

Category 2 Number Properties

1. If k is a positive integer and if the numeral in the decimal system that represents the product $60k$ contains only the digits 0 and 2, what is the least possible value of $60k$?
(A) 220
(B) 2,020
(C) 2,220
(D) 20,020
(E) 20,220

2. There are between 100 and 110 cards in a collection of cards. If they are counted out 3 at a time, there are 2 left over, but if they are counted out 4 at a time, there is 1 left over. How many cards are in the collection?
(A) 101
(B) 103
(C) 106
(D) 107
(E) 109

3. A necklace is made by stringing N individual beads together in the repeating pattern red bead, green bead, white bead, blue bead, and yellow bead. If the necklace design begins with a red bead and ends with a white bead, then N could equal
(A) 16
(B) 32
(C) 41
(D) 54
(E) 68

4. Mary Lou has 969 dimes in a piggy bank. What is the least number of dimes that she can remove from the bank so that she could divide the remaining dimes equally among 7 people?
- (A) 2
(B) 3
(C) 4
(D) 5
(E) 6
5. Which of the following integers equals the product of two prime numbers?
- (A) 19
(B) 27
(C) 30
(D) 41
(E) 58
6. What is the smallest positive integer by which 126 can be multiplied so that the product is the square of an integer?
- (A) 4
(B) 7
(C) 9
(D) 14
(E) 126

7. The sum of three consecutive odd integers, x , y , and z , in ascending order, is 39. What is the sum of the three consecutive odd integers that immediately follow z ?
- (A) 78
(B) 57
(C) 48
(D) 45
(E) 42
8. If the average (arithmetic mean) of x , y , and z is an even integer, then $x + y + z$ could be
- (A) 15
(B) 16
(C) 18
(D) 20
(E) 21
9. The number $\frac{3}{4}$ is what fraction of its reciprocal?
- (A) $\frac{9}{16}$
(B) $\frac{3}{4}$
(C) 1
(D) $\frac{4}{3}$
(E) $\frac{16}{9}$

10. If $0 < n < 1$, which of the following must be greater than 1?

- (A) $\frac{3n}{2}$
- (B) $\frac{n}{1-n}$
- (C) $\frac{n}{n^2 + 1}$
- (D) $\frac{n}{1+n}$
- (E) $\frac{3}{n+2}$

11. For how many of the integers from 10 to 99 is at least one of the two digits a 4?

- (A) 9
- (B) 10
- (C) 18
- (D) 19
- (E) 20

12. The series of numbers 3, 4, and 5 has the property that the square of the greatest number is equal to the sum of the squares of the other two numbers. Which of the following series of numbers does NOT have this property?

- (A) 0.6, 0.8, 1.0
- (B) $\frac{3}{8}, \frac{1}{2}, \frac{5}{8}$
- (C) $3\sqrt{2}, 4\sqrt{2}, 5\sqrt{2}$
- (D) $\sqrt{3}, \sqrt{4}, \sqrt{5}$
- (E) 1.5, 2, 2.5

STOP



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1. If k is a positive integer and if the numeral in the decimal system that represents the product $60k$ contains only the digits 0 and 2, what is the least possible value of $60k$?

- (A) 220
(B) 2,020
(C) 2,220
(D) 20,020
(E) 20,220

k 가 $60k$ ($60 \times k$) 0 2 가 , 가 $60k$
가
가

▶▶ (C) ▶▶

2. There are between 100 and 110 cards in a collection of cards. If they are counted out 3 at a time, there are 2 left over, but if they are counted out 4 at a time, there is 1 left over. How many cards are in the collection?

- (A) 101 (B) 103 (C) 106 (D) 107 (E) 109

100 ~ 110 가 3 가 2 ,
4 가 1 가
100 110 3 2가 101,104,107,110 . 4
1 101

▶▶ (A) ▶▶

3. A necklace is made by stringing N individual beads together in the repeating pattern red bead, green bead, white bead, blue bead, and yellow bead. If the necklace design begins with a red bead and ends with a white bead, then N could equal

(A) 16
 (B) 32
 (C) 41
 (D) 54
 (E) 68

N

N

5

가

3

5

3

▶▶ (E) . ▶▶

4. Mary Lou has 969 dimes in a piggy bank. What is the least number of dimes that she can remove from the bank so that she could divide the remaining dimes equally among 7 people?

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

969

10cent

7

가

969

7

. 969

7

966

3

966 가

7

가

▶▶ (B) . ▶▶

5. Which of the following integers equals the product of two prime numbers?

- (A) 19 (B) 27 (C) 30 (D) 41 (E) 58

가
2
가
30, 58
2
가
..
가 가 !
<< >>
가 2
가 가 !
» (E) . »

6. What is the smallest positive integer by which 126 can be multiplied so that the product is the square of an integer?

- (A) 4
(B) 7
(C) 9
(D) 14
(E) 126

126
126
 $2 \times 3^2 \times 7$
14
 $42^2 (= 2^2 \times 3^2 \times 7^2)$
» (D) . »

7. The sum of three consecutive odd integers, x , y , and z , in ascending order, is 39. What is the sum of the three consecutive odd integers that immediately follow z ?

- (A) 78 (B) 57 (C) 48 (D) 45 (E) 42

x, y, z 39 , z 3
.
 $a-2, a, a+2$. $3a = 39$
 $z = 15$. z 3 17, 19, 21 .
» (B) . »

8. If the average (arithmetic mean) of x , y , and z is an even integer, then $x + y + z$ could be ?

- (A) 15
- (B) 16
- ☒ (C) 18
- (D) 20
- (E) 21

x, y, z , $\frac{x+y+z}{3} = \text{even}$ x, y, z 3
 가 . 18 .

▶▶ (C) . ▶▶

9. The number $\frac{3}{4}$ is what fraction of its reciprocal?

- ☒ (A) $\frac{9}{16}$
- (B) $\frac{3}{4}$
- (C) 1
- (D) $\frac{4}{3}$
- (E) $\frac{16}{9}$

$\frac{3}{4}$ $\frac{3}{4}$ $\frac{4}{3}$.
 $\frac{3}{4} \div \frac{4}{3} = \frac{9}{16}$

▶▶ (A) . ▶▶

10. If $0 < n < 1$, which of the following must be greater than 1?

- (A) $\frac{3n}{2}$ (B) $\frac{n}{1-n}$ (C) $\frac{n}{n^2+1}$ (D) $\frac{n}{1+n}$ (E) $\frac{3}{n+2}$

n 1 0 , 1 가 . n 1
가 n 1 가 n .

(1) n $\frac{2}{3} < n < 1$ 1 가 .

(2) n $1/\left(\frac{1}{n}-1\right)$. n

$1/\left(\frac{1}{n}-1\right)$ 1 $(n=\frac{2}{3})$ $(n=\frac{1}{3})$.

(3) n $1/n + \frac{1}{n}$. $\frac{1}{n} > 1$ $1/n + \frac{1}{n}$

1 .

(4) n $1/\frac{1}{n} + 1$. $\frac{1}{n} > 1$ $1/\frac{1}{n} + 1$

1 .

(5) n 1 $(n+2)$ (3) .

1 .

» (E) . »

11. For how many of the integers from 10 to 99 is at least one of the two digits a 4?

- (A) 9
(B) 10
(C) 18
(D) 19
(E) 20

10 99 4 가
. 40~49 10 , 14,24,34,...94 8 (44) 18 가 .

» (C) . »

12. The series of numbers 3, 4, and 5 has the property that the square of the greatest number is equal to the sum of the squares of the other two numbers. Which of the following series of numbers does NOT have this property?

(A) 0.6, 0.8, 1.0

(B) $\frac{3}{8}, \frac{1}{2}, \frac{5}{8}$

(C) $3\sqrt{2}, 4\sqrt{2}, 5\sqrt{2}$

(D) $\sqrt{3}, \sqrt{4}, \sqrt{5}$

(E) 1.5, 2, 2.5

3, 4, 5 가 (5) (3, 4)
가 .
3, 4, 5 .
(A) 0.2 3, 4, 5 .
(B) 8 3, 4, 5 .
(D) 가 .
» (D) . »

GRE

. 가 가 .
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