Exam Content Outline

Basic Techniques for Ratemaking and Estimating Claim Liabilities (Exam 5)

Exam Item Types

Candidates may see the following item types in the CAS examinations. Candidates should become familiar with these item types and sample questions will be available in 2023.

Multiple Choice

Multiple answer choices are presented after a problem with only one correct answer.

Multiple Selection

Multiple answer choices are presented after a problem with more than one correct answer.

Fill in the Blank

A blank section is presented after a problem where the candidate must input the correct value.

Constructed Response

A question without any answer options – candidates are expected to provide a written response.

Exam Cognitive Level

Each task is tied to a certain type of mental operation or thinking skill, which is called the cognitive level. ACAS and FCAS use four cognitive levels, and every examination item is authored to address both the task and one of the following cognitive levels paired with that task *(sample questions coming soon)*.

Remember: 5-10%

Tests the ability of the candidate to recall or remember knowledge or facts.

Understand and Apply: 55-60%

Measures the candidate's ability to understand and apply ideas and concepts to new situations.

Analyze and Evaluate: 35-40%

Requires the candidate analyze information, combine concepts/ideas, and justify a position resulting from that combination.

Create: 0-5%

Requires the candidate to synthesize conclusions by evaluating the validity of ideas and concepts.

Exam Section Details

Domains	Domain Weight
A. Ratemaking	45-55%
B. Reserving	45-55%

A. Ratemaking

Candidates should have a thorough understanding of basic ratemaking so that they can analyze data, select appropriate techniques, and develop solutions to problems.

TASKS
1. Define and describe exposure bases as used in the ratemaking process
2. Evaluate and select an exposure base in a given scenario for use in the ratemaking process (e.g., line of business, use cases)
3. Aggregate and/or organize ratemaking data in the following ways: calendar year, policy year, accident year, report year, close year, in-force, net of reinsurance
4. Evaluate ratemaking data and analyses for errors and reasonableness
5. Separate data into groups that balance homogeneity and credibility and summarize the considerations for determining such groups
6. Calculate loss and loss adjustment expenses to be used for ratemaking (e.g., common ratios, adjustments to losses, claims-made vs occurrence coverage)
7. Calculate various adjustments to the premium used for ratemaking (e.g., on-leveling, premium audit)
8. Calculate and apply trends (e.g., exposure, premium, losses) using different approaches (e.g., exponential, and linear analyses)
9. Calculate the underwriting provisions underlying the overall rate level indication (e.g., fixed and variable expenses, profit and contingency, reinsurance costs)
10. Demonstrate proper handling of extraordinary losses for ratemaking purposes (e.g., large losses, catastrophes)
11. Construct an overall rate level indication using the pure premium and loss ratio methods
12. Apply credibility to ratemaking analyses using different methods and justify choice of complement
13. Select and justify a final rate change to implement beyond the calculated overall rate level indication (e.g., Operational/Marketing/Regulatory Constraints, Lifetime Value)
14. Perform calculations related to alternative ratemaking procedures (e.g., classification, territory, deductibles, increased limits, coinsurance, commercial lines

rating mechanisms, etc.)

15. Analyze results of predictive models (e.g., GLM)

16. Apply the four principles of ratemaking to a scenario

17. Understand the considerations for implementing rates to achieve an organization's goals (e.g., non-pricing solutions, minimum premium, rating algorithms)

Readings:
- Werner & Modlin
- CAS Ratemaking Principles
- ASOP 12
- ASOP 13
- ASOP 43

B. Reserving

Candidates should understand how to estimate unpaid claims for both insurance entities and also for non-insurance entities that retain risk.

TASKS
1. Organize reserving data in the following ways: calendar year, accident year, policy year, underwriting year, report year, etc.
2. Evaluate reserving data and analyses for errors and reasonableness
3. Describe the role of homogeneity and credibility of data in the process of estimating unpaid claims
4. Describe the fundamentals of different types of insurance (e.g., long tail versus short tail lines, low frequency versus high frequency lines, occurrence versus claims made)
5. Articulate the importance of accurate estimates of unpaid claims.
6. Build and analyze development triangles (e.g., loss, count, allocated loss adjustment expenses (ALAE))
7. Apply a tail factor
8. Use development triangles as diagnostic tools to identify changes and trends (e.g., loss and claim count, ratio of losses to premium, severity, ratios of loss and claim counts)
9. Calculate and evaluate unpaid loss estimation techniques (i.e., development/chain ladder, case outstanding development, expected losses, Bornhuetter-Ferguson, Cape Cod, frequency-severity, Berquist-Sherman, Benktander)
10. Assess the influence of operating changes on the estimation of unpaid losses (e.g., claims coding and/or claim-related expenses, claims processing, underwriting and policy provisions, marketing, reinsurance, treatment of recoveries such as deductibles and salvage and subrogation)

11. Adjust data and/or estimation techniques for changes in the internal and external environment (e.g., claims processes that result in shift in the adequacy of case outstanding or shift in settlement rates, change in mix of business, change in rate level, inflationary or legal environment)
12. Consider the impact of and adjust for the presence of large losses in a reserving analysis
13. Calculate and evaluate the estimation techniques for recoveries (e.g., salvage and subrogation, reinsurance)
14. Calculate and evaluate the estimation techniques for allocated loss adjustment expenses
15. Calculate and evaluate the estimation techniques for unallocated loss adjustment expenses
16. Evaluate the results of a reserve analysis for adequacy and reasonableness using loss ratios, severities, pure premiums, frequencies, indicated unpaid losses, etc.
17. Monitor results for adequacy and reasonability including interim valuations (e.g., actual versus expected, roll forward analysis)
18. Communicate results and drivers of change to various stakeholders (internal management, investors, regulators)
19. Define and apply reinsurance concepts to calculate net, ceded, and gross losses
20. Utilize external information in a reserve analysis

Readings:
- Friedland
- ASOP 43

Complete Text References for Exam 5

Text references are alphabetized by the citation column.

Citation	Abbreviation	Domains/Task	Source
Actuarial Standards Board of the American Academy of Actuaries, "Actuarial Standard of Practice No. 12, Risk Classification (for All Practice Areas)," revised in 2005, updated for deviation language in 2011.	ASOP 12	A4-5	**OP**
Actuarial Standards Board of the American Academy of Actuaries, "Actuarial Standard of Practice No. 13, Trending Procedures in Property/Casualty Insurance," revised in 2009, updated for deviation language in 2011.	ASOP 13	A4, A8	**OP**
Actuarial Standards Board of the American Academy of Actuaries, "Actuarial Standard of Practice No. 43, Property/Casualty Unpaid Claim Estimates," adopted in 2007, updated for deviation language in 2011.	ASOP 43	A4, B2	**OP**
Friedland, J.F., *Estimating Unpaid Claims Using Basic Techniques*, Casualty Actuarial Society, Third Version, July 2010. • All chapters (the Appendices are excluded).	Friedland	B1-B42	**OP**
Statement of Principles Regarding Property and Casualty Insurance Ratemaking, Casualty Actuarial Society, May 1988.	CAS Ratemaking Principles	A4, A16	**OP**
Werner, G., and Modlin, C., *Basic Ratemaking*, Casualty Actuarial Society, Fifth Edition, May 2016. The Appendices are an integral part of the textbook and will be used for creating questions. Chapter 2 is excluded. • Chapters 1, 3-16	Werner & Modlin	A1-15, A17	**OP**

Source Key

B	Book – may be purchased from the publisher or bookstore.
BO	Book (Optional) – may be purchased from the publisher or bookstore.
DSK	Material included in the 2023 Digital Study Kit.
NEW	Indicates new or updated material.
OP	All text references marked as Online Publications are available on a web page titled Complete Online Text References.
SK	Material included in the 2023 Study Kit.
SKU	Material included in both the 2023 CAS Study Kit and the 2023 Update to the 2022 Study Kit.