Formula for Post-2020 Standard Scoring Formula

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1   Definition of Terms

- Raw exam score: X

- Minimum exam score: X_0

- Number of questions: N_q

- Number of response options: N_o

- Score expected by guessing alone:

$$X_g = \frac{N_q}{N_o}$$

- Latent knowledge score

$$K = \frac{X - X_g}{N_q - X_g}$$

- Knowledge score required to pass the exam: K_p

2   Grade Calculation

$$Grade = \begin{cases} X_0 + \frac{K(5.5 - X_0)}{K_p}, & \text{if } K < K_p \\ 5.5 + \left[\frac{K - K_p}{1 - K_p}\right] \times 4.5, & \text{otherwise} \end{cases}$$