1. What is the remainder when 10! is divided by 11?

2. A standard six-faced die is rolled repeatedly until an even number appears on two consecutive rolls. What is the probability that the sequence of rolls includes two consecutive rolls that are odd? Express your answer as a common fraction.

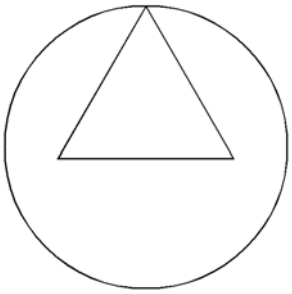
3. Five times the number of degrees in each exterior angle measure of a regular polygon is equal to twice its number of sides. How many sides does the regular polygon have?

4. Isosceles right triangle ABC is plotted on the coordinate plane with vertex A at (1,0), vertex B at $(7, 1)$, and vertex C at (x, y). What is the sum of all possible values of x?

5. Rory runs x miles at 8 miles per hour, then y miles at 12 miles per hour. If his average speed for the entire 15-mile run is 9 miles per hour, find x.

6. What is the sum of all of the distinct integers that are less than 1,000,000 and whose digits have a sum of 2?

7. An equilateral triangle with side length $2\sqrt{3}$ cm has one of its vertices on a circle as shown below. The distance from each of the remaining vertices to the nearest point on the circle is 1cm. Find the number of centimeters in the radius of the circle. Express your answer as a common fraction.



8. Consider the following sequence:

   1, 2, 4, 3, 6, 5, 10, 9, 8, 7, 14, 13, 12, 11, …

   The first two terms of this sequence are 1 and 2. Thereafter, if a term in the sequence is x, then the next term is either $x - 1$ or $2x$. If $x - 1$ has already appeared in the sequence, then the next term is $2x$. Otherwise, the next term is $x - 1$. For example, the next term after 11 is 22 because the number 10 has already appeared in the sequence, and the term after 22 is 21 because 21 has not already appeared in the sequence. What is the 2010^{th} term in this sequence?

1. 10
2. $1/2$
3. 30
4. 24
5. 10
6. 777777
7. $11/4$
8. 1571