

1.1)

The relation between the number of units sold and dollar sales would become a statistical one.

1.5)

No, it should be just  $Y_i = B_0 + B_1X_i + \varepsilon_i$

1.7)

a)

No, we can not state the exact probability for Y because we don't know the error distribution.

The only thing we can deduce is that Y will be between -5 and 5.

b)

With the normal error regression model applied, it can be seen it is one standard deviation away from the mean, so the probability is 68%

1.11)

That is false. Just because it is less than one does not necessarily mean it will not raise output.

If you take the smallest range (40), it acquires 58 which is 18 more than 40.

1.12)

a)

Observational because the data was not controlled.

b)

The results aren't 100% valid since it was observational nothing was controlled so there have been other factors that led to less colds.

c)

Location, health history, and type of exercise would be some explanatory variables

d)

A better study would include a certain group of senior citizens from a specific area doing the same exact workout routine and have them being monitored instead of them monitoring themselves.

1.16)

This statement is incorrect, as the distribution of the error should be normal, not the distribution of Y

1.17)

Yes, they can be found with formulas of  $B_0 = \bar{y} - B_1\bar{x}$  and  $B_1 = SS_{xy}/SS_{xx}$

1.18)

Yes, because it is assumed that the error follows normal distribution with mean equal to zero.

1.19)

a)

Mean of X = 24.725 and Mean of Y = 3.0745

$B_0 = 2.114$

$$B_1 = .038827$$

$$y = 2.114 + .038827x$$

b)

Yes

c)

$$y = 2.114 + .038827(30)$$

$$3.27886$$

d)

$$.038827$$

$$1.23)$$

a)

Residual = Actual - Calculated

Yes, it is very close to 0

b)

$$\text{Variance} = \text{MSE} = \text{SSE}/df$$

$$45.818/118$$

$$.388$$

$$SD = \sqrt{.388} \text{ points}$$

$$1.33)$$

$$B_0 = \bar{y}$$

$$1.43)$$

4.

a)

$$.7508 \text{ and } .5793$$

b)

$$4.865 \text{ and } 15.99$$

c)

$$.559 \text{ and } -.920$$

d)

$$3.46 \text{ and } .189$$

5.