

Name:

Date:

1. **B**. The probability is  $1 - \frac{1}{2} - \frac{1}{3} = \frac{1}{6}$ .
2. **D**. We set a  $6 \times 6$  table and count the outcomes.

	1	2	3	4	5	6
1					x	
2					x	
3					x	
4					x	
5	x	x	x	x	x	x
6					x	

Thus, we have  $P = \frac{11}{36}$ .

3. **B**. We set a table and count the outcomes.

	1	2	3	4	5	6
1		x	x	x	x	x
2			x	x	x	x
3				x	x	x
4					x	x
5						x
6						

The probability is  $P = \frac{15}{36} = \frac{5}{12}$ .

4. **D**. The number of ways to select two cards is  $\binom{8}{2} = 28$ . There are 4 ways to select the same letter and  $2 \times \binom{4}{2} = 12$  ways to select the same color. The combined probability is  $\frac{4 + 12}{28} = \frac{4}{7}$ .
5. **D**. We set a 3-by-3 table to represent the two spinners.

	1	2	3
4	x	x	x
5		x	
6	x	x	x

The probability for an even number is  $P = \frac{7}{9}$ .

6. **E**. We can simply list the outcomes that satisfy the condition:

*HHHH, HHHT, HHTH, HTHH, THHH, HHTT, HTTH, TTHH, HTHT, THTH, THHT*

We have 11 cases so the probability is  $\boxed{\frac{11}{16}}$ .

Remark: We can also simplify the counting using case work. There are three cases: 0 tails, 1 tail, and 2 tails. There are  $\binom{4}{0} = 1$  ways for 0 tails. There are  $\binom{4}{1} = 4$  ways for 1 tail, and there are  $\binom{4}{2} = 6$  ways for 2 tails. So, there are  $1 + 4 + 6 = 11$  ways. The combined

probability is then  $P = \boxed{\frac{11}{16}}$ .

7.  $\boxed{\text{A}}$ . We use a  $8 \times 8$  table to solve this problem.

	1	2	3	4	5	6	7	8
1								
2								
3								
4								
5								x
6							x	x
7						x	x	x
8					x	x	x	x

The probability is  $P = \frac{10}{64} = \boxed{\frac{5}{32}}$ .

Remark: Since the number of cases are limited, we can also just list the desirable outcomes:

$(5, 8), (6, 7), (6, 8), (7, 6), (7, 7), (7, 8), (8, 5), (8, 6), (8, 7), (8, 8)$

8.  $\boxed{\text{C}}$ . We use a  $3 \times 4$  table for this problem.

	6	7	9
3		x	x
4	x		
5		x	x
8	x		

The probability is  $P = \frac{6}{12} = \boxed{\frac{1}{2}}$ .