

BRITISH COLUMBIA COLLEGES

Junior High School Mathematics Contest, 2002

Final Round, Part A

May 3, 2002

- The sum of the largest and smallest numbers in the set $\left\{\frac{2}{5}, \frac{5}{12}, \frac{19}{45}, \frac{37}{90}\right\}$ is:
(a) $\frac{73}{90}$ (b) $\frac{147}{180}$ (c) $\frac{37}{45}$ (d) $\frac{149}{180}$ (e) $\frac{5}{6}$
- Antonino goes into the delicatessen to buy lunch for his math study group. He buys x drinks at \$2 per bottle and y submarine sandwiches at \$5 per sandwich. He spends a total of \$113. Everyone in the group, including Antonino, got exactly one drink and exactly one sandwich, but there were a few, less than 10, drinks left over. The number of people in the study group, including Antonino, is:
(a) 13 (b) 14 (c) 15 (d) 16 (e) 19
- The solution to the pair of equations $4x - y + 17 = 0$ and $3x + 2y - 1 = 0$ is also a solution to the equation $kx - 2y + 4 = 0$. The value of k is:
(a) -3 (b) -2 (c) 0 (d) 3 (e) 5
- If the remainder when the integer n is divided by 9 is 7, the remainder when $3n - 1$ is divided by 9 is:
(a) 1 (b) 2 (c) 3 (d) 4 (e) not necessarily one of these
- The angle between the minute hand and hour hand of a clock face at 2:25 is:
(a) 75° (b) 60° (c) 90° (d) 77.5° (e) 14.5°
- If each tire you buy for your car, which has four wheels, is good for exactly 120,000 km, the minimum number of tires you need to travel 180,000 km is:
(a) 5 (b) 6 (c) 7 (d) 8 (e) 9
- Consider the set of triangles whose sides have lengths c , $c + 3$, and $3c - 1$, where c is a positive integer. The number of possible values of c that will result in a triangle in this set having two or more equal sides is:
(a) 0 (b) 1 (c) 2 (d) 3 (e) more than 3
- If $\frac{x+y}{x-y} = \frac{5}{8}$, then the value of $\frac{x}{y}$ is:
(a) $-\frac{13}{3}$ (b) $-\frac{3}{13}$ (c) 1 (d) $\frac{3}{13}$ (e) $\frac{13}{3}$
- The maximum number of points of intersection of three circles and two lines in the same plane is:
(a) 13 (b) 15 (c) 18 (d) 19 (e) 20

10. Two candles of the same height are lit at the same time and both burn at a constant rate. The first is consumed in four hours, the second in three hours. The number of minutes after being lit when the height of the first candle is twice that of the second candle is:

(a) 36

(b) 48

(c) 90

(d) 120

(e) 144