1. In the year 2001, the United States will host the International Mathematical Olympiad. Let $I, M,$ and O be distinct positive integers such that the product $I \cdot M \cdot O = 2001$. What is the largest possible value of the sum $I + M + O$?

(A) 23 (B) 55 (C) 99 (D) 111 (E) 671

2. $2000(2000^{2000}) =$

(A) 2000^{2001} (B) 4000^{2000} (C) 2000^{4000}
(D) $4,000,000^{2000}$ (E) $2000^{4,000,000}$

3. Each day, Jenny ate 20% of the jellybeans that were in her jar at the beginning of that day. At the end of the second day, 32 remained. How many jellybeans were in the jar originally?

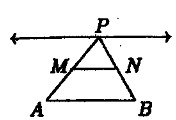
(A) 40 (B) 50 (C) 55 (D) 60 (E) 75

4. Chandra pays an on-line service provider a fixed monthly fee plus an hourly charge for connect time. Her December bill was \$12.48, but in January her bill was \$17.54 because she used twice as much connect time as in December. What is the fixed monthly fee?

(A) \$2.53 (B) \$5.06 (C) \$6.24 (D) \$7.42 (E) \$8.77

5. Points M and N are the midpoints of sides PA and PB of $\triangle PAB$. As P moves along a line that is parallel to side AB, how many of the four quantities listed below change?

(a) the length of the segment MN
(b) the perimeter of $\triangle PAB$
(c) the area of $\triangle PAB$
(d) the area of trapezoid $ABNM$

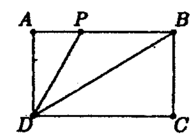


(A) 0 (B) 1 (C) 2 (D) 3 (E) 4

6. The Fibonacci sequence $1, 1, 2, 3, 5, 8, 13, 21, \ldots$ starts with two 1s, and each term afterwards is the sum of its two predecessors. Which one of the ten digits is the last to appear in the units position of a number in the Fibonacci sequence?

(A) 0 (B) 4 (C) 6 (D) 7 (E) 9

7. In rectangle $ABCD, AD = 1, P$ is on $\overline{AB}$, and $\overline{DB}$ and $\overline{DP}$ trisect $\angle ADC$. What is the perimeter of $\triangle BDP$?



(A) $3 + \frac{\sqrt{3}}{3}$ (B) $2 + \frac{4\sqrt{3}}{3}$ (C) $2 + 2\sqrt{2}$ (D) $\frac{3 + 3\sqrt{5}}{2}$ (E) $2 + \frac{5\sqrt{3}}{3}$

8. At Olympic High School, 2/5 of the freshmen and 4/5 of the sophomores took the AMC→10. Given that the number of freshmen and sophomore contestants was the same, which of the following must be true?

(A) There are five times as many sophomores as freshmen.
(B) There are twice as many sophomores as freshmen.
(C) There are as many freshmen as sophomores.
(D) There are twice as many freshmen as sophomores.
(E) There are five times as many freshmen as sophomores.

9. If $|x - 2| = p$, where $x < 2$, then $x - p =$

(A) -2 (B) 2 (C) $2 - 2p$ (D) $2p - 2$ (E) $|2p - 2|$

10. The sides of a triangle with positive area have lengths 4, 6, and x. The sides of a second triangle with positive area have lengths 4, 6, and y. What is the smallest positive number that is not a possible value of $|x - y|$?

(A) 2 (B) 4 (C) 6 (D) 8 (E) 10

11. Two different prime numbers between 4 and 18 are chosen. When their sum is subtracted from their product, which of the following numbers could be obtained?

(A) 21 (B) 60 (C) 119 (D) 180 (E) 231

12. Figures 0, 1, 2, and 3 consist of 1, 5, 13, and 25 nonoverlapping unit squares, respectively. If the pattern were continued, how many nonoverlapping unit squares would there be in figure 100?

(A) 10401 (B) 19801 (C) 20201 (D) 39801 (E) 40801

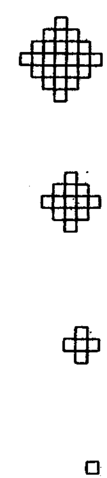
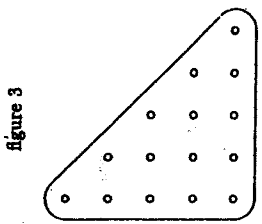


figure 0 figure 1 figure 2 figure 3

13. There are 5 yellow pegs, 4 red pegs, 3 green pegs, 2 blue pegs, and 1 orange peg to be placed on a triangular peg board. In how many ways can the pegs be placed so that no (horizontal) row or (vertical) column contains two pegs of the same color?



(A) 0 (B) 1 (C) $5! \cdot 4! \cdot 3! \cdot 2! \cdot 1!$
(D) $15!/(5! \cdot 4! \cdot 3! \cdot 2! \cdot 1!)$ (E) $15!$