

Name: KEY Quiz Score: _____ /20**Quiz 4: Version A**

1. (14 points) Consider a three-sided die (with sides labeled "1," "2," and "3") and a four-sided die (with sides labeled "1," "2," "3," and "4"). The dice are tossed and we observe the number that comes up on each die.

(a) Consider the sample space S for this random experiment, where each outcome is an ordered pair of the form (t, f) where t is the number that comes up on the three-sided die and f is the number that comes up on the four-sided die

i. Write out the sample space S for this random experiment completely. Use set notation. (For your sanity and mine, write the set out in some systematic order.)

$$S = \{ (1,1), (1,2), (1,3), (1,4), \\ (2,1), (2,2), (2,3), (2,4), \\ (3,1), (3,2), (3,3), (3,4) \}$$

ii. Find $|S| = N. = 3 \cdot 4 = 12$

(b) Let E_5 be the event "roll a sum of five."

i. Write E_5 as a set. $E_5 = \{ (1,4), (2,3), (3,2) \}$

ii. Find $|E_5| = 3$

(c) Let E_{12} be the event "roll a sum of twelve."

i. Write E_{12} as a set. $E_{12} = \{ \}$

ii. Find $|E_{12}| = 0$

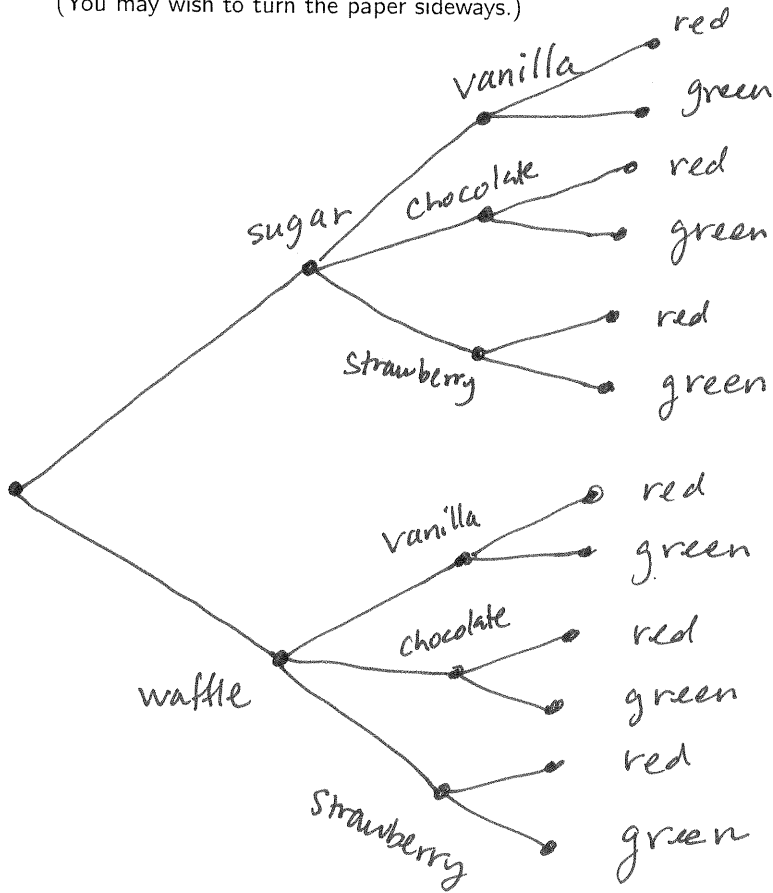
Continues on the reverse...

2. (6 pts) An ice cream shop offers two types of cones (sugar, waffle), three flavors of ice cream (vanilla, chocolate, strawberry), and two types of sprinkles (red, green).

(a) How many different desserts can you get, if each dessert consists of 1 cone, 1 scoop of ice cream, and 1 type of sprinkles?

$$2 \cdot 3 \cdot 2 = 12$$

(b) Draw the tree diagram where each path from the root to a leaf represents one of the desserts described above. (You may wish to turn the paper sideways.)



(note that there are 12 leaves = 12 desserts)