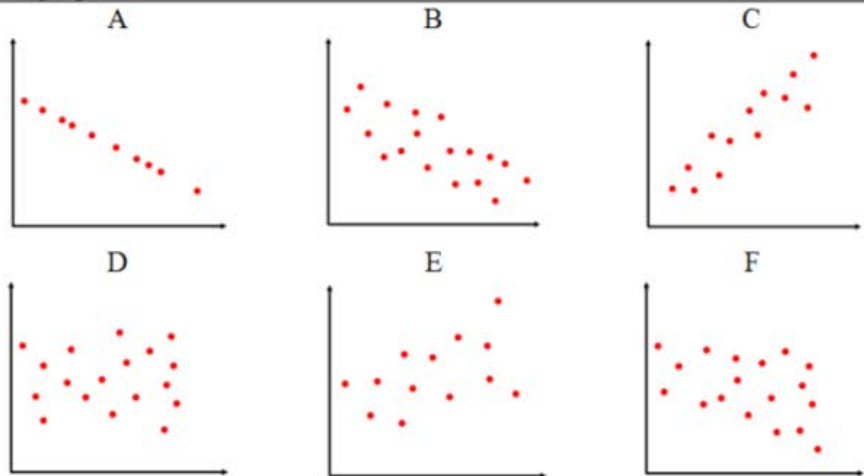**MATCHING – Match the *r* value to the graph**

1. $r = 0.5$ matches graph __E__

2. $r = 0.8$ matches graph __C__

3. $r = -1$ matches graph __A__

4. $r = 0$ matches graph __D__

5. $r = -0.3$ matches graph __F__

6. $r = -0.6$ matches graph __B__

A   B   C

D   E   F

Use a sentence to explain the meaning of the slope and *y*-intercept of the best fit line for each situation.

7. Sully, Kelly, and Bean are keeping track of their money over time where *x* stands for time in months and *y* stands for money in dollars.

SULLY $y = \dfrac{40}{3}x + 500$

slope = He earns 40 dollars every 3 months.

y-intercept = At month zero he has 500 dollars

KELLY $y = -60x + 200$

slope = He loses 60 dollars every month.
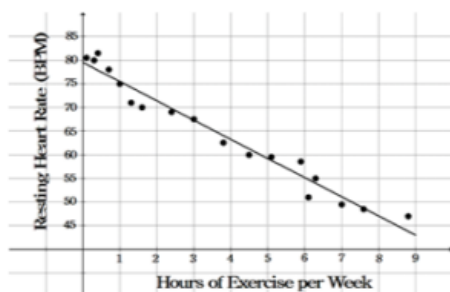
y-intercept = At month zero he has 200 dollars

BEAN $y = 25.75x + 400$

slope = He earns 25.75 dollars every month.

y-intercept = At month zero he has 400 dollars

Use the graph and the equation of the best fit line to answer the following.

8.

$r = -4h + 79$

Resting Heart Rate (BPM)

Hours of Exercise per Week

a. Use a sentence to explain the meaning of the slope of the best fit line.

Resting Heart Rate decrease 4 BPM every hour of exercise per week.

b. Use a sentence to explain the meaning of the *y*-intercept of the best fit line.

Zero hours of exercise per week has resting heart rate of 79 BPM

c. Use the equation of the best fit line to predict resting heart rate of a person with 8 hours of exercise per week.

$r = -4(8) + 79$

$r = -32 + 79$

$r = 47 \ BPM$

d. Circle the best estimate of the *r*-value of the best fit line.

$r = -.75$ $r = -0.5$ $r = 0$ $r = 0.5$ $r = 0.75$

Use the data to find the best fit linear regression and correlation coefficient. Round to nearest hundredth.

9.

x	y
10	-2
11	-1.5
16	1
7	-3.5
4	-5
-5	-9.5
1	-6.5
-3	-8.5

EQUATION

$y = 0.5x - 7$

Correlation Coefficient

$r = 1$

Explain the meaning of the correlation coefficient.

Perfect positive correlation
Straight line

10.

x	y
6.1	19.3
8.7	6.1
9.9	3.2
10.1	3.5
11	2.8
12.9	1.5
15.1	0.3
17.3	0.1

EQUATION

$y = -1.38x + 20.35$

Correlation Coefficient

$r = -0.8$

Explain the meaning of the correlation coefficient.

Strong negative correlation

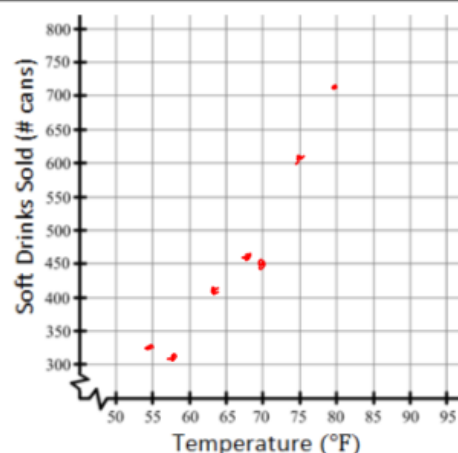**Construct a scatterplot and answer the questions.**

11. Drinks sold at a convenience store.

Temperature (°F)	55	58	64	68	70	75	80
Soft Drinks Sold (# cans)	340	335	410	460	450	610	735

a. Find and graph a linear regression equation that models the data. (Round to nearest hundredth)

EQUATION: $y = 15.61x - 570.83$

CORRELATION COEFFICIENT: 0.95

b. Use a sentence to explain what the slope means.

The number of soft drinks sold increases 15.61 cans every 1 degree Fahrenheit

c. Use a sentence to explain what the y-intercept means.

At zero degrees Fahrenheit there would be negative 570.83 cans sold.
NOTE: This doesn't make sense, extrapolation of data!

d. How many soft drinks would be sold if the temperature was 60°F ?

$y = 15.61(60) - 570.83$
$y = 365.77$ cans
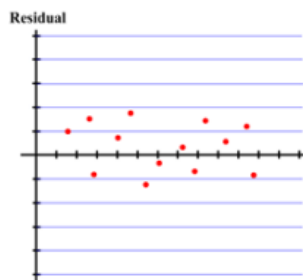
e. Find the residual for 70°F.

Actual
$(70, 450)$

Predicted
$y = 15.61(70) - 570.83$
$y = 521.87$

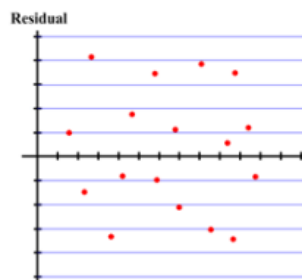Actual − Predicted = Residual
$450 - 521.87 = -71.87$

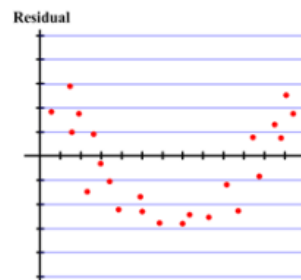**Do the following residual plots indicate a good fit for a linear model? Justify your answer.**

12.
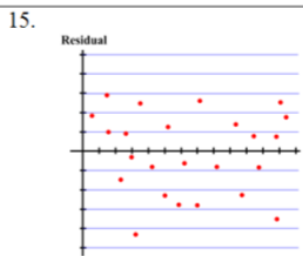

Yes, random points no pattern
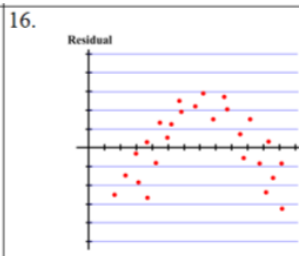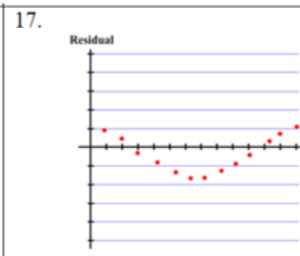
13.

Yes, random points no pattern

14.

No, not random points there is a pattern

15.	16.	17.
Residual	Residual	Residual
Yes, random points no pattern	No, not random points there is a pattern	No, not random points there is a pattern

## Use the data to answer the following.

18. The table below shows the shoe sizes and height (in inches) for men.

a. Find the equation for the line of best fit and the correlation coefficient. (Round to nearest hundredth)

EQUATION: $y = 1.87x + 51.36$ CORRELATION COEFFICIENT: 0.93

b. Complete the table and create a residual plot.

| Shoe Size x	Height y	Predicted Height	Residual
8.5	66	67.26	−1.26
9	68.5	68.19	0.31
9	67.5	68.19	−0.69
9.5	70	69.13	0.87
10	70	70.06	−0.06
10	72	70.06	1.94
10.5	71.5	71	0.5
10.5	69.5	71	−0.5
11	71.5	71.93	−0.43
11	72	71.93	0.07
11	73	71.93	1.07
12	73.5	73.8	−0.3
12	74	73.8	0.2
12.5	74	74.74	−0.74
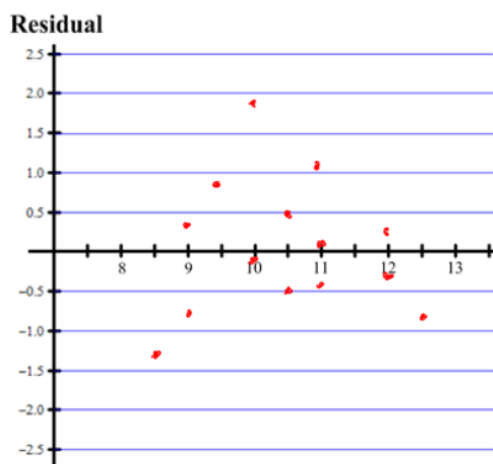
Residual

c. Using the residual plot and correlation coefficient, is the prediction line a good model for the data? Explain.
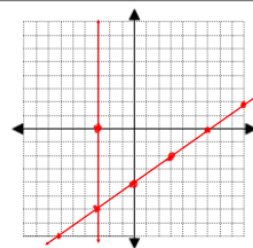
Yes, random points
no pattern

Graph the following.

19. $y > 5 - x$
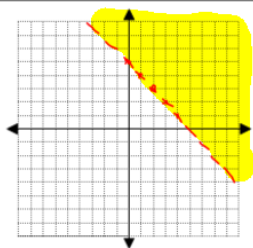
20. $2x - 3y = 12$
    $x = -3$

$y = \frac{2}{3}x - 4$

Solve the following.

21. $4 - 3(2y - 3) = -5$

$4 - 6y + 9 = -5$
$-6y + 13 = -5$
$-6y = -18$
$y = 3$

22. $4 - \frac{x}{3} = 7$
    $-4 \quad -4$

$(-3) - \frac{x}{3} = 3(-3)$

$x = -9$

23. $2x - 3y = -7$
    $y = (x + 1)$

$2x - 3(x+1) = -7$
$2x - 3x - 3 = -7$
$-x - 3 = -7$
$-x = -4$
$x = 4$