Quiz 2:

1. In a cohort study about the association between students' amount of sleep and passing a test, the following raw data was collected. Among students who sleep between 3 and 7 hours, the odds for failing is ___

	Fail	Pass	Total
Less than 3hr of sleep	300	500	800
Between 3 to 7hr of sleep	50	150	200
More than 7hr of sleep	70	80	150
Total	420	730	1150

A) 150/50

B) 50/420

C) 50/200

D) 50/150

Explanation:

D is the answer. The odds for an event is equal to the number of events divided by the number of non-events. Thus, the odds of failing for students, who sleep between 3 to 7hr, is 50/150=0.33.

2. In a case and control study about the association between students' amount of sleep and passing a test, the following raw data was collected. Take students who sleep less than 3 hours as the baseline. The odds ratio for failing among students who sleep between 3 and 7 hours is ___

	Fail	Pass	Total
Less than 3hr of sleep	300	500	800
Between 3 to 7hr of sleep	50	150	200
More than 7hr of sleep	70	80	150
Total	420	730	1150

A) 50/300

B) (150*300)/(50*500)

C) (50*500)/(150*300)

D) (50*800)/(200*300)

Explanation:

C is the answer. The odds of failing for students, who sleep between 3 to 7hr, is 50/150. The odds of failing for students, who sleep less than 3hr, is 300/500. The odds ratio is (50/150)/(300/500) = (50*500)/(150*300). Please refer to chapter 2 unit 3 for more information.

3. Which of the following is true for the correlation coefficient?

A) The larger the range of the data, the closer it is to 1.

B) It is always positive.

C) A value near -1 means that there is a strong linear relationship.

D) Its value must be between 0 and 1.

E) It is always the gradient of the line of best fit.

Explanation:

(A) is not correct. For example, if the x values were multiplied by 2, the value of r is unchanged [chapter 2 unit 6 slide 15].

(B) is not correct because r can be negative.

(C) is correct. A value near -1 means that the points of the scatter diagram lie close to a line of negative gradient.

(D) is not correct. The value can be between -1 to 1.

(E) is not true because in general r is not the gradient of the best fit line.

4. Which of the following statement on risk ratio and odds ratio is most accurate?

A) Odds ratio of nearly 1 and risk ratio of nearly 0 both indicate the absence of association.

B) Both risk ratio and odds ratio can be estimated from cohort studies.

C) Both odd ratio and risk ratio may be negative.

D) Odds ratio can only be estimated from case and control studies.

Explanation:

(A) is not correct. Association is present when the odds ratio is far from 1. Also, association is present when the risk ratio is far from 1.

(B) is correct.

(C) is not correct. The range of values is only 0 and above.

(D) is not correct. Odds ratio can be used in cohort studies as well.

5. A scatter diagram is useful for visualizing the relationship between variables X and Y…

A) only if X and Y have the same scale of measurement.

B) and may suggest that the relationship is better described by a curve than a straight line.

C) especially if X and Y have the same average value.

D) and will convince us that X causes Y.

Explanation:

B is the answer.