

# Math 10 Spring 2010 Quiz 1

Name: Key

April 2, 2010

1 (1) What is at the top of the main Math 10 webpage?

a quotation

3/part (2) (a) Find the probability that a red die and a green die rolled together show numbers that add to 7.

event:	16	6 outcomes
	25	
	34	36 total outcomes
	43	
	52	
	61	probability $\frac{6}{36} = \frac{1}{6}$

(b) Is the event in (a) independent from the event "the red die shows a 1"?

event A: sum is 7. event B: red shows 1

note: here the fact that prob B is also  $\frac{1}{6}$  is irrelevant.

approach 1:  
 prob A =  $\frac{1}{6}$   
 prob A given B: 6 outcomes in B  
 one of these gives A (green = 6)  
 so  $\frac{1}{6} = \text{prob A}$  so independent.

approach 2: prob B =  $\frac{1}{6}$   
 1 of the 6 outcomes in A has the red showing 1, so prob B given A =  $\frac{1}{6}$  also. Independent.  
 (in this case prob A =  $\frac{1}{6}$  is irrelevant)

(c) What is the probability that the red and green dice sum to 7 and the red die shows a 1?

approach 1: By (b), we can multiply prob A · prob B =  $\frac{1}{6} \cdot \frac{1}{6} = \frac{1}{36}$

approach 2: the only outcome in A ∩ B is red 1, green 6: prob  $\frac{1}{36}$