

1. [Combinatorics, 3 Points]

Two dice are rolled, and their numbers are multiplied.
How many cases are there that the product is prime?



- A) 3 B) 4 C) 5 D) 6 E) 9

2. [Algebra, 3 Points]

Evaluate the given expression.

$$(9.5 + 4.5)^2 - 4 \cdot (9.5) \cdot (4.5)$$

- A) 4 B) 9 C) 16 D) 25 E) 36

3. [Number Theory, 3 Points]

When 313 is divided by the number x , the quotient is 18 and the remainder is y .
What is $x + y$?

- A) 17 B) 23 C) 24 D) 27 E) 33

4. [Geometry, 3 Points]

Which of the following is formed when a right triangle is rotated about one of its legs?

- A) pyramid B) rectangular prism C) cone D) cylinder E) cube

5. [Algebra, 5 Points]

Robert is 22 years younger than his mother and 25 years younger than his father.
His father will be 67 years old when he will be his mother's present age.
How old is Robert?

- A) 19 B) 20 C) 22 D) 24 E) 25



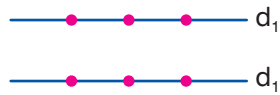
6. [Number Theory, 5 Points]

The product of the digits a four-digit number is 100.
Which of the following **must be** one of its digits?

- A) 0 B) 1 C) 2 D) 4 E) 5

7. [Combinatorics, 5 Points]

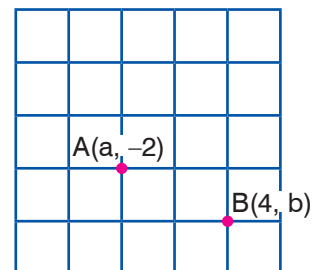
There are three points on each lines d_1 and d_2 .
How many different triangles can be drawn using any three of these points as vertices?



- A) 6 B) 9 C) 12 D) 15 E) 18

8. [Geometry, 5 Points]

Given the figure, points $A(a, -2)$ and $B(4, b)$ are in the coordinate plane.
What is $a + b$?



- A) 1 B) 0 C) -1 D) 2 E) 3

9. [Number Theory, 7 Points]

$x - y$, y , and $x + y$ are three consecutive integers in increasing order.
What is the value of $x \cdot y$?

- A) 1 B) 2 C) 3 D) 4 E) 5

10. [Algebra, 7 Points]

The difference of two numbers that are equidistant from 5 on the number line is 5.
What is the product of these two numbers?

- A) $\frac{75}{2}$ B) $\frac{5}{2}$ C) $\frac{15}{2}$ D) $\frac{75}{4}$ E) $\frac{25}{4}$