

Basic Training 6: Review and Proofreading, Reflection, and Glossary of Terms



A Program of The Actuarial Foundation

**Modeling the Future
Challenge**

The Modeling The Future Challenge

As part of the Scenario Phase of the MTFC, teams will be demonstrating and applying their mathematical analysis skills to a scenario response paper as well as identifying a potential project and writing a proposal. The Actuarial Process Guide to be an invaluable resource.

- [The Actuarial Process Guide](#)

How to Use this MTFC Writing and Review Scaffolding Guide

Teams have answered every question in the scenario response and completed the project proposal. This guide will help scaffold the process and guide participants through the process of writing and review in the MTFC Project Proposal. Each task refers to a specific section of The Actuarial Process Guide for more in-depth information.

Content: The process is scaffolded into 3 total tasks (review of scenario, review of proposal, preparing for the project phase).

Suggested pacing: Complete the tasks and reflection in the week leading up to submission of the MTFC Proposal.

Common Core Standards for Mathematical Practice

The [Common Core Standards for Mathematical Practice](#). The MTFC Project Proposal specifically addresses the following standards:

- ❑ CCSS.MATH.PRACTICE.MP1 **Make sense of problems and persevere in solving them.**
- ❑ CCSS.MATH.PRACTICE.MP2 **Reason abstractly and quantitatively.**
- ❑ CCSS.MATH.PRACTICE.MP3 **Construct viable arguments and critique the reasoning of others.**
- ❑ CCSS.MATH.PRACTICE.MP4 **Model with mathematics.**

6.1 Reviewing and Proofreading the Scenario & Project Proposal

After weeks of engaging in the scenario and project proposal, submission is now just around the corner! Before your team submits, know that the writing and clarity of communication is just as key to the evaluation process as the correctness of your mathematical reasoning. Reviewing and proofreading your submissions could be the difference between moving to the next phase or wrapping up your MTFC participation for the year.

- **Proofread the response!**
 - The responses to the scenarios have likely been written in different sessions over multiple days or weeks and often by different team members. Proofreading and making sure that all responses are free of grammatical, spelling and punctuation errors while also accurate and coherent is an essential step before submission.
 - Since responses are written by multiple team members, discuss and agree on person (first, third) and voice (active over passive) to increase the readability of responses and coherency overall.
 - **Scenario response proofreading:**
 - Every team member should check a response they did not initially work on for mathematical accuracy and that the response is written in clear and concise language free of linguistic errors.
 - Each team member should independently read through the scenario response one final time before submitting.
 - **Project Proposal proofreading:**
 - In addition to the proofreading suggestions for the scenario response, one strategy after individual sections are checked is to proofread the proposal backwards a sentence at a time bring attention and focus to technical aspects of the proposal instead of overall content for that read-through.
- **Review guidelines one last time!**
 - Review the guidelines for the scenario and proposal submissions to ensure that your team has answered every question of the scenario and addressed every section requirement of the proposal.
 - Edit and check word counts!
 - Make sure that your submissions are free of any identifying information for your team (no names, school/affiliation, location, etc.) and that only your Team number is identifying.
 - Self-score your submission using the rubric.
- **Reflect!**
 - How did your team function and operate together?
 - Did your team discuss and assign roles in the scenario phase? If your team qualifies for the Project Phase, would roles be fruitful?
 - What went well? What did not go well? What did you learn from this process?
 - Where can you see the skills used while participating in the Scenario Phase to transcend to other courses, skills, or future career opportunities you are considering?



6.2 Preparing for Project Phase

Now that your team has submitted your Scenario Response and Project Proposal, there will be a short waiting period and reprieve before the semi-finalist announcement of qualifying teams for the Project Phase.

Assuming that your team is moving on to the project phase - what should you do in the meantime?

- Begin preparing to meet with the actuarial mentor by identifying questions you have regarding how to approach the project phase, actuarial work in general, and ensuring that each team member can articulate the main points of the project proposal.
- There will be several weeks between submission and when the project phase officially begins - with everything going on, it will be easy to forget the momentum and strides you have made here in the last few weeks on the proposal.
 - Record where research and driving questions had led you.
 - Organize your project proposal research and plan into a shared document.
- Watch for updates about the Semi-Finalist announcement webinar!
- Review the Glossary of Insurance and Risk Analysis Terms and Concepts as many of those terms will come into play with your project phase research.

Glossary of Insurance and Risk Analysis Terms and Concepts

- **Adverse Selection:** when sellers have information that buyers do not have, or vice versa, about some aspect of product quality. It is thus the tendency of those more likely to need the insurance to purchase a policy insurance and the chances are greater they will collect on it.
- **Claim:** A demand by customer for payment for a covered item in an insurance contract.
- **Co-pay:** a percentage of the claim that must be paid by the policy holder.
- **Combined Ratio:** a measure of the expenses of an insurance company (ie, dividends, losses - the money flowing out of the insurance company) and is computed by dividing all incurred losses and expenses by the total premiums. Losses are a measure of the insurer's discipline in underwriting policies (receiving payment or remuneration for the willingness to cover a potential risk).
 - combined ratio = $\frac{\text{sum}(\text{incurred losses \& expenses})}{\text{total earned premiums}}$
 - Note: a combined ratio below 100% means the company is making underwriting profit while a ratio above 100% means they are taking a loss in their underwriting policies. The lower the combined ratio, the better for the insurance company.
- **Deductible:** An amount that must be paid before insurance begins claim payment.
- **Exclusion:** Part of an insurance contract that removes coverage in specific cases.
- **Exposure:** risk of possible loss.
- **Frequency:** The expected number of losses per exposure. (How often will it happen)
- **Indemnity** - compensation payments to one party by the other for the loss occurred.
- **Insurance:** an economic device transferring risk from an individual to a company and reducing the uncertainty of risk via pooling.
- **Loss Cost or Loss Payment:** The amount of money (per exposure) to cover the cost of loss and settlement.
- **Loss ratio:** computed by dividing the total incurred losses by the total premium. The lower the ratio, the more profitable for the insurance company. A loss ratio above 100% would mean that the insurance company is *unprofitable* since the amount paid out for losses is greater than has been paid in by the policyholder.
 - loss ratio = $\frac{\text{total incurred losses}}{\text{total premium}}$
- **Premium:** The amount charged to the insured to cover all future expected costs and profit (an amount paid for an insurance policy).
- **Risk:** Measure of the probability and severity of an adverse effect to life, health, property, or the environment. Quantitatively, Risk = Hazard × Potential Worth of Loss. This can be also expressed as "Probability of an adverse event times the consequences if the event occurs".
- **Risk assessment:** The process of making a decision recommendation on whether existing risks are tolerable and present risk control measures are adequate, and if not, whether alternative risk control measures are justified or will be implemented. Risk assessment incorporates the risk analysis and risk



evaluation phases. The insurance goal of conducting a risk assessment would be to properly calculate the correct premium.

- identify the hazards
- decide who might be harmed and how
- evaluate the risks and decide on precautionary measures
- record findings and implement them
- **Risk evaluation:** The stage at which values and judgement enter the decision process, explicitly or implicitly, by including consideration of the importance of the estimated risks and the associated social, environmental, and economic consequences, in order to identify a range of alternatives for managing the risks.
- **Risk management:** The systematic application of management policies, procedures and practices to the tasks of identifying, analyzing, assessing, mitigating and monitoring risk.
- **Risk mitigation:** A selective application of appropriate techniques and management principles to reduce either likelihood of an occurrence or its adverse consequences, or both.
- **Sensitivity analysis:** An analysis to determine the range over which the result varies, given unit change in one or more input parameters.
- **Severity:** The expected amount of loss per claim. (How much will it cost)
- **Ultimate Losses:** The final amount necessary to pay all valid claims.
- **Uncertainty:** Describes any situation without certainty, whether or not described by a probability distribution. Uncertainty is caused by natural variation and/or incomplete knowledge (lack of understanding or insufficient data). In the context of structural safety, uncertainty can be attributed to (i) aleatory uncertainty: inherent variability in natural properties and events, and (ii) epistemic uncertainty: incomplete knowledge of parameters and the relationships between input and output values.
- **Vulnerability:** The degree of loss to a given element or set of elements within the area affected by a hazard. It is expressed on a scale of 0 (no loss) to 1 (total loss).

These are a few of the key terms that may be valuable when introducing insurance and risk analysis to your students.

For a more complete list of insurance related terms see the Glossary of Terms from the National Association of Insurance Commissioners here : https://www.naic.org/consumer_glossary.htm

For a more complete list of Risk Analysis terms see the glossary of the society for risk analysis here: https://www.sra.org/sites/default/files/pdf/SRA_glossary_20150622.pdf