



INSTITUTE OF MATHEMATICS EDUCATION

Junior Maths Olympiad (Higher Level)

Solution

Std.: VII and VIII

Time: 2 Hours

Date: 02.02.2025

Total Marks: 100

Q.1 240

Q.2 $p + q + r = 2$

Q.3 (i) $n(A \cap B) = 26$

(ii) $n(A \cup B) = 35$

(iii) $n(A \Delta B) = 9$

Q.5 $PE + PF = \frac{60}{13}$

Q.6 ${}^{100}C_3 - ({}^{12}C_1 \times {}^{86}C_2) = 15500$

Q.7 $K = 54$

Q.8 Pairs are (24, 450), (72, 150), (600, 18), (1800, 6) and (450, 24), (150, 72), (18, 600), (6, 1800)

Q.9 (0, 0), (-1, 0), (1, 0), (0, -1), (2, 1), (-2, 1)

Q.10 $m \angle PSR + m \angle QTR = 90^\circ$

Q.11 When $n = 35$, $k = 17$

Q.12 (i) $f(x) = \frac{1}{2} \left[\frac{x^3 - 2x^2 + x - 1}{x(x-1)} \right]$

When $n = 36$, $k = 35$

(ii) $f(2) = \frac{1}{4}$

