

Grading Criteria MMT2026

Senior League

Problem 1

10 points for each of parts (a) and (b).

Part (a): 5 points for a correct solution and 5 points for proving optimality.

Part (b): The same criteria apply.

Problem 2

10 points for each of parts (a), (b), and (c).

Part (a): Full marks for making an assumption about the shape of the walls and calculating or estimating the amount of heat.

Part (b): 5 points for choosing an appropriate model and 5 points for calculating or estimating the amount of heat.

Part (c): 5 points for choosing an appropriate model of the processes involved and 5 points for any valid approach that produces a numerical calculation or estimate.

Problem 3

15 points for part (a) and 35 points for part (b).

Part (a): Full marks for a correct calculation and proper application of the law of conservation of mass (using the mass flow rate equation).

Part (b): 10 points for choosing an appropriate model describing how the air's swirl changes, 10 points for applying Bernoulli's equation, and 15 points for obtaining and justifying an estimate of the allowable increase in radius.