

2002 Edmonton Junior High Mathematics Contest

Part I: Multiple Choices

- The value of $2 \div \left(\frac{-1}{2}\right)^2 + (-2)^3$ is
 - 2
 - 0
 - 2
 - 4
- The last two digits of 49^{2001} are
 - 01
 - 49
 - 69
 - 81
- The sum $7^7 + 7^7 + 7^7 + 7^7 + 7^7 + 7^7 + 7^7$ is equal to
 - 8^7
 - 7^8
 - 49^7
 - 7^{49}
- The number of six-digit numbers consisting of three 1's, two 2's and a 3 is
 - 45
 - 50
 - 60
 - 70
- Nancy fed consecutive integers into her computer, starting from 1. After a while, she asked for the average of her inputs, and the computer printed $35\frac{5}{7}$. She did it by hand and got a different answer. Then she discovered that during input, one of the integers was inadvertently left out. This integer is
 - 10
 - 53
 - 56
 - 67
- For any numbers x and y , define $x \oplus y = x + y + xy - 1$ and $x \otimes y = a^2 + b^2 - ab$. The value of $3 \oplus (2 \otimes 4)$ is
 - 36
 - 42
 - 48
 - 50
- The price is first increased by $r\%$ and then reduced by $r\%$. If the final price is divided by the original price, the quotient is
 - 1
 - $1 - \frac{r}{10000}$
 - $1 + \frac{r^2}{10000}$
 - $1 - \frac{r^2}{10000}$

8. There is enough cabbage to last the goat x days and the rabbit y days. The number of days the cabbage will last both the goat and the rabbit is
- a) $\frac{1}{x+y}$ b) $\frac{1}{x} + \frac{1}{y}$ c) $\frac{xy}{x+y}$ d) $\frac{1}{xy}$
9. When Ace was as old as Bea is now, Bea was 10. When Bea is as old as Ace is now, Ace will be 25. In years, Ace is older than Bea by
- a) 5 b) 10 c) 15 d) none of these
10. If the number x satisfies $\frac{2}{x} - |x| = 1$, then the value of $\frac{2}{x} + |x|$ is
- a) -3 b) -1 c) 1 d) 3
11. The length of each side of a triangle is a positive integer and the sum of these three integers is odd. If the difference between two of them is 5, the smallest possible value of the third is
- a) 4 b) 6 c) 7 d) 8
12. The number of ways of dividing a regular hexagon into three identical pieces using three line segments is
- a) 1 b) 2 c) 3 d) infinite
13. The sum of the angles of a convex polygon is less than 2001° . The largest possible number of sides of this polygon is
- a) 11 b) 12 c) 13 d) 14
14. In triangle ABC, $AB = AC$. E is the point on AC such that BE is perpendicular to AC. F is the midpoint of AB. If $BE = EF$, then the measure of angle C is
- a) 65° b) 70° c) 75° d) 80°
15. D is a point on the side BC of triangle ABC. If $AC = 5$, $AD = 6$, $BD = 10$ and $CD = 5$, then the area of triangle ABC is
- a) 30 b) 36 c) 72 d) 125