Table 3: Rating system

★★★★★	Essential—appears repeatedly on every exam
★★★★	Important—appears on every exam
★★★	Average importance—regularly appears on exams
★★	Not so important—appears occasionally on exams, or easy to derive as needed
★	Obscure—on syllabus, but unlikely to appear on exam. Sometimes this indicates a formula not covered by all the reading options. No released exam uses this formula or concept, and students have never reported a question from an unreleased exam requiring this formula or concept.

★★★

Method of moments estimator for exponential distribution

$$\hat{\theta} = \bar{x}$$

★★

Method of moments estimator for gamma distribution

$$\tilde{\alpha} = \frac{\bar{x}^2}{\hat{\sigma}^2}$$
$$\tilde{\theta} = \frac{\hat{\sigma}^2}{\bar{x}}$$

★★

Method of moments estimator for lognormal distribution

$$\tilde{\mu} = 2\ln m - 0.5\ln t$$

$$\tilde{\sigma} = \sqrt{\ln t - 2\ln m}$$

$$\textit{where } m = \bar{x},\ t = \sum_{i=1}^{n} x_i^2/n$$

★★

Method of moments estimator for two-parameter Pareto distribution

$$\tilde{\alpha} = \frac{2(t - m^2)}{t - 2m^2}$$

$$\tilde{\theta} - \frac{m\,t}{t - 2m^2}$$

$$where\ m = \bar{x},\ t = \sum_{i=1}^{n} x_i^2/n$$

★★

Method of moments estimator for single-parameter Pareto distribution with known θ

$$\tilde{\alpha} = \frac{\bar{x}}{\bar{x} - \theta}$$

★★★★★

Two formulas for ${}_{t|u}q_x$ in terms of non-deferred p's and q's

$$ {}_{t|u}q_x = {}_tp_x \; {}_uq_{x+t} $$

$$ {}_{t|u}q_x = {}_tp_x - {}_{t+u}p_x $$

★★★★★

$_k p_x$ *in terms of l's*

$$ {}_k p_x = \frac{l_{x+k}}{l_x} $$

★★★★★

$_kq_x$ *in terms of l's and d's*

$$ {}_k q_x = \frac{{}_k d_x}{l_x} $$

★★★

$_{k|l}q_x$ *in terms of l's and d's*

$$ {}_{k|l}q_x = \frac{{}_l d_{x+k}}{l_x} $$

★★★★

Definition of ${}_tq_x$ in terms of probabilities of X, the random variable for age at death.

$$ {}_t q_x = \Pr(x < X \leq x + t \mid X > x) $$

★★★★★

${}_sq_x$ *under UDD,* $s \leq 1$

$$ {}_s q_x = s q_x $$

★★★★★

$_{s}p_{x}$ *under UDD,* $s \leq 1$

$$ {}_s p_x = 1 - {}_s q_x $$

★★★★★

l_{x+s} *under UDD,* $s \leq 1$

$$l_{x+s} = l_x - s\,d_x$$

★★★★

$_{1-s}q_{x+s}$ *under UDD,* $s \leq 1$

$$ {}_{1-s}q_{x+s} = \frac{(1-s)q_x}{1-sq_x} $$

★★★

$${}_sq_{x+t} \textit{ under UDD, } s+t \leq 1$$

$$ {}_s q_{x+t} = \frac{s q_x}{1 - t q_x} $$