

**1C**, page 82, solution 52b:  $(.37)(1.05) = 0.3885$ .

**3B**, p.46, sol. 4: To adjust for #1 we **multiply** the manual rate by the permissible loss ratio.

**5B**, page 52: b. In order to be eligible for **Experience** Rating

**7A**, page 19:  $E[X \wedge k] \Leftrightarrow \text{Area B} + \text{Area E}$

**8A**, pages 8 and 9:  $\hat{E} = E - ELF = 0.68 - 0.347 = 0.333$ .

$cl = (1.07) (0.333) (0.0320 - 0.0087) = 0.008$ .

$b = 0.172 + 0.008 = 0.180$ .  $(0.180) (\$3 \text{ million}) = \$540,000$ .

Thus for this example, the retrospective premium would be:

$(1.04) \{ (1.07) (\text{Limited Losses}) + \$540,000 + \$111,387 \}$ .

$\$1.5 \text{ million} = (1.04) \{ (1.07) (\text{Limited Losses}) + \$540,000 + \$111,387 \}$ .

$\Rightarrow \text{Limited Losses} = \$739,178$ .

$\$4.5 \text{ million} = (1.04) \{ (1.07) (\text{Limited Losses}) + \$540,000 + \$111,387 \}$ .

$\Rightarrow \text{Limited Losses} = \$3,435,080$ .

**10A**, page 14: The empirical excess ratio at 100,000 for Hazard Group 4 is 0.5098.

Thus the estimated excess ratio at 227,273 is:  $(0.5098)(0.4858) = 0.2477$ .

The loss and alae ratio is:  $(1.1)(68\%) = 74.8\%$ . ELAF is:  $(0.748)(0.2477) = 18.5\%$ .

Preliminary premium =  $(1.03)\{(1.045)(690,600) + (.221)(\$1 \text{ million}) + (1.045)(.185)(\$1 \text{ million})\}$   
 = **\$1,117,008**.

**11A**, page 4: For  $x < a$ , the expected losses excess of  $x$  are:  $\int_a^b (y-x) \frac{1}{b-a} dy =$

$$\frac{1}{b-a} \left\{ \frac{(b-x)^2}{2} - \frac{(a-x)^2}{2} \right\} = \frac{b^2 - a^2 - 2bx + abx}{(2)(b-a)} = \frac{b+a}{2} - x.$$

Therefore, dividing by the mean,  $R(x) = 1 - 2x / (b+a)$ .

$$\text{For a uniform on the interval from } a \text{ to } b, R(x) = \begin{cases} 1 - 2x / (b + a) & \text{for } x \leq a \\ \frac{(b-x)^2}{b^2 - a^2} & \text{for } a < x < b \\ 0 & \text{for } x \geq b \end{cases}$$

**12B**, page 37, sol. 37a: Premium = 
$$\frac{79,200 + 50,400 + 72,000 + 30,000 + 36,000 + 80,000}{1 - 7.5\% - 3.5\% - 5\%}$$

**13B**, page 25, sol. 5: Alternately, expected losses: **(80%)**(\$9,000,000) = \$7,200,000.