

Name: \_\_\_\_\_

Show work needed to justify your answer.

Date: \_\_\_\_\_

HW: # 32c: Math IBSL - Standard 30 - Venn Diagrams and Sample Spaces

5 points

- 2 Two tetrahedral dice, one blue and the other red, are each numbered 1 to 4. The two dice are rolled and the results noted.
- Draw a sample space diagram for this experiment.
  - Find the probability that:
    - the number on the red dice is greater than the number on the blue dice
    - the difference between the numbers of the dice is 1
    - the red dice shows an odd number and the blue dice shows an even number
    - the sum of the numbers on the dice is a prime number. **2, 3, 5, 7**

(a)

R \ B	1	2	3	4
1	(1,1)	(2,1)	(3,1)	(4,1)
2	(1,2)	(2,2)	(3,2)	(4,2)
3	(1,3)	(2,3)	(3,3)	(4,3)
4	(1,4)	(2,4)	(3,4)	(4,4)

b(i)  $P(R > B) = \frac{6}{16}$  or  $\boxed{\frac{3}{8}}$

(ii)  $P(\text{Diff} = 1) = \frac{6}{16}$  or  $\boxed{\frac{3}{8}}$

(iii)  $P(R = \text{odd And } B = \text{even}) = \frac{4}{16}$  or  $\boxed{\frac{1}{4}}$

(iv)  $P(\text{Prime Sum}) = \boxed{\frac{9}{16}}$

- 3 A box contains three cards bearing the numbers 1, 2, 3. A second box contains four cards with the numbers 2, 3, 4, 5. A card is chosen at random from each box.
- Draw the sample space diagram for the experiment.
  - Find the probability that:
    - the cards have the same number.
    - the larger of the two numbers drawn is a 3
    - the sum of the two numbers on the card is less than 7
    - the product of the numbers on the card is at least 8
    - at least one even number is chosen.

	1	2	3
2	1,2	2,2	3,2
3	1,3	2,3	3,3
4	1,4	2,4	3,4
5	1,5	2,5	3,5

b(i)  $P(\text{same}) = \frac{2}{12}$  or  $\boxed{\frac{1}{6}}$

(ii)  $P(3 \text{ is larger}) = \frac{3}{12}$  or  $\boxed{\frac{1}{4}}$

(iii)  $P(\text{sum} < 7) = \frac{9}{12}$  or  $\boxed{\frac{3}{4}}$

(iv)  $P(\text{Product} \geq 8) = \frac{5}{12}$

(v)  $P(\text{At least one Even}) = \frac{8}{12}$  or  $\boxed{\frac{2}{3}}$