

Category I: The Math Modelling category requires students to answer ALL questions allocated to their category for their submission to be considered valid:

- **Junior: Form 1 – 3 (Secondary School)**

1. How can we strategically position three ambulances to maximize the number of residents reached within an 8-minute window? Is it feasible to ensure complete coverage, and if not, what is the extent of the population left uncovered?
2. With just two ambulances available, due to one being reserved for emergency calls, what is the optimal placement to ensure the highest coverage within an 8-minute response time? Is full coverage possible, and if not, what's the population gap?

- **Intermediate: Form 4 – 5 (Secondary School)**

1. How can we strategically position three ambulances to maximize the number of residents reached within an 8-minute window? Is it feasible to ensure complete coverage, and if not, what is the extent of the population left uncovered?
2. With just two ambulances available, due to one being reserved for emergency calls, what's the optimal placement to ensure the highest coverage within an 8-minute response time? Is full coverage possible, and if not, what's the population gap?
3. With two ambulances unavailable, where is the best location for the remaining ambulance? Is comprehensive coverage attainable, and if not, how many people will remain without coverage?
4. In the event of a catastrophic incident involving residents from multiple zones, can the Ambulances effectively respond? What strategies can cities or counties employ to prepare for rare yet catastrophic events?

- **Senior: Form 6 (Secondary School)**

1. How can we strategically position three ambulances to maximize the number of residents reached within an 8-minute window? Is it feasible to ensure complete coverage, and if not, what is the extent of the population left uncovered?
2. With just two ambulances available due to one being reserved for emergency calls, what's the optimal placement to ensure the highest coverage within an 8-minute response time? Is full coverage possible, and if not, what's the population gap?
3. With two ambulances unavailable, where is the best location for the remaining ambulance? Is comprehensive coverage attainable, and if not, how many people will remain without coverage?
4. In the event of a catastrophic incident involving residents from multiple zones, can the Ambulances effectively respond? What strategies can cities or counties employ to prepare for rare yet catastrophic events?
5. In addition to the contest's format, create a concise 1-2 page non-technical memo outlining recommendations based on your model and analysis findings for the Ministry of Health.