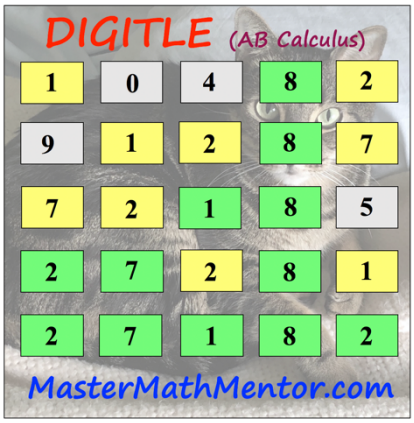
DIGITLE – SAT/ACT
Puzzle 515 – Coordinate Geometry



Directions: The first 5 problems have single digits answers. The 6th problem has a 5-digit answer (counting leading zeros if present). You have a choice: solve the easier single-digit answer problems or tackle the more difficult 5-digit answer. Once you have done that, attempt to solve the puzzle by entering the following url on your computer, tablet, or phone: https://mastermathmentor.com/mmm/digitle.ashx.
The correct puzzle answer will be the digits of your answer(s) scrambled. Use the following interpretation. You get 6 tries.

Green : the digit is in the answer and is in the correct spot.
Yellow: the digit is in the answer but is not in the correct spot.
Grey : the digit is not in the answer.

Single Digit Answers:

1) Given the equations $y = -x^2 + 4x - 7$ and $x^2 + y^2 = 16$, find the number of points of intersections.

2) Find the length of the diameter of the circle expressed by $x^2 + y^2 + 6x - 8y + 9 = 0$.

3) Given that the line $3y - 4x = 4$ passes through the points (2, *a*) and (*b*, –4) which are the endpoint of the diameter of a circle. If the center of the circle is (*c*, *d*), find the distance the center is from the origin.

4) Given the circle $x^2 - 8x + y^2 + 2y - 47 = 0$ and $y = k$, what is the positive value of *k* that gives only one solution to the system of equations?

5) Two lines intersect at the center of a circle: $x - 2y = 3$ and $3x + 2y = -7$. One endpoint of the diameter of the circle is $(-1, 2.5)$ if the circumference of the circle is expressed $k\pi$, find the value of *k*.

5-Digit Answer:

6) A circle with center (2, 3) and radius $\sqrt{\frac{2}{3}}$ is expressed in the form $Ax^2 + By^2 + Cx + Dy + E = 0$. Find the product *ABCDE*.