

MTH 156-PROBABILITY TWO (PR2): SAMPLE EXAM

PROBLEM 1. There are ten contestants in a chess tournament. The number of ways in which the first, second, and third place prizes can be awarded is closest to

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|--------|--------|--------|--------|--------|
| A. 750 | B. 600 | C. 825 | D. 700 | E. 650 |
| F. 675 | G. 725 | H. 775 | I. 575 | J. 625 |
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PROBLEM 2. There are 5 rotten apples in a crate of 25 apples. How many samples of 3 can be drawn from the crate? The number is closest to

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|---------|---------|---------|---------|---------|
| A. 1800 | B. 2100 | C. 2200 | D. 2500 | E. 2700 |
| F. 2300 | G. 2000 | H. 2800 | I. 2600 | J. 1900 |
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PROBLEM 3. A safety engineer claims that only 60% of all drivers use seat belts on short trips. The probability that exactly 2 out of five drivers will be using his seat belts is closest to

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|--------|--------|--------|--------|--------|
| A. .31 | B. .23 | C. .29 | D. .24 | E. .27 |
| F. .21 | G. .28 | H. .30 | I. .26 | J. .25 |

PROBLEM 4. The probability that at least 1 driver of five will be using his seat belt is closest to

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|-----------|-----------|-----------|-----------|-----------|
| A. .98974 | B. .98978 | C. .98986 | D. .98970 | E. .98966 |
| F. .98976 | G. .98982 | H. .98984 | I. .98972 | J. .98968 |
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PROBLEM 5. Each month, a sales manager classifies his sale people as low, medium, or high producers. There is a 20% chance that a low producer will become a medium producer the following month, and a 5% chance that a low producer will become a high producer. A medium producer will become a low or high producer, respectively, with probabilities 20% and 5%. A high producer will become a low or medium producer, respectively, with probabilities 5% and 20%. After a long time the percentage of low producers is closest to

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|-------|-------|-------|-------|-------|
| A. 30 | B. 51 | C. 39 | D. 42 | E. 60 |
| F. 54 | G. 48 | H. 33 | I. 45 | J. 36 |

PROBLEM 6. After a long time the percentage of high producers is closest to

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|-------|-------|-------|-------|-------|
| A. 13 | B. 14 | C. 16 | D. 21 | E. 17 |
| F. 12 | G. 22 | H. 19 | I. 15 | J. 20 |

EXAM CONTINUES ON BACK OF SHEET

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PROBLEM 7. An investor has \$20,000 to invest in stocks. She can buy blue chip or speculative stocks. If the market goes up the blue chips will pay off \$30,000 and speculative will pay off \$50,000. If the market goes down, the blue chips will pay off \$10,000 and speculative will pay off \$1,000. If the probability of the market going up is .4, then the expected profit for the best strategy is closest to

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|---------------|----------|------------|------------|---------------|
| A. \$ - 500 | B. \$0 | C. \$1,00 | D. \$2500 | E. \$ - 1,500 |
| F. \$ - 2,500 | G. \$500 | H. \$1,500 | I. \$2,000 | J. \$ - 1,000 |
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PROBLEM 8. There are 10 contestants in a scrabble tournament. The number of ways in which the 3 finalists can be chosen is closest to

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|--------|--------|--------|-------|--------|
| A. 70 | B. 50 | C. 140 | D. 60 | E. 90 |
| F. 110 | G. 130 | H. 120 | I. 80 | J. 100 |
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PROBLEM 9. A game has the following rules. A fair die is tossed. The tosser wins \$7 if a 1 or 2 shows and wins \$11 if a 6 shows. The tosser pays \$14 if a 3 shows and \$6 if a 4 or 5 shows. The tosser's expected winnings for one toss is closest to

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|-------|------|-------|------|-------|
| A. 4 | B. 2 | C. -3 | D. 0 | E. 5 |
| F. -4 | G. 3 | H. -1 | I. 1 | J. -2 |
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PROBLEM 10. A team has 10 players named A, B, C, Before each game an offensive captain, a defensive captain, and a water-boy are determined by chance. No one may have more than one of these honors per game. The probability the C and D both win honors for the sixth game is closest to

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|---------|---------|---------|---------|---------|
| A. .066 | B. .093 | C. .063 | D. .084 | E. .072 |
| F. .087 | G. .075 | H. .090 | I. .078 | J. .081 |

PROBLEM 11. The probability that for the third game E wins honors but B does not is closest to

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|--------|--------|--------|--------|--------|
| A. .28 | B. .25 | C. .26 | D. .19 | E. .24 |
| F. .23 | G. .18 | H. .22 | I. .27 | J. .21 |

PROBLEM 12. During a season with 16 games, the number of times that A and F together can expect to win honors as water-boy is closest to

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|--------|--------|--------|--------|--------|
| A. 3.4 | B. 4.6 | C. 3.2 | D. 3.0 | E. 4.2 |
| F. 4.4 | G. 3.6 | H. 2.8 | I. 2.6 | J. 3.8 |

The correct answers are: 1-G, 2-F, 3-B, 4-F, 5-C, 6-E, 7-G, 8-H, 9-D, 10-A, 11-F, 12-C