D116 Quiz 1

Name: _____

1. An experiment with outcomes $\mathcal{O}_1$, $\mathcal{O}_2$, $\mathcal{O}_3$, $\mathcal{O}_4$ has an assignment of probabilities w_1, w_2, w_3, and w_4. Suppose that $\mathcal{O}_2$ is three times as likely as $\mathcal{O}_4$, $w_1 = 0.5$, and $w_3 = w_4$. Find w_2.
   Solution: For this type of problems, it might be convenient to draw a table:

w_1	w_2	w_3	w_4
0.5	$3x$	x	x

   Since $w_1 + w_2 + w_3 + w_4 = 1$, we have $0.5 + 3x + x + x = 1$, and so $5x = 0.5$, which gives $x = 0.1$. Therefore, $w_2 = 3x = 3(0.1) = 0.3$.

2. A conductor has 4 songs to conduct during a concert, and he can conduct them in any order. In how many ways can he organize a concert?
   Solution: We are selecting 4 songs from 4 songs in order. So the answer is

$$P(4, 4) = 4 \times 3 \times 2 \times 1 = 24 \text{ ways.}$$

♢ End of paper ♢