MS Module 8 Confidence interval for difference in proportions practice exam questions

(The attached PDF file has better formatting.)

The observations and successes for a treatment group and a control group are

	treatment	*control*
observations	80	101
successes	56	67

The difference in the probability of success is the probability of success for the treatment group minus the probability of success for the control group.

Question 8.1: Sample difference in the probability of success

What is the sample difference in the probability of success between the two groups?

Answer 8.1: 56 / 80 – 67 / 101 = 0.0366

Question 8.2: Variance of the difference

What is the sample variance of the difference in the probability of success between the two groups?

Answer 8.2: (56 / 80 × (1 – 56 / 80)) / 80 + (67 / 101 × (1 – 67 / 101)) / 101 = 0.004836

Question 8.3: Standard deviation of the difference

What is the sample standard deviation of the difference in the probability of success between the two groups?

Answer 8.3: $0.004836^{0.5}$ = 0.0695

Question 8.4: *z* value for confidence interval

What is the *z* value for the 90% two-sided confidence interval for the difference in the probability of success for the two groups?

Answer 8.4: 1.645

(the *z* value for the 90% two-sided confidence interval is the *z* value for the 95% one-sided test)

Question 8.5: Upper bound of confidence interval

What is the 90% two-sided confidence interval for the difference in the probability of success for the two groups?

A. 0.0446
B. 0.0428

C. 0.1258
D. 0.1510
E. 0.2654

Answer 8.5: $0.0366 \pm 1.645 \times 0.0695$

- lower bound: $0.0366 - 1.645 \times 0.0695 = -0.0777$
- upper bound: $0.0366 + 1.645 \times 0.0695 = 0.1509$