

MATH-1XXX (DUPRÉ) FALL 2013 TEST 1 ANSWERS

DATE: WEDNESDAY 18 SEPTEMBER 2013

1. PRINT YOUR LAST NAME IN **LARGE** CAPITAL LETTERS ON THE UPPER RIGHT CORNER OF EACH SHEET TURNED IN.

2. PRINT YOUR FIRST NAME IN CAPITAL LETTERS DIRECTLY UNDERNEATH YOUR LAST NAME ON EACH SHEET TURNED IN.

3. WRITE YOUR MATH COURSE NUMBER AND SECTION NUMBER DIRECTLY UNDERNEATH YOUR FIRST NAME ON EACH SHEET TURNED IN.

Suppose that a dice is in a box where you cannot see it and you believe that it sits in the box with one face flat on the bottom of the box and X is the number on the top face. Calculate the numerical values indicated, based on this information and the additional information indicated, for each of the following problems.

4. The expected value of X given that the number on top is 1, 2, or 3.

A. 1

B. 2

C. 3

D. 1.5

E. None of the above

CORRECT ANSWER: B

5. The expected value of X given that the number on top is 4, 5, or 6.

- A. 4
- B. 5
- C. 6
- D. 4.5
- E. None of the above

CORRECT ANSWER: B

6. The probability that the number on top is 1, 2, or 3.

- A. $1/3$
- B. $1/4$
- C. $1/6$
- D. $1/2$
- E. None of the above

CORRECT ANSWER: D

7. The probability that X is in the set $\{1, 2, 3\}$, given that X is 4 times as likely to be in the set $\{1, 2, 3\}$ as not.

- A. $1/5$
- B. $1/4$
- C. $1/3$
- D. $1/2$
- E. None of the above

CORRECT ANSWER: E

8. The probability that the number on top is 2, given that X is 4 times as likely to be in the set $\{1, 2, 3\}$ as not.

- A. $1/4$
- B. $1/(15)$
- C. $4/5$
- D. $4/(15)$
- E. None of the above

CORRECT ANSWER: D

9. The expected value of X given that the number on top is 4 times as likely to be in the set $\{1, 2, 3\}$ as not.

- A. 4
- B. 3.5
- C. 2.6
- D. 2.5
- E. None of the above

CORRECT ANSWER: C

Suppose that a box contains 2 BLUE blocks, 3 RED blocks, and 5 GREEN blocks. Suppose that three blocks are drawn from the box without replacement one after another.

10. What is the probability that the SECOND block drawn is RED?

- A. $3/9$
- B. $3/(10)$
- C. $2/9$
- D. $2/(10)$
- E. None of the above

CORRECT ANSWER: B

11. What is the probability that the THIRD block drawn is RED given that the FIRST is GREEN and the SECOND is BLUE?

- A. $3/8$
- B. $3/(10)$
- C. $1/8$
- D. $2/9$
- E. None of the above

CORRECT ANSWER: A

12. What is the probability that the SECOND block drawn is RED given that the FIRST is BLUE and the THIRD is GREEN?

- A. $3/8$
- B. $3/(10)$
- C. $1/8$
- D. $2/9$
- E. None of the above

CORRECT ANSWER: A

13. What is the probability that ALL three are GREEN?

- A. $(1/2)^3$
- B. $(1/2)(4/9)(3/8)$
- C. $(1/2)+(4/9)+(3/8)$
- D. $(1/2)+(4/9)-(3/8)$
- E. None of the above

CORRECT ANSWER: B

Suppose in addition to the preceding information, that GREEN blocks are worth ONE dollar, that RED blocks are worth TEN dollars and BLUE blocks are worth TWENTY dollars.

14. What is the total worth in dollars of the blocks in the box?

- A. 31
- B. 75
- C. 150
- D. 310
- E. None of the above

CORRECT ANSWER: B

15. If W is the WORTH of the THIRD block drawn, then what is $E(W)$?

- A. 3.1
- B. 7.5
- C. 15
- D. 31
- E. None of the above

CORRECT ANSWER: B