GER1000 2018 Sem 2
Quiz 6 and solutions

Researchers are interested to examine the relationship between lifetime exposure to second hand smoke and risk of late-life dementia. Separate random samples of dementia patients and non-patients were taken from the population. Everyone in the sample is interviewed regarding his/her exposure level, which is then divided into two bands, low and high. The results are summarised in the following contingency table. **Answer the next 4 questions based on this information.**

	Dementia	No dementia
High exposure	500	800
Low exposure	300	1100

1. What is the sample odds ratio of dementia between the high exposure and low exposure groups (to 1 decimal place)?
    a. 0.4
    b. 1.5
    c. 1.8
    d. 2.3

Explanation: Using the method of cross-product-ratio, odds ratio of dementia between high exposure and low exposure groups = 500 × 1100 / 800 × 300 = 2.3 (1 d.p.). Refer to Unit 2, slide 9.

2. Can the sample odds ratio be used to yield a good estimate of the population odds ratio, of dementia between the high exposure and low exposure groups?
    a. Yes
    b. No

Explanation: Sample odds ratio is generally a good estimate of the population odds ratio, since this is a case-control study. Refer to Unit 2, slide 8.

3. What is the sample risk ratio of dementia between the high exposure and low exposure groups (to 1 decimal place)?
    a. 0.4
    b. 1.5
    c. 1.8
    d. 2.3

Explanation: In the sample, risk(dementia | high exposure) = 500 / (500 + 800) = 0.385, and risk(dementia | low exposure) = 0.214. So risk ratio of dementia between high and low exposure groups = 0.385 / 0.214 = 1.8 (1 d.p.). Refer to Unit 1, slide 7.

4. Can the sample risk ratio be used to yield a good estimate of the population risk ratio, of dementia between the high exposure and low exposure groups?
    a. Yes
    b. No

Explanation: Sample risk ratio is generally not a good estimate of the population risk ratio, since this is a case-control study. Refer to Unit 1, slide 10.

5. The same group of researchers did a replication study on another population. The incomplete contingency table below displays a part of the results, and additionally we know that the sample odds ratio of dementia between the high exposure and low exposure groups is 0.8.

	Dementia	No dementia
High exposure	A	900
Low exposure	B	1200

What are possible values for A and B?

   a. A = 200, B = 400
   b. A = 200, B = 600
   c. A = 400, B = 600
   d. A = 600, B = 1000

Explanation: Substituting 600 for A and 1000 for B in the contingency table and computing odds ratio using the cross-product-ratio method, we have 600 × 1200 / (900 × 1000) = 0.8. No other pairs of values among the four options give a cross-product-ratio of 0.8. Alternatively, 0.8 = (A × 1200) / (900 × B), so we must have A/B = 0.8 × 900 / 1200 = 0.6. Here "A = 600, B = 1000" is the only answer with A/B = 0.6. Refer again, to Unit 2, slide 9.