BRITISH COLUMBIA SECONDARY SCHOOL MATHEMATICS CONTEST, 2025

Junior Preliminary

March 5, 2025

1. Suppose $d > e$, $b < e$, $c < a$, and $b > a$. The smallest of the values is:

   (A) a (B) b (C) c (D) d (E) e

2. Madame X left her entire estate to her daughter, her son, her dog, and her cat. Her daughter and son got half the estate, in a 4:3 ratio. Her dog got twice as much as her son. If the cat received $500, then the entire estate (in dollars) was worth:

   (A) 3500 (B) 5500 (C) 6500 (D) 7000 (E) 7500

3. A hiker is walking a trail. As she has walked 1 km and 1/2 of the remaining distance, she will still need to cover 1/3 of the entire distance and another 1 km to get to the finish. What is the total distance (in km) to be covered?

   (A) 4 (B) 9 (C) 8 (D) 11 (E) 5

4. In a Canadian history final exam, 48 students passed and 20% of those who wrote did not. How many took the history final?

   (A) 12 (B) 24 (C) 60 (D) 120 (E) Not a whole number

5. As the audience at the Globule Theatre waited for the production to begin, the leading lady, Lipstick Lil, was nowhere to be seen. The word was that she was in either dressing room 1, 2, or 3, so the stage manager went to look for her. Unfortunately, outside each door was a minder from the Attitude Security Company, rather disagreeable looking fellows, who refused to let anyone into the rooms they were guarding.

   "Where's Lipstick Lil?" the stage manager asked.

   "Room 1 or 3," said the minder at room 1.

   The stage manager went to room 2. "I am looking for the leading lady."

   "Room 2 or 3," said the minder.

   The minder of room 3 gave a more helpful response. "She's in room 1 or 2," he said. "But exactly two of us minders are habitual liars."

   If a habitual liar always lies, then in what room was the elusive Lipstick Lil?

   (A) room 1 (B) room 2 (C) room 3 (D) lack of info (E) inconsistent

6. The area of a trapezoidal field is 1400 square metres. The distance between the parallel sides is 50 metres. You want to find lengths of the parallel sides, if the number of metres in each base is a multiple of 8. The number of solutions (x, y) to this problem is:

   (A) none (B) one (C) two (D) three (E) four

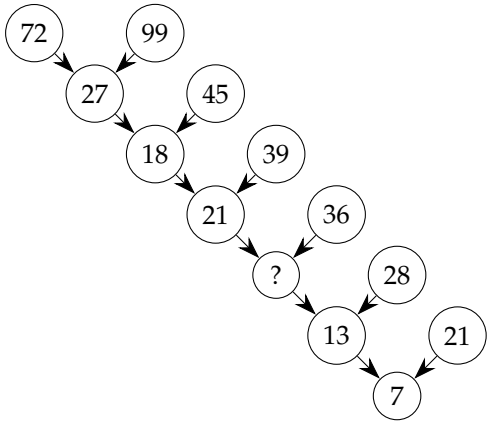
7. A and B together can do a job in 2 days. B and C can do it in 4 days, A and C can do it in $2\frac{2}{5}$ days. The number of days A would take to do it alone is:

   (A) 1 (B) 2.8 (C) 3 (D) 3.2 (E) 3.5

8. The number 23 initially is written on a blackboard. Each minute the current number is being erased and instead replaced by the product of its digits multiplied by 12. What number will be on the blackboard in an hour?

   (A) 10 to 100 (B) 101 to 500 (C) 501 to 1000 (D) at least 1001 (E) less than 10

9. Find the missing number in the following diagram to keep the pattern



   (A) 12 (B) 14 (C) 15 (D) 16 (E) 18

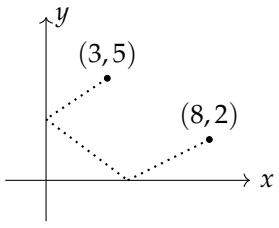
10. Michael and Erin measured the distance of 143 m by steps. Exactly 20 times their steps matched. Michael's step length is 65 cm. What is Erin's step length?

    (A) 55 cm (B) 50 cm (C) 52 cm (D) 45 cm (E) 44 cm

11. What is the remainder when the sum of all digits of 2025! is divided by 9?

    (A) 0 (B) 1 (C) 3 (D) 4 (E) 7

12. What is the shortest path between the points $(3,5)$ and $(8,2)$ that touches each axis exactly once? An example of such a path is illustrated below.



    (A) $\sqrt{90}$ (B) $\sqrt{110}$ (C) $\sqrt{130}$ (D) $\sqrt{150}$ (E) $\sqrt{170}$