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Course Name: -

Notices:

This exam has no notices

Question #: 1

From a collection of nine paintings, four are to be selected to hang side-by-side on a gallery wall in positions 1, 2, 3 and 4. In how many ways can this be done?

✓A. 3024
B. 6561
C. 24

Item Weight: 1.0

Item Psychometrics:

No item psychometrics are available at this time, this item has yet to be scored in any assessment.

Question #: 2

A group of 60 freshmen are to be randomly assigned into two classes of 30 students each, one on the first floor and one on the second floor. In how many ways can this be done?

✓A. $\binom{60}{30}$

B. $\binom{60}{30} / 2!$

C. $2! \times \binom{60}{30}$

Item Weight: 1.0

Item Psychometrics:

No item psychometrics are available at this time, this item has yet to be scored in any assessment.

Question #: 3

Suppose we have with us a biased coin. In other words, the probability of heads is p, where p >0.5. We flip the coin twice, and define the following events:
A_1: we observe head followed by a tail
A_2: we observe a tail followed by a head.
What is $P(A_1 \mid A_1 \cup A_2)$?

✓A. 1/2
B. p
C. 1-p

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.93	-	-	-	-	0.37

Question #: 4

Question: If 8 identical blackboards are to be divided among 4 schools, how many divisions are possible?

Answer:

$$\frac{8!}{4!4!}$$

A. True
✓B. False

Item Weight: 1.0

Item Psychometrics:

No item psychometrics are available at this time, this item has yet to be scored in any assessment.

Question #: 5

If 8 distinct blackboards are to be divided equally among 4 schools, how many possible assignments are there?

✓A. $\frac{8!}{2!2!2!2!}$

B. $\binom{8}{4}$

C. $\frac{8!}{4!}$

Item Weight: 1.0

Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.94	-	-	-	-	0.09

Question #: 6

Which of the following is **not** a cumulative distribution function?

A.

$$F(x)=\begin{cases}0, & x<0\\ 0.3, & 0\le x<1\\ 1 & x\ge 1\end{cases}$$

B.

$$F(x)=\begin{cases}0, & x<0\\ 1, & x\ge 1\end{cases}$$

✓C.

$$F(x)=\begin{cases}0, & x\le 0\\ 0.5, & 0<x\le 1\\ 1, & x>1\end{cases}$$

Item Weight: 1.0

Item Psychometrics:

No item psychometrics are available at this time, this item has yet to be scored in any assessment.

Question #: 7

Two players, A and B, alternately and independently flip a coin and the first player to obtain a head wins. Assume player A flips first. Define E_i to be the event that head appears first on the i-th toss. What is P(A wins)?

✓A. $$P(A\ wins) = \sum_{k=0}^{\infty} P(E_{2k+1})$$

B. $$P(A\ wins) = \lim_{k \to \infty} P(E_{2k+1})$$

C. $$P(A\ wins) = \lim_{k \to \infty} P(E_{2k})$$

Item Weight: 1.0

Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.83	-	-	-	-	0.35

Question #: 8

A fair coin is tossed independently 10 times. Define the following events:
A_k: the k-th toss is heads
S: the total number of heads observed in the 10 tosses is even. (Note that 0 is an even number).
What is $P(S \mid A_1 A_2 A_3 \ldots A_{10})$?

✓A. 1
B. 0
C. $(0.5)^{10}$

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.94	-	-	-	-	0.34

Question #: 9

Two players, A and B, alternately and independently flip a coin and the first player to obtain a head wins. Assume player A flips first. Define E_i to be the event that head appears first on the i-th toss. Which of the following statements is true about the sequence of events E_i?

A. $E_2 \subset E_1$

B. $E_1 \subset E_2$

✓C. Neither of the above statements are true.

Item Weight: 1.0

Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 10

Suppose that $p(x)$ and $q(x)$ are two distinct pmfs. Then for any b such that $0 < b < 1$, $r(x) = bp(x) + (1-b)q(x)$ is also a pmf.

✓A. True
B. False

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.83	-	-	-	-	0.49

Question #: 11

Consider the following pmf, for i = {1, 2, 3, 4, 5, ...}

$$p(i) = \frac{c}{i^3}$$

What is the value of c?

✓A.

$$c = \frac{1}{\sum_{i=1}^{\infty} 1/i^3}$$

B.

$$c = \frac{1}{\sum_{i=1}^{\infty} i^3}$$

C.

$$c = \sum_{i=1}^{\infty} i^3$$

Item Weight: 1.0

Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.86	-	-	-	-	0.43

Question #: 12

Two fair six-sided dice are rolled. Let X be the product of the two dice. What is P(X >= 33)?

✓A. 1/36
B. 33/36
C. 3/36

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 13

Suppose that P(A) >0, P(B) >0 and P(AB) >0. Then the following equality holds:

$$\frac{P(A \mid B)}{P(B \mid A)} = \frac{P(A)}{P(B)}$$

✓A. True
B. False

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 14

Consider the following pmf, for i = {1, 2, 3, 4, 5, ...}

$$p(i) = \frac{6}{\pi^2 i^2}$$

Find P(X = 1 | {X=1} U {X=2})

✓A. 0.8
B. 0.608
C. 0.760

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.94	-	-	-	-	0.30

Question #: 15

A deck of playing cards has 52 cards. Four of these cards are Aces. Suppose that a well-shuffled deck of cards is dealt out. What is the probability that the 14th card dealt out is an Ace?

✓A. 1/13
B. 1/4
C. 1/52

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 16

The cdf of X is given by the following function, for i *in* $\{1,2,3,4,5,6, \ldots\}$:

$$F(x) = \begin{cases} 0, & x < 1 \\ 1 - \dfrac{1}{i+1}, & i \le x < i+1 \end{cases}$$

What is the support of X?

✓A. $\{1, 2, 3, 4, 5,\ldots\}$
B. $\{0, 1, 2, 3, 4, 5,\ldots\}$
C. {0,1}

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 17

The cdf of *X* is given by the following function, for *i = 1, 2, 3, 4, 5,....* :

$$F(x) = \begin{cases} 0, & x < 1 \\ 1 - \dfrac{1}{i+1}, & i \le x < i+1 \end{cases}$$

What is P(X <2)?

✓A. *1/2*
B. *2/3*
C. *1/3*

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.98	-	-	-	-	0.21

Question #: 18

The cdf of *X* is given by the following function, for *i* >= *1*:

$$F(x) = \begin{cases} 0, & x < 1 \\ 1 - \dfrac{1}{i+1}, & i \le x < i+1 \end{cases}$$

What is the pmf of *X*?

✓A. *P(X=i) = 1/[i(i+1)]* for *i = 1, 2, 3, 4, 5, 6, ...*
B. *P(X=i) = 1 - 1/(i+1)* for *i = 1, 2, 3, 4, 5, 6, ...*
C. *P(X=i) = 1/(i+1)* for *i = 1, 2, 3, 4, 5, 6, ...*

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.91	-	-	-	-	0.50

Question #: 19

Let X be a random variable denoting the number of children in a family. X has support {1,2,3,4}, and pmf given by

p(1)	p(2)	p(3)	p(4)
0.1	0.25	0.35	0.3

A child from this family is chosen at random (i.e. all children within a family are equally likely to be selected). Let E be the event that the eldest child is chosen. Find $P(X=1 \mid E)$.

A. 0.42
B. 0.1
✓C. 0.24

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.9	-	-	-	-	0.28

Question #: 20

An urn has *n* white and *m* black balls. Balls are randomly withdrawn without replacement, one at a time, until a total of *k* white balls have been withdrawn, where *k* <= *n*. The random variable *X* is the total number of balls that have been withdrawn. Which of the following events is equivalent to *{X = r}*, where *r* is an integer in the support of *X*?

✓A. There are k - 1 white balls in the first r-1 draws, and the r-th draw is a white ball.
B. There are r balls drawn.
C. There are k white balls in the first r draws.

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.73	-	-	-	-	0.53

Question #: 21

Let E, F and G be three events from a sample space. Match the following descriptions to the events regarding E, F and G below. There is only one matching description for each event.

1. E occurs.	2. At least two of the events occur.
3. Exactly two events occur.	4. The empty set occurs.
5. None of the three events occur.	6. Only E occurs.

1 $(E \cup F \cup G)^c$

2 $EF \cup EG \cup FG$

1. 5
2. 2

Item Weight: 1.0

Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.98	-	-	-	-	0.29

Question #: 22

Let E, F and G be three events from a sample space. Match the following descriptions to the events regarding E,F and G below. There is only one matching description for each event.

1. E occurs.	2. At least two of the events occur.
3. Exactly two events occur.	4. Exactly one of the events occurs.
5. Only E occurs.	6. At least one of the events occurs.

_____1____ $E \cup F \cup G$

_____2____ $E F^c G^c$

1. 6
2. 5

Item Weight: 1.0

Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.91	-	-	-	-	0.31

Question #: 23

A fair coin is tossed independently *n* times, where n >= 2. Define the following events:
A_k: the k-th toss is heads.
S_n: the total number of heads observed in the n tosses is even. (Note that 0 is an even number).

Is the collection of events $A_1, A_2, A_3, \ldots A_n, S_n$ independent?
Hint: Consider $P(S_n \mid A_1\ A_2\ A_3 \ldots A_n)$

A. True
✓B. False

Item Weight: 1.0

Item Psychometrics:

No item psychometrics are available at this time, this item has yet to be scored in any assessment.

Question #: 24

Suppose that A and B are independent events such that the probability that **neither** occurs is a, and the probability that B occurs is b. Find P(A).

A. *a/(1-b)*
✓B. *(1-b-a)/(1-b)*
C. *ab*

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 25

A fair coin is tossed independently *n* times, where n >= 2. Define the following events:
A_k: the k-th toss is heads.
What is $P(A_1 A_2 A_3 A_4 \ldots A_n)$?

A. 1/2
✓B. (1/2)^n
C. k! / n!

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.96	-	-	-	-	0.19

Question #: 26

Suppose that $E_1, E_2, \ldots .E_n$ are independent events. Which of the following statements is true for any such collection of events?

✓A. $P(E_1 \cup E_2 \ldots \cup E_n) = 1 - (1 - P(E_1))(1 - P(E_2)) \ldots (1 - P(E_n))$

B. $P(E_1 \cup E_2 \ldots \cup E_n) = P(E_1) + P(E_2) + \ldots + P(E_n)$

C. $P(E_1 \cup E_2 \ldots \cup E_n) = P(E_1)P(E_2 \mid E_1)P(E_3 \mid E_1 \cup E_2) \ldots . P(E_n \mid E_1 \cup \ldots E_{n-1})$

Item Weight: 1.0

Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.88	-	-	-	-	0.51

Question #: 27

Independent trials are performed indefintely, where each trial consists of rolling a pair of fair six-sided dice, and then summing the values on the dice at each trial. Thus, if we observe (1,2), (3,4) and (6,6) in the first three trials, then the outcomes of the first three trials are recorded as 3, 7 and then 12.
We define E_n to be the event that no 5 or 7 appears on the first *n-1* trials and a 5 appears on the *n*-th trial. What does the event

$$\bigcup_{n=1}^{\infty} E_n$$

correspond to?

A. A 5 never appears.
B. A 7 never appears.
✓C. A 5 appears before a 7.

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.35	-	-	-	-	0.38

Question #: 28

Suppose that X is a discrete random variable with support on the set {1,2,3,4}. We define the sequence of events E_n to be

$$E_n = \{1 - 1/n < X < 1 + 1/n\}, \qquad n \geq 1$$

What is

$$\lim_{n \to \infty} P(E_n)$$

?

✓A. P(X=1)
B. P(1 <X <2)
C. 0

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.82	-	-	-	-	0.41

Question #: 29

Suppose that A and B are mutually exclusive, and P(A) >0 and P(B) >0. Which of the following statements is **false**?

A. P(A|B)=0
✓B. A and B are independent.
C. A and B are dependent.

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.86	-	-	-	-	0.41

Question #: 30

Suppose that A and B are events with positive probability. Determine if the following statement is true or false:
If A and B are not mutually exclusive, then they are independent.

A. True
✓B. False

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 31

Suppose that A and B form a partition of the sample space, and P(A) >0 and P(B) >0. Which of the following statements is **false**?

A. $P(A \mid B^c) = 1$
✓B. A and B are independent.
C. A and B are dependent.

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.75	-	-	-	-	0.64

Question #: 32

A mobile phone manufacturing company has two factories X and Y. Factories X and Y produce 30% and 70% of all mobile phones respectively. 9% of the phones produced by factory X are defective, and 1% of the phones produced by factory Y are defective. If a phone bought from the company is found to be defective, what is the probability that it was produced by factory X?

✓A. 0.79
B. 0.027
C. 0.30

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.98	-	-	-	-	0.13

Question #: 33

Which of the following is **not** a probability mass function?

✓A.

$$P(X=i)=\left(\frac{1}{2}\right)^{i} \qquad for\ i=1,2,3,\ldots,n$$

B.

$$P(X=i)=\frac{e^{-1}}{i!} \qquad for\ i\geq 0$$

C.

$$P(X=0)=P(X=1)=1/2$$

Item Weight: 1.0

Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 34

Consider the following pmf, for i = {1, 2, 3, 4, 5, ...}

$$p(i) = \frac{6}{\pi^2 i^2}$$

Evaluate the cdf at i=2.

✓A. 0.760
B. 0.608
C. 0.152

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.99	-	-	-	-	0.07

Question #: 35

A and B are mutually exclusive events. Further, P(A) = 0.3 and P(B) = 0.2. What is the probability that both events occur?

A. There is insufficient information to compute this probability.
B. 0.06
✓C. 0

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 36

How many ways can we arrange the letters in the word "VISITING" such that no two "I"s are adjacent? Hint: Experiment 1: Permute the non-I letters. Experiment 2: Choose where to put the I's.

A. 6720
✓B. 2400
C. 480

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.96	-	-	-	-	0.23

Question #: 37

How many ways can we arrange the letters in the word "VISITING"?

✓A. 6720
B. 2400
C. 480

Item Weight: 1.0

Item Psychometrics:

No item psychometrics are available at this time, this item has yet to be scored in any assessment.

Question #: 38

Independent trials are performed indefintely, where each trial consists of rolling a pair of fair six-sided dice, and then summing the values on the dice at each trial. Thus, if we observe (1,2), (3,4) and (6,6) in the first three trials, then the outcomes of the first three trials are recorded as 3, 7 and then 12.
We define E_n to be the event that no 5 or 7 appears on the first n-1 trials and a 5 appears on the n-th trial. Is E_n an increasing or decreasing sequence?

A. An increasing sequence.
B. A decreasing sequence.
✓C. It is neither increasing or decreasing.

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.57	-	-	-	-	0.37

Question #: 39

Suppose that A, B and C are events from a sample space. Which of the following statements is not true for all possible choices of A, B and C?

A. $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

B. $A \cap (B \cap C) = (A \cap B) \cap C$

✓C. $(A \cup B) \cap C = A \cup (B \cap C)$

Item Weight: 1.0

Item Psychometrics:

No item psychometrics are available at this time, this item has yet to be scored in any assessment.

Question #: 40

A closet contains 10 pairs of shoes. If 8 shoes are randomly selected, what is the probability that there will be no complete pair?

✓A. $\binom{10}{8}2^8 \Big/ \binom{20}{8}$

B. $\binom{10}{8} \Big/ \binom{20}{8}$

C. $\binom{2}{1}^8 \Big/ \binom{20}{8}$

Item Weight: 1.0

Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 41

There are *n* socks in a drawer, 3 of which are red. What is the value of *n* if, when 2 of the socks are chosen randomly, the probability that they are both red is 1/2?

✓A. *n=4*
B. *n=6*
C. *n=5*

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	0.00

Question #: 42

Suppose that the random variable X has support $\{1, 2, 3, 4, 5, ... \}$. For i in this set, the pmf is given by

$$P(X = i) = 1/i - 1/(i+1)$$

If we let $Y = 2 - X$, what is the pmf of Y evaluated at -5? In other words, what is $P(Y = -5)$?

✓A. 1/56
B. 1/20
C. -1/5

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.99	-	-	-	-	-0.05

Question #: 43

Suppose that the random variable *X* has support *{1, 2, 3, 4, 5, ... }*. For i in this set, the pmf is given by

$$P(X = i) = 1/i - 1/(i+1)$$

If we let *Y = 1* if *X <= 2* and 0 otherwise, what is *P(Y = 0)*?

A. 1
B. 1/2
✓C. 1/3

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.95	-	-	-	-	0.28

Question #: 44

There are 4 TV repairmen and 8 TV repair jobs. If it is possible for a single repairman to do multiple jobs, how many possible assignments of repairmen to jobs are there?

A. 8^4

✓B. 4^8

C. $\binom{8}{4}$

Item Weight: 1.0

Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-

Question #: 45

If P(A) = 1/4 and P(B) = 1/3, then

$P(AB) \leq 7/12$

.

✓A. True
B. False

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.64	-	-	-	-	0.41

Question #: 46

If $P(A)=1/3$ and $P(B^c)=1/4$ then it is still possible for A and B to be disjoint.

A. True
✓B. False

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.91	-	-	-	-	0.32

Question #: 47

A company has two factories X and Y. Factories X and Y produce 40% and 60% of all watches respectively. 2% of the watches produced by factory X are defective, and 3% of the watches produced by factory Y are defective. If a watch bought from the company is found to be defective, what is the probability that it was produced by factory Y?

✓A. 0.69
B. 0.018
C. 0.026

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.94	-	-	-	-	0.36

Question #: 48

An urn has n white and m black balls. Balls are randomly withdrawn without replacement, one at a time, until a total of k white balls have been withdrawn, where k <= n. The random variable X is the total number of balls that have been withdrawn. What is the support of X?

A. {1, 2, 3, ... , n+m}
✓B. {k, k+1, ... , n+m}
C. {1, 2, 3, ..., k}

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
0.98	-	-	-	-	0.23

Question #: 49

Let X be a random variable denoting the number of children in a family. X has support {1,2,3,4}, and pmf given by

p(1)	p(2)	p(3)	p(4)
0.3	0.25	0.35	0.1

A child from this family is chosen at random (i.e. all children are equally likely to be selected). Let E be the event that the youngest child is chosen. Find *P(E)*.

✓A. 0.42
B. 0.1
C. 0.52

Item Weight: 1.0
Item Psychometrics:

Difficulty Level/P-value	Upper 27%	Lower 27%	Discrimination Index	Point Biserial(Question)	Point Biserial(Rev)
1.0	-	-	-	-	-