

Property & Casualty (P&C) Insurance Cheat Sheet

Key Financial Ratios & Formulas

1. Loss Ratio = $\text{Incurred Losses} / \text{Earned Premiums}$
2. Expense Ratio = $\text{Underwriting Expenses} / \text{Earned Premiums}$
3. Combined Ratio = Loss Ratio + Expense Ratio
 - If $< 100\%$ Underwriting profit
 - If $> 100\%$ Underwriting loss
4. Retention Ratio = $\text{Renewed Policies} / \text{Total Renewable Policies}$
5. LAE Ratio = $\text{Loss Adjustment Expenses} / \text{Incurred Losses}$
6. Operating Ratio = Combined Ratio - Investment Income Ratio

Reserve Calculations

7. Incurred Losses = Paid Losses + Case Reserves + IBNR
8. Loss Development Factor (LDF) = $\text{Ultimate Loss} / \text{Reported Loss to Date}$
9. Earned Premium = $\text{Written Premium} \times (\text{Days Passed} / \text{Policy Term})$
10. Unearned Premium Reserve (UPR) = $\text{Written Premium} - \text{Earned Premium}$

Underwriting Metrics

11. Hit Ratio = $\text{Number of Policies Written} / \text{Number of Quotes Issued}$
12. Average Premium = $\text{Total Premium} / \text{Number of Policies}$

Claims Metrics

13. Claims Frequency = $\text{Number of Claims} / \text{Number of Policies in Force}$
14. Claims Severity = $\text{Total Incurred Losses} / \text{Number of Claims}$
15. Pure Premium = $\text{Claims Frequency} \times \text{Claims Severity}$

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Profitability Metrics

16. Loss Cost = Expected Losses / Exposure Units

17. Investment Income Ratio = Investment Income / Earned Premiums

Catastrophe & Risk Metrics

18. Probable Maximum Loss (PML): Estimated maximum loss under worst-case scenario

19. Exposure: Risk measured by policy limits, insured value, or number of units

Key P&C Terms to Know

- Premium: Amount paid for insurance coverage
- Claim: Request for payment due to a covered loss
- Underwriting: Risk assessment and pricing process
- Reinsurance: Insurance purchased by insurers to manage risk
- Deductible: Amount paid out-of-pocket by the insured before coverage starts
- Limit: Max amount payable by the insurer for a loss
- Subrogation: Insurer recovering costs from a third party
- Moral Hazard: Risk due to insureds behavior post-insurance
- Adverse Selection: High-risk individuals more likely to buy insurance

Interview Quick Tips

- Segment risk by geography, product, and policy type
- Explain impacts of inflation, catastrophes on loss ratios
- Know use cases like fraud detection, pricing analysis
- Familiarity with Excel, SQL, Python, Tableau, actuarial tools (e.g., Emblem)