1. Ernie can mow half of his lawn in three quarters of an hour. How many minutes will it take for him to mow two-thirds of his lawn at this rate?

(A) 50 (B) 60 (C) 75 (D) 90 (E) 120

2. Two coplanar circles intersect such that the area of their intersection is half the area of the smaller circle, and two-ninths the area of the larger circle. What is the ratio of the diameter of the smaller circle to the diameter of the larger one?

(A) $\frac{2}{3}$ (B) $\frac{6}{11}$ (C) $\frac{4}{9}$ (D) $\frac{\sqrt{66}}{11}$ (E) $\frac{\sqrt{14}}{7}$

3. What is the units digit of 2010 when it is written in base 9?

(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

4. The first term of an arithmetic sequence is 7. One of the terms in the sequence is 84, and the last term in the sequence is 139. If the terms of the sequence are non-consecutive integers, how many terms are in the sequence?

(A) 7 (B) 11 (C) 12 (D) 13 (E) 15

5. An equilateral triangle has the property that the number of centimeters in its perimeter and the number of square centimeters in its area are equal. How many centimeters are in the length of the triangle's altitude?

(A) 3 (B) $2\sqrt{3}$ (C) $3\sqrt{3}$ (D) 6 (E) 12

6. Simplify $206^2 - 194^2$.

(A) 3200 (B) 3600 (C) 4000 (D) 4400 (E) 4800

7. A football team has 33 players whose jerseys are numbered to form a sequence of 33 consecutive integers. At practice one day, the 3 players who wear the smallest jersey numbers form a group, and the 30 remaining players form 15 pairs so that the sum of the jersey numbers in each pair is the same as the sum of the three smallest jersey numbers. What is the sum of all 33 jersey numbers?

(A) 561 (B) 1056 (C) 1320 (D) 1536 (E) 1584

8. For a set of 10 numbers, removing the largest number decreases the mean by 1. Removing the smallest number increases the mean by 2. What is the positive difference between the largest and the smallest of these ten numbers?

(A) 9 (B) 18 (C) 27 (D) 30 (E) 36

9. Aribah writes 5 positive integers whose sum is 19. Betsy writes 6 positive integers whose sum is 19. What is the positive difference between the greatest possible product of Aribah's 5 integers and the greatest possible product of Betsy's 6 integers?

(A) 163 (B) 204 (C) 214 (D) 297 (E) 405

10. If $x\%$ more than y is 70, and $y\%$ more than x is 60, find $y - x$.

(A) 5 (B) 10 (C) 20 (D) 25 (E) 50

11. In a board game, on each turn you are allowed to move either 5 squares forward, 13 squares forward, or 1 square backwards. What is the fewest number of moves it will take for you to move from the 3rd to the 50th square?

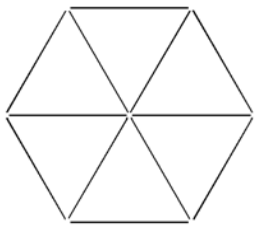
(A) 5 (B) 6 (C) 7 (D) 8 (E) 9

12. What is the number of square units in the area of the quadrilateral in the first quadrant of the Cartesian plane bounded by the equations $y = 8 - x$, $y = 2x - 10$, and both coordinate axis?

(A) 29 (B) 30 (C) 31 (D) 32 (E) 33

13. Twelve toothpicks are arranged as shown, with their endpoints at the vertices of six equilateral triangles arranged to form a regular hexagon. Three of the toothpicks are selected at random. What is the probability that no two of the selected toothpicks share a vertex?

(A) $\frac{9}{220}$ (B) $\frac{7}{110}$ (C) $\frac{1}{15}$ (D) $\frac{14}{165}$ (E) $\frac{1}{11}$



14. AB and CD are chords of circle O which intersect at X such that $AX = 3$, $CX = 4$, $AC = 5$, and $BX = 8$. The area of circle O can be expressed $\frac{a}{b}\pi$ square units, where $\frac{a}{b}$ is a common fraction in simplest form. Find $a + b$.

(A) 61 (B) 63 (C) 94 (D) 125 (E) 129

15. How many of the distinct arrangements of the nine letters below include the word "TEN"? The arrangement given is one such arrangement.

TWENTYTEN

(A) 2400 (B) 2460 (C) 2520 (D) 4980 (E) 5040

1. B
2. A
3. B
4. D
5. D
6. E
7. E
8. C
9. B
10. B
11. C
12. A
13. E
14. E
15. B