About 4 percent
 - E. None of the above
-

9. Using the scenario below, model the situation using an exponential function and a base of $\frac{1}{2}$. Then, solve for the half-life of the element, rounding to the nearest day.

The half-life of an element is the amount of time it takes for the element to decay to half of its initial starting amount. There is initially 510 grams of element X and after 20 years there is 72 grams remaining.

- A. About 730 days
- B. About 2555 days
- C. About 3650 days

- D. About 9125 days
 - E. None of the above
-

10. Solve the modeling problem below, if possible.

In CHM2045L, Brittany created a 22 liter 28 percent solution of chemical χ using two different solution percentages of chemical χ . When she went to write her lab report, she realized she forgot to write the amount of each solution she used! If she remembers she used 6 percent and 32 percent solutions, what was the amount she used of the 32 percent solution?

- A. 16.60
 - B. 18.62
 - C. 3.38
 - D. 11.00
 - E. There is not enough information to solve the problem.
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