## BRITISH COLUMBIA SECONDARY SCHOOL MATHEMATICS CONTEST, 2025

## Junior Final, Part A

## May 2, 2025

- 1. Michael wrote a test which has 20 problems. For each correctly solved problem 8 points were given. For each incorrectly solved problem 5 points were deducted. For each blank problem 0 points were given. How many problems had Michael attempted if he received 13 points?
  - (A) 11 (B) 13 (C) 7 (D) 16 (E) None of the above
- 2. A cargo train departed from a station at 9:00am. Later a passenger train departed from the same station at 11:00am. What distance from the station will the passenger train pass the cargo train if the speed of the cargo train is 54 km/hr and the speed of the passenger train is 72 km/hr?

(A) 156 (B) 283 (C) 432 (D) 516 (E) 371

3. The sum of 11 consecutive integers is 154. The largest of these integers is:

(A) 1	4 (B)	16	(C) 18	(D) 19	(E)	20
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4. "Scalene" triangles are triangles whose sides are all different lengths. Determine the number of possible scalene triangles having all sides of integral lengths, and perimeter less than 13.

(A) 1 (B) 2 (C) 3 (D) 4 (E) 18

5. Nicole and Adrienne just became friends with Harmony, and they want to know when her birthday is. Harmony gives them a list of twelve possible dates:

March 1, 26 May 18, 28 June 16, 18, 20 September 1, 16, 28 November 3, 18

Harmony then tells Nicole the month and Adrienne the day of her birthday. Nicole and Adrienne then have the following conversation:

Nicole: I don't know when Harmony's birthday is, but I know that Adrienne doesn't know either.

Adrienne: At first I didn't know when Harmony's birthday is, but I know now.

Nicole: I STILL DON'T know when Harmony's birthday is.

What month is Harmony's birthday?

	(A)	March	(B)	May	(C)	June	(D)	September	(E)	November
6.	Find	l the hundred	s digi	t of 2025 <sup>2025</sup> .						
	(A)	1	(B)	2	(C)	3	(D)	5	(E)	6

7. The number 2025 can be expressed as the sum of consecutive odd numbers starting from 1:

$$2025 = 1 + 3 + 5 + \dots + n.$$

Find *n*.

(A) 37 (B) 59 (C) 67 (D) 71 (E) 89

8. Given a cube (with corners *FGHIMJKL*), mid-points (*PQRSTU*) of six of the twelve edges of the cube are joined to form a regular hexagon. Find the ratio of the area of the hexagon to the surface area of the cube.



- (A)  $\sqrt{2}:4$  (B)  $\sqrt{2}:8$  (C)  $\sqrt{3}:4$  (D)  $\sqrt{3}:8$  (E)  $\sqrt{6}:12$
- 9. Fifteen tiles are arranged as shown. An ant walks along the edges of the tiles, always keeping a black tile on its left. The ant never traverses the same edge twice.



How many different routes could the ant take to get from A to B?

- (A) 8 (B) 4 (C) 2 (D) 10 (E) 6
- 10. A deck of 16 cards contains 4 Jacks, 4 Queens, 4 Kings, 4 Aces. I shuffle the deck and draw 2 cards at random. I then tell you (truthfully) that I have at least one ace. What is the probability that I have two aces?

(A) 
$$\frac{1}{5}$$
 (B)  $\frac{1}{6}$  (C)  $\frac{1}{9}$  (D)  $\frac{3}{16}$  (E)  $\frac{2}{15}$