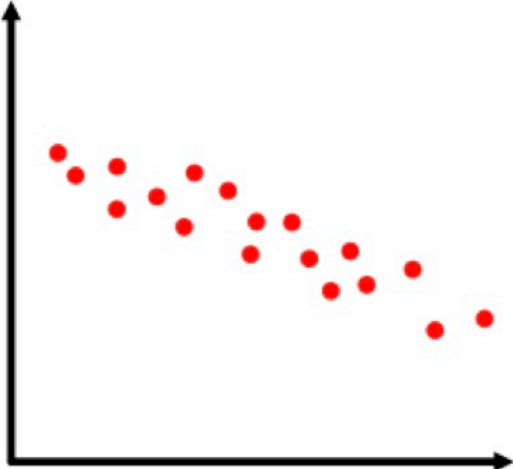


Determine if the data is linear or non-linear. Draw in the best fit model to represent the data.


1.



The data is...

Linear Non-Linear

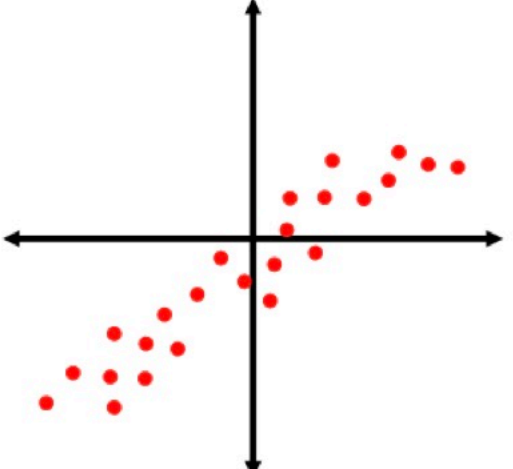
2.



The data is...

Linear Non-Linear

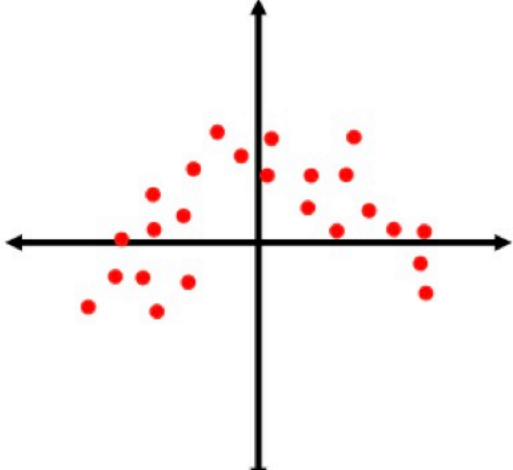
3.



The data is...

Linear Non-Linear

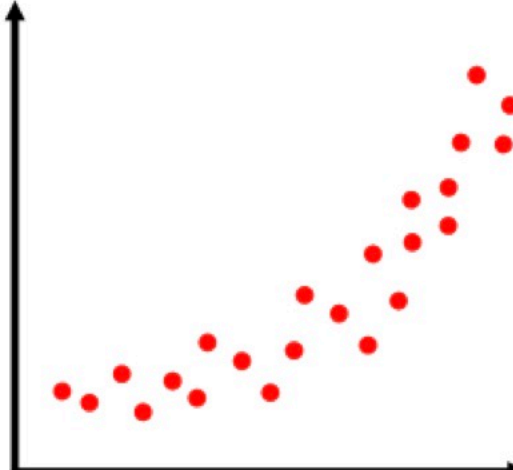
4.



The data is...

Linear Non-Linear

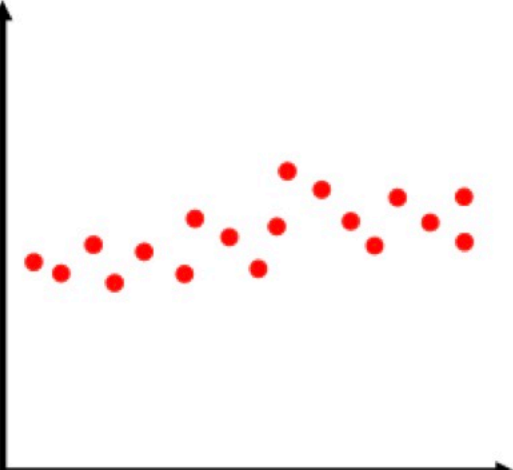
5.



The data is...

Linear Non-Linear

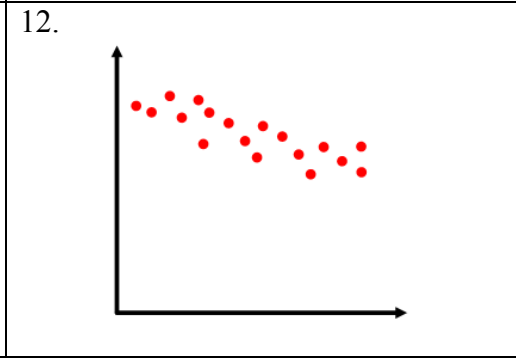
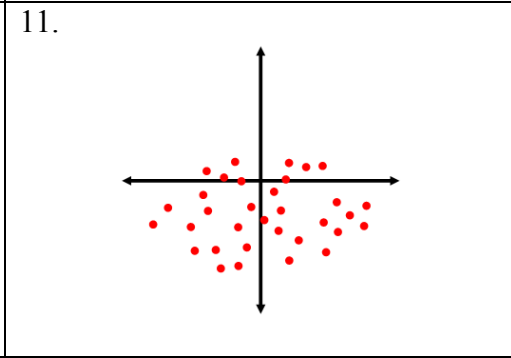
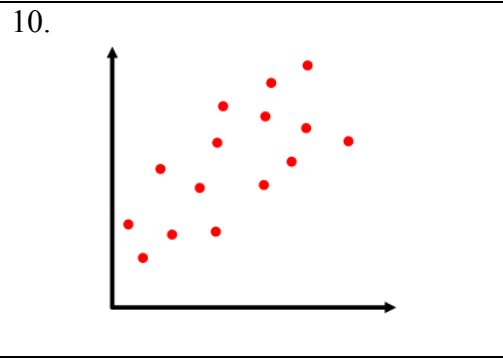
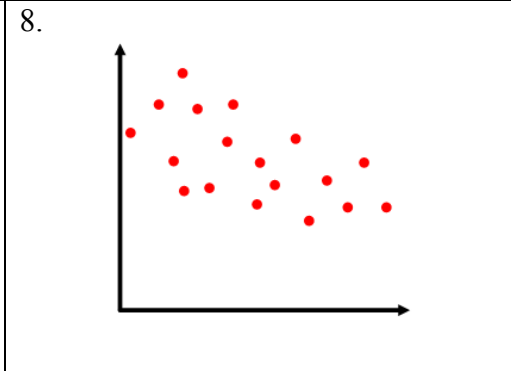
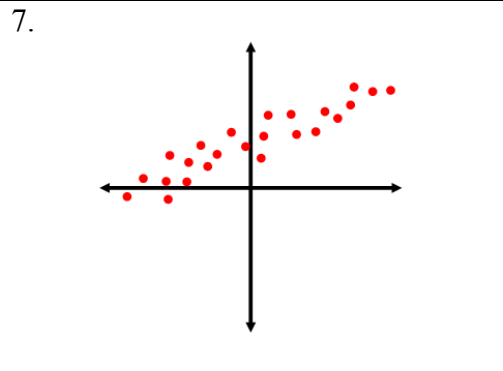
6.



The data is...

Linear Non-Linear

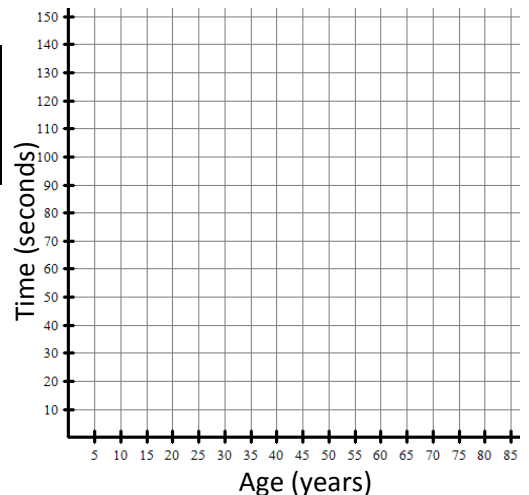
Determine if the data has a linear correlation. If so, describe as positive/negative and strong/moderate.



Construct a scatterplot and answer the questions.

13. People of various ages are timed solving a puzzle.

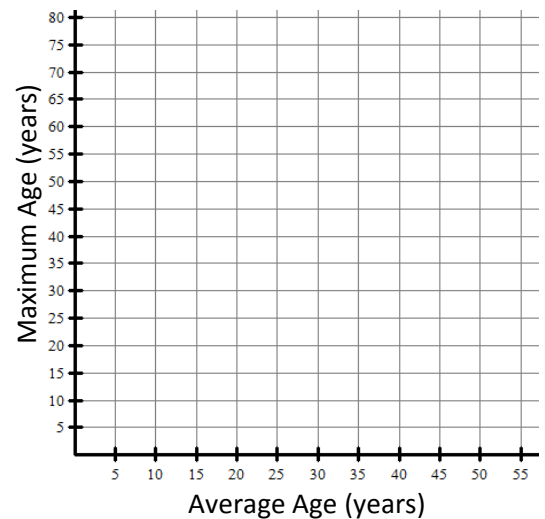
Age (years)	14	18	24	30	34	47	54	68	72
Time (seconds)	120	104	75	60	55	75	110	130	145



- The data is...
 Linear Non-Linear
- Draw in a best fit line/curve.
- Estimate the time it would take for 40 year old to solve the puzzle.
- How old would you expect a person to be that took 90 seconds to solve the puzzle?

14. The table shows the average age and maximum age of various animals at a zoo.

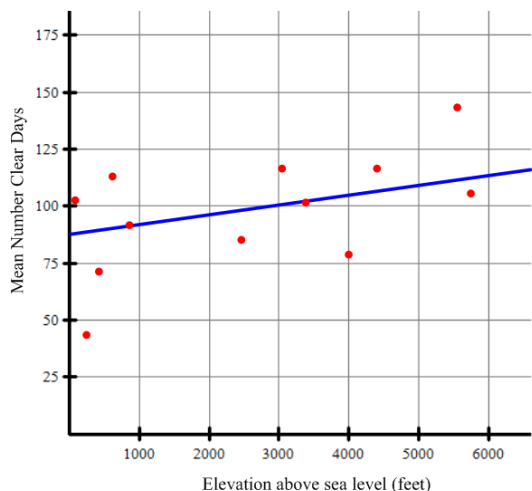
Average (years)	12	25	15	8	35	40	41	20
Maximum (years)	47	50	40	35	70	77	61	54



- The data is...
 Linear Non-Linear
- Draw in a best fit line/curve.
- Estimate the maximum age of an animal with average age of 33 years old.
- Explain why predicting the maximum age of an animal with average age of 55 is extrapolation of the data.

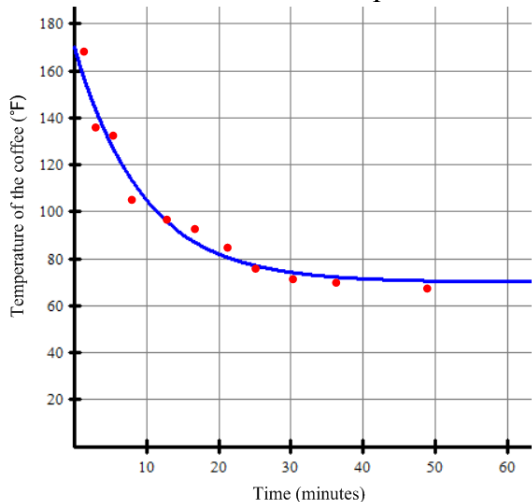
Use the scatterplot and equation for the best fit line/curve to answer the following.

15. The scatterplot shows the elevation above sea level in feet of selected cities and their mean number of clear days per year. The equation of the best fit line is $y = 83 + 0.008x$ and is shown graphed below.



- Use the equation of best fit to predict the mean number of clear days for Denver “The Mile High City” 5280 feet above sea level.
- Use the equation of best fit to predict the height above sea level for a city with a mean of 90 clear days per year.
- Describe the relationship between the elevation of a city and the mean number of clear day per year.

16. The scatterplot shows the temperature of a cup of coffee in Fahrenheit left on the counter measured over various times in minutes. The equation of the best fit curve is $y = 100(0.9)^x + 70$ and is graphed below.



- Use the equation of best fit to predict the temperature of the coffee after 12 minutes.
- The actual temperature of the coffee at 20 minutes was 86°F. How far off is the model’s prediction at this time? (round to hundredths)
- Describe the relationship between the time and the temperature of the coffee.

17.

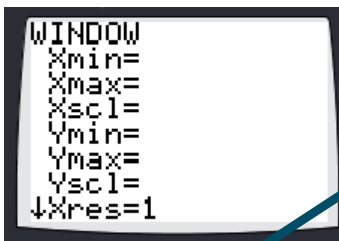
wind speed (mph)	0	6	9	12	17	20	22
temperature (°F)	32	28	22	18	16	10	3

- The equation of the best fit line is $y = -1.2x + 33$.
- Use the best fit line from above to predict temperature when the wind speed is 10 mph.
- Use the best fit line from above to predict the wind speed when the temperature is 14°F ?

Construct a scatterplot on a graphing calculator of the data below. State the window that you used to view the graph. Make a rough sketch and answer the questions.

18. A ball is thrown into the air.

time (sec)	0	1	1.5	3	4	4.5	5
height (ft)	6	71	89	100	68	43	7



SKETCH:

- The equation of the best fit curve is $y = -16x^2 + 80x + 6$. Graph in calculator.
- Use the best fit curve from above to predict the height of the ball at 2 seconds.
- How far off is the model's prediction of the height of the ball at 3 seconds?
- Use the best fit curve from above to predict the height of the ball at 8 seconds. What is wrong with this prediction?

Solve the following.

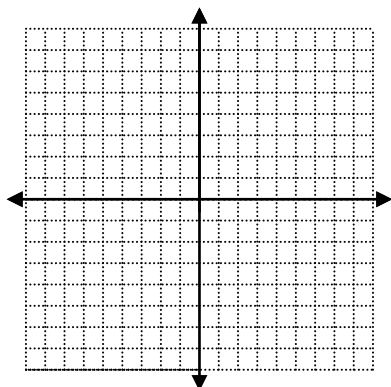
19. $2(y + 1) - 7 = 9$

20. $\frac{7}{3x} + 3 = 7$

21. $2x - 3y = 15$
 $y = 2x - 1$

Graph the following.

22. $y < -\frac{1}{3}x - 3$



23. $2x + 3y = 12$
 $y = 2$

