Errata for the ASM Study Manual for Exam P, Fourteenth Edition
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Posted January 24, 2012
In the solution of Problem 21 in Practice Examination 18, the expression

$$E\big(X-\min(X,100)\big)E$$

in the formula should be

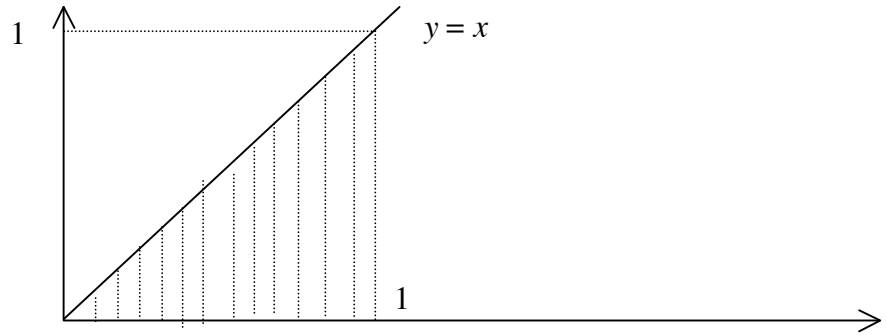
$$E\big(X-\min(X,100)\big)$$

The extra *E* is a typo.

Posted September 21, 2011
The solution of Problem 29 in Practice Examination 19 should be:
Solution.
The joint density, where positive, for $0<x<1$ and $0<y<x$, is

$$f_{X,Y}(x,y)=f_Y\left(y|X=x\right)\cdot f_X(x)=\frac{1}{x}\cdot 2x=2.$$

The region where that joint density is positive is indicated with dotted lines in the graph below



Since the joint density is uniform, the conditional distribution of *X* given that $Y=y$ is uniform on the range of values of *x* determined by the condition $0<y<x<1$, i.e., the interval $(y,1)$, so that the variance is $\frac{(1-y)^2}{12}$.
Answer E.

Posted August 31, 2011
The first sentence of the solution of Problem 14 in Practice Examination 18 should be:

Chi-square distribution is obtained as a sum of squares of independent identically distributed standard normal random variables, so we need to standardize these variables, add squares of those standardized variables, and hope we get one of the answers.

Posted August 6, 2011
In the third line of Problem 21 in Practice Examination 15, the words "and integer" **should be** "an integer".

Posted August 6, 2011
In the solution of Problem 6 in Practice Examination 9, in the first line, the words "for and" **should be "**for any".

Posted August 6, 2011
In the solution of Problem 1 in Practice Examination 9, the formula in the fifth line should be

$$\Pr\left(Y_{(1)}=3\right)=\Pr(E-F)=\Pr(E)-\Pr(F).$$

instead of

$$\Pr\left(Y_{(1)}=3\right)=\Pr(F)-\Pr(F).$$

Posted August 4, 2011
The solution of Problem 7 in Practice Examination 13 should be rephrased as follows:
The event of at least one color not being represented is the complement of the event of all three colors being represented, and all colors being represented simply means that we pick one red ball out of 3, one green ball out of 2, and one yellow ball out of 1. Thus

$$\Pr(\text{At least one color not drawn})=$$

$$=1-\Pr(\text{All colors drawn})=1-\frac{\binom{3}{1}\cdot\binom{2}{1}\cdot\binom{1}{1}}{\binom{6}{3}}=0.70.$$

You could also argue as follows. We are looking for the probability that all three balls are of the same color, or of two colors only. We have

$$\Pr(\text{3 balls of one color})=\Pr(\text{3 red})=\frac{1}{\binom{6}{3}}=\frac{3!\cdot 3!}{6!}=\frac{6}{4\cdot 5\cdot 6}=\frac{1}{20},$$

and

$$\Pr(\text{3 balls of two colors only}) = \Pr(\text{2 red + 1 green}) + \Pr(\text{2 red + 1 yellow}) +$$
$$+ \Pr(\text{2 green + 1 red}) + \Pr(\text{2 green + 1 yellow}) =$$
$$= \frac{\binom{3}{2}\cdot\binom{2}{1}}{\binom{6}{3}} + \frac{\binom{3}{2}\cdot\binom{1}{1}}{\binom{6}{3}} + \frac{\binom{2}{2}\cdot\binom{3}{1}}{\binom{6}{3}} + \frac{\binom{2}{2}\cdot\binom{1}{1}}{\binom{6}{3}} = \frac{13}{20},$$

so that the total probability is $\frac{1}{20} + \frac{13}{20} = \frac{7}{10}$.

Answer B.

Posted August 3, 2011
In Practice Examination 20, Problem 6, in the solutions part of the examination, answer choices were not listed. They are listed in the questions part of the examination.

Posted August 3, 2011
The last sentence of Problem 11 in Practice Examination 16 should be:
Calculate the variance of Y given that $X > 3$ and $Y > 3$.
instead of
Calculate the variance of Y given that and $X > 3$ and $Y > 3$.

Posted August 3, 2011
In Problem 7 in Practice Examination 14, the solution should start with the words
Because you studied this manual
instead of
Because you studied his manual

Posted July 30, 2011
Problem 7 in Practice Examination 19 should start with
Let $X_1, X_2, ..., X_{36}$ and $Y_1, Y_2, ..., Y_{49}$ be independent random samples from distributions …
instead of
Let $x_1, x_2, ..., x_{36}$ and $y_1, y_2, ..., y_{49}$ be independent random samples from distributions …

Posted July 30, 2011
The first line of the formula in the solution of Problem 6 in Practice Examination 19 should be

$$\Pr(2X - X^2 > 0) = \Pr(X(2 - X) > 0) = \Pr(X(X - 2) < 0) =$$

instead of

$$\Pr\left(2X - X^2 > 0\right) = \Pr\left(X(2-X) > 0\right) = \Pr\left(X(X-2) > 0\right) =$$

Posted July 28, 2011
In the formula in the solution of Problem 26 in Practice Examination 17, the formula should be

$$f_X(x) = F_X'(x) = -\frac{d}{dx}\sum_{k=0}^{3}\frac{x^k \cdot e^{-x}}{k!} = -\frac{d}{dx}\left(e^{-x} + xe^{-x} + \frac{1}{2}x^2 \cdot e^{-x} + \frac{1}{6}x^3 \cdot e^{-x}\right) =$$

$$= -\left(-e^{-x} + \left(e^{-x} - xe^{-x}\right) + \left(xe^{-x} - \frac{1}{2}x^2 \cdot e^{-x}\right) + \left(\frac{1}{2}x^2 \cdot e^{-x} - \frac{1}{6}x^3 \cdot e^{-x}\right)\right) = \frac{1}{6}x^3 \cdot e^{-x}.$$

The formula was missing a minus sign in the second line just after the first parenthesis. The rest of the solution is unaffected.

Posted July 28, 2011
In the solution of Problem 16 in Practice Examination 17, the word "bad" **in the first sentence should be replaced by** "bag".

Posted July 28, 2011
The second sentence of the solution of Problem 12 in Practice Examination 16 should be:
Box 1 contains 1 blue and 4 red marbles, box 2 contains 2 blue and 3 red marbles and box 3 contains 3 blue and 2 red marbles.
instead of
Box 1 contains 1 blue and 4 red marbles, box 2 contains 2 blue and 3 red marbles and box 3 contains 3 red and 2 blue marbles.
The rest of the solution is unaffected by this typo.

Posted July 26, 2011
In Problem 9 in Practice Examination 14, the third condition should be:
(ii) The future lifetimes follow a Weibull distribution with $\alpha = 1.5$ and $\beta = 2.0$ for smokers, and $\alpha = 2.0$ and $\beta = 2.0$ for nonsmokers.
Also, the survival function of the Weibull distribution should be given as
$s_T(t) = e^{-\left(\frac{t}{\alpha}\right)^{\beta}}$.

Posted June 26, 2011
In Problem 29 in Practice Examination 19, the last sentence should be:
Find the variance of the conditional distribution of X, given $Y = y$.

Posted June 22, 2011

In the solution of Exercise 3.15, on the last page of Section 3 of the manual, the two lines before the last displayed formula should be:

and then note that –2 = (–1) + (–1), –1 = (–1) + 0 = 0 + (–1), 0 = 0 + 0 = 1 + (–1) = = (–1) + 1, 1 = 1 + 0 = 0 + 1, and 2 = 1 + 1, so that

The line was improperly broken and some text was missing.

Posted June 13, 2011

In Exercise 2.13, in calculation of $E\left(X^k\right)$, the first integral in the second line should end with dz instead of dx.

Posted June 1, 2011

In Exercise 2.13, the formula for the CDF should be:

$$F_X(x)=\int_0^x f_X(s)\,ds=\int_0^x \frac{\beta}{\alpha}\left(\frac{s}{\alpha}\right)^{\beta-1} e^{-\left(\frac{s}{\alpha}\right)^{\beta}}\,ds=-e^{-\left(\frac{s}{\alpha}\right)^{\beta}}\Bigg|_{s=0}^{s=x}=1-e^{-\left(\frac{x}{\alpha}\right)^{\beta}}.$$

There was a minus sign missing in the formula before the last equal sign.

Posted March 10, 2011

The second sentence of the solution of Problem 10 in Practice Examination 1 should be:

As the policy has a deductible of 1 (thousand), the claim payment is

$$Y=\begin{cases} 0, & \text{when there is no damage, with probability } 0.94,\\ \max(0,X-1), & \text{when } 0<X<15, \text{ with probability } 0.04,\\ 14, & \text{in the case of total loss, with probability } 0.02. \end{cases}$$

Posted February 18, 2011

The first displayed formula in the solution of Problem 17 in Practice Examination 8 should be

$$f_P(p)=3p^2=\frac{3!}{2!\,0!}\cdot x^2=\frac{\Gamma(3+1)}{\Gamma(3)\Gamma(1)}\cdot x^{3-1}(1-x)^{1-1}$$

instead of

$$f_P(p)=3p^2=\frac{3!}{2!\,1!}\cdot x^2=\frac{\Gamma(3+1)}{\Gamma(3)\Gamma(1)}\cdot x^{3-1}(1-x)^{1-1}$$

Posted February 14, 2011

The last line of the calculation of the *k*-th moment near the end of Exercise 2.13 should be

$$= \int_0^{+\infty} \left(\alpha z^{\frac{1}{\beta}} \right)^k e^{-z}\, dx = \alpha^k \int_0^{+\infty} z^{\left(1+\frac{k}{\beta}\right)-1} e^{-z} dz = \alpha^k \Gamma\left(1+\frac{k}{\beta}\right),$$

instead of

$$= \int_0^{+\infty} \left(\alpha z^{\frac{1}{\beta}} \right)^k e^{-z}\, dx = \alpha^k \int_0^{+\infty} z^{\frac{k}{\beta}-1} e^{-z} dz = \alpha^k \Gamma\left(1+\frac{k}{\beta}\right),$$

Posted January 25, 2011

The last two sentences of the solution of Problem 11 in Practice Examination 16 should be replaced by the following:

But the memoryless property of the exponential distribution tells us that Y and $\left(Y-3 \middle| Y>3\right)$ have the same distribution. Note, however, that

$$\left(Y \middle| Y>3\right) = 3 + \left(Y-3 \middle| Y>3\right),$$

so that

$$\mathrm{Var}\left(Y \middle| Y>3\right) = \mathrm{Var}\left(Y-3 \middle| Y>3\right) = \mathrm{Var}\left(Y\right).$$

This implies that

$$\mathrm{Var}\left(Y \middle| \{X>3\} \cap \{Y>3\}\right) = \mathrm{Var}\left(Y \middle| Y>3\right) = \mathrm{Var}\left(Y\right) = \frac{1}{2^2} = 0.25.$$

Answer A.

Posted January 15, 2011

In Problem 16 in Practice Examination 6, the calculation of the second moment of X should be:

$$E\left(X^2\right) = \frac{1}{4}\cdot 0^2 + \frac{3}{4}\cdot \underbrace{(1+1)}_{\text{Second moment of } T} = \frac{3}{2}.$$

instead of

$$E\left(X^2\right) = E\left(X\right) = \frac{1}{4}\cdot 0^2 + \frac{3}{4}\cdot \underbrace{(1+1)}_{\text{Second moment of } T} = \frac{3}{2}.$$