1 / 10

1989 Q16

16. In how many ways can 47 be written as the sum of two primes?

A) 0 B) 1 C) 2 D) 3 E) more than 3

2 / 10

1986 Q17

17. Let o be an odd whole number and let n be any whole number. Which of the following statements about the whole number $(o^2 + no)$ is always true?

A) it is always odd B) it is always even

C) it is even only if n is even D) it is odd only if n is odd

E) it is odd only if n is even

3 / 10

2009 Q17

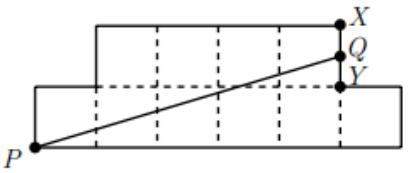
17. The positive integers x and y are the two smallest positive integers for which the product of 360 and x is a square and the product of 360 and y is a cube. What is the sum of x and y?

(A) 80 **(B)** 85 **(C)** 115 **(D)** 165 **(E)** 610

4 / 10

2010 Q17

17. The diagram shows an octagon consisting of 10 unit squares. The portion below $\overline{PQ}$ is a unit square and a triangle with base 5. If $\overline{PQ}$ bisects the area of the octagon, what is the ratio $\frac{XQ}{QY}$?



(A) $\frac{2}{5}$ **(B)** $\frac{1}{2}$ **(C)** $\frac{3}{5}$ **(D)** $\frac{2}{3}$ **(E)** $\frac{3}{4}$

5 / 10

2011 Q17

17. Let w, x, y, and z be whole numbers. If $2^w \cdot 3^x \cdot 5^y \cdot 7^z = 588$, then what does $2w + 3x + 5y + 7z$ equal?

(A) 21 **(B)** 25 **(C)** 27 **(D)** 35 **(E)** 56

6 / 10

2005 Q18

18. How many three-digit numbers are divisible by 13?

(A) 7 **(B)** 67 **(C)** 69 **(D)** 76 **(E)** 77

7 / 10

2004 Q18

18. Five friends compete in a dart-throwing contest. Each one has two darts to throw at the same circular target, and each individual's score is the sum of the scores in the target regions that are hit. The scores for the target regions are the whole numbers 1 through 10. Each throw hits the target in a region with a different value. The scores are: Alice 16 points, Ben 4 points, Cindy 7 points, Dave 11 points, and Ellen 17 points. Who hits the region worth 6 points?

(A) Alice **(B)** Ben **(C)** Cindy **(D)** Dave **(E)** Ellen

8 / 10

2007 Q18

18. The product of the two 99-digit numbers

$$303{,}030{,}303{,}\ldots{,}030{,}303 \quad \text{and} \quad 505{,}050{,}505{,}\ldots{,}050{,}505$$

has thousands digit A and units digit B. What is the sum of A and B?

(A) 3 **(B)** 5 **(C)** 6 **(D)** 8 **(E)** 10

9 / 10

2012 Q18

18. What is the smallest positive integer that is neither prime nor square and that has no prime factor less than 50?

(A) 3127 **(B)** 3133 **(C)** 3137 **(D)** 3139 **(E)** 3149

10 / 10

2004 Q19

19. A whole number larger than 2 leaves a remainder of 2 when divided by each of the numbers 3, 4, 5 and 6. The smallest such number lies between which two numbers?

(A) 40 and 49 **(B)** 60 and 79 **(C)** 100 and 129 **(D)** 210 and 249
(E) 320 and 369