MB3 Beginner Diagnostic Test

1. Solve for x and y in the following system of equations:
   $$3x + 5y = 17$$
   $$x + 4y = 15$$

2. Olivia surveyed her math class on whether they like coffee or tea. All responded saying they liked at least one and 7 students said they liked both. If 15 students said they like coffee and there are 24 students in the class, how many liked tea?

3. Solve for the positive value of x in (x,1) in the equation $g(x) = 4x - 15$.

4. If there are 10 seats in the first row of a theater and each row after has 6 more seats than the previous row, how many seats are in the ninth row?

5. In a 30-60-90 triangle, what would the shorter and longer sides of the triangle be if the hypotenuse was 32 units.

6. Multiply $(6x - 7)(11x + 5)$.

7. Calculate the amount of money you would have if you deposited $145 in a bank account, compounded annually, for 4 years at an interest rate of 1.7%.

8. Find the distance between the points (10, 4) and (3, 7). Express your answer in simplest radical form.

9. (Calculator Allowed) If the measure of an arc is 288 degrees, what is the area of the sector if the radius is 5 in? Round to the nearest thousandth.

10. Oliver has to pick 5 numbers for his lottery ticket. If there are 10 possible numbers to choose from, how many possible combinations can he choose?

MB3 Beginner Diagnostic Answer Key

1. $x = -1, y = 4$

2. 16 students

3. $x = 4$

4. 58 seats

5. The short leg would be 16 units and the longer leg would be 16sqrt(3) units.

6. $66x^2-47x-35$

7. $155.11

8. sqrt(58) units

9. 62.832 in^2

10. 252 combinations