

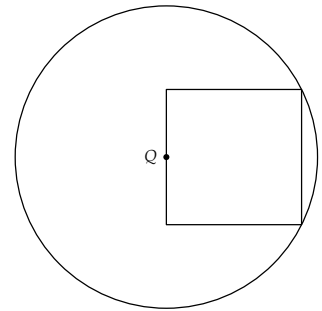
BRITISH COLUMBIA SECONDARY SCHOOL MATHEMATICS CONTEST, 2009

Junior Preliminary

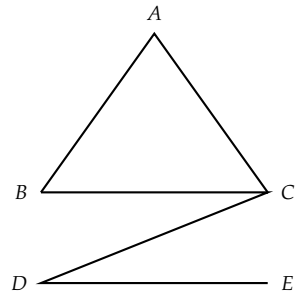
Wednesday March 4

*Dedicated to the memory of Jim Totten, the inspiration for
and co-founder of the BCSSMC*

- The value of $2009 + 200.9 + 20.09 + 2.009 + 0.2009$ is:
(A) 2231.3008 (B) 2232.108 (C) 2232.199 (D) 2231.2036 (E) 2232.1999
- Tickets can only be ordered in bundles of 6 or 10. The minimum number of ticket bundles that are required to purchase exactly 52 tickets is:
(A) 5 (B) 6 (C) 7 (D) 8 (E) 9
- Of the choices below the number that is less than its reciprocal is:
(A) -1 (B) 1 (C) -2 (D) 2 (E) $-\frac{1}{3}$
- If 80 is divided by the positive integer n , the remainder is 4. The remainder when 155 is divided by n is:
(A) 0 (B) 1 (C) 2 (D) 3 (E) 4
- Point Q is the centre of a circle with a radius of 25 centimetres. A square is constructed with two vertices on the circle and the side joining the other two vertices containing the centre Q . The area of the square, in square centimetres, is:
(A) 125 (B) $125\sqrt{5}$ (C) 500
(D) 250 (E) $250\sqrt{5}$



- If n is a positive integer, then $n! = n(n-1)(n-2)\cdots 2 \cdot 1$. For example, $6! = 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1$. The smallest positive integer that is not a divisor of $91!$ is:
(A) 101 (B) 97 (C) 95 (D) 93 (E) 92
- In the diagram, triangle ABC is isosceles with $\angle ABC = \angle ACB$, and $\angle ACD$ is a right angle. Line segment DE is parallel to BC and $\angle CDE = 25^\circ$. The measure of $\angle BAC$ is:
(A) 50° (B) 60° (C) 65°
(D) 90° (E) 115°
- You play a game in which two six-sided dice are rolled. You win if the product of the two numbers rolled is odd or a multiple of 5. The probability that you win is:
(A) $\frac{1}{2}$ (B) $\frac{19}{36}$ (C) $\frac{5}{12}$ (D) $\frac{7}{12}$ (E) $\frac{25}{36}$



9. Tina runs 12 metres in the same time that Mark runs 7.5 metres. One day they ran around a 400-metre circular track. They leave the starting line at the same time and run in opposite directions. At the instant when Tina completes her second lap, the distance, in metres, that Mark is from the starting line would be:

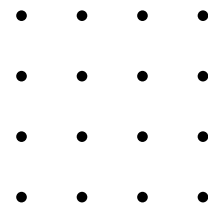
(A) 50 (B) 100 (C) 125 (D) 150 (E) 200

10. Given that a and b are digits from 1 to 9, the number of fractions of the form a/b , expressed in lowest terms, which are less than 1 is:

(A) 13 (B) 17 (C) 21 (D) 27 (E) 36

11. In the grid shown, the horizontal and vertical distance between adjacent dots is the same. The number of squares that can be formed for which all four vertices are dots in the grid is:

(A) 9 (B) 13 (C) 14
(D) 18 (E) 20



12. Two squares of side 1 are placed so that the centre of one square lies on a corner of the other, as shown in the diagram. The overlap of the two squares is shaded. The value of the shaded area is:

(A) $\frac{1}{4}$ (B) $\frac{1}{2\sqrt{2}}$ (C) $\frac{1}{2}$
(D) $\frac{1}{\sqrt{2}}$ (E) impossible to determine

