## **Checkpoint 8A Solutions**

## 1) See below:

- a. {1,2,3,4,5,6}
- b. Yes. For example, if a 1 was rolled the first roll, it's not going to affect getting another 1 the second roll.

c.  $\frac{4}{6} = \frac{2}{3}$ 

- 2) See below:
  - a. There will be 36 outcomes. Here are a few images that represent the sample space.

		Second throw						
		1	2	3	4	5	6	
	1	(1,1)	(1,2)	(1,3)	(1,4)	(1,5)	(1,6)	
	2	(2,1)	(2, 2)	(2,3)	(2,4)	(2,5)	(2,6	
First	3	(3,1)	(3,2)	(3,3)	(3,4)	(3,5)	(3,6	
hrow	4	(4,1)	(4,2)	(4,3)	(4,4)	(4,5)	(4,6	
	5	(5,1)	(5,2)	(5,3)	(5,4)	(5,5)	(5,6	
	6	(6,1)	(6,2)	(6,3)	(6,4)	(6,5)	(6,6	
	First hrow	1 2 First 3 hrow 4 5 6	First 3 (3,1) hrow 4 (4,1) 5 (5,1) 6 (6,1)	First 3 (3,1) (3,2) hrow 4 (4,1) (4,2) 5 (5,1) (5,2) 6 (6,1) (6,2)	Second   1 2 3   2 (2,1) (2,2) (2,3)   hrow 4 (4,1) (4,2) (4,3)   5 (5,1) (5,2) (5,3)   6 (6,1) (6,2) (6,3)	Second throw   1 2 3 4   1 (1,1) (1,2) (1,3) (1,4)   2 (2,1) (2,2) (2,3) (2,4)   3 (3,1) (3,2) (3,3) (3,4)   hrow 4 (4,1) (4,2) (4,3) (4,4)   5 (5,1) (5,2) (5,3) (5,4) (6,1) (6,2) (6,3) (6,4)	Second throw   1 2 3 4 5   1 (1,1) (1,2) (1,3) (1,4) (1,5)   2 (2,1) (2,2) (2,3) (2,4) (2,5)   3 (3,1) (3,2) (3,3) (3,4) (3,5)   hrow 4 (4,1) (4,2) (4,3) (4,4) (4,5)   5 (5,1) (5,2) (5,3) (5,4) (5,5)   6 (6,1) (6,2) (6,3) (6,4) (6,5)	

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<b>E</b>		<b>B</b>		

- b.  $\frac{1}{36}$
- c.  $\frac{35}{36}$
- d.  $\frac{21}{36} = \frac{7}{12}$

e. 
$$\frac{3}{36} = \frac{1}{12}$$

f. 
$$\frac{1}{36}$$

- 3) Independent
- 4) Independent
- 5) Dependent
- 6) Yes they are independent because  $(0.64) \cdot (0.52) = 0.3328$ . Because it fits the formula  $P(A) \cdot P(B) = P(A \text{ and } B)$ , they are independent.

7) They are not independent because  $\left(\frac{24}{30}\right) \cdot \left(\frac{12}{30}\right) \neq \left(\frac{9}{30}\right)$ . For the events to be independent  $\left(\frac{24}{30}\right) \cdot \left(\frac{12}{30}\right)$ 

needed to be equal to  $\frac{9}{30}$ . The events need to fit the formula  $P(A) \cdot P(B) = P(A \text{ and } B)$  to be

- independent.
- 8) See below:
  - a. {red, green, green, green, blue, yellow}
  - $\frac{1}{6}$ b. c.  $\frac{3}{6} = \frac{1}{2}$ d.  $\frac{5}{6}$ e.  $\frac{5}{6}$

9)  $\frac{13}{30}$ 10)  $\frac{5}{12}$ 

11) The theoretical probability is  $\frac{2}{6} = \frac{1}{3}$ . The predicted number of multiples of 3 will be 20. The experimental probability might be the same but it doesn't have to be because it's an experiment.

However, there is more of a chance that it'll not be the same since it's an experiment.

12) See below:

a. 
$$\frac{5}{22}$$
  
b.  $\frac{1}{4}$ 

13) See below:

a. 
$$\frac{4}{12} = \frac{1}{3}$$
  
b.  $\frac{1}{4}$ 

14) By flipping the coin 10 times, the friend determined the experimental probability, not the theoretical probability. The theoretical probability of getting a heads is  $\frac{1}{2}$  because heads is one out of two outcomes of flipping a coin.