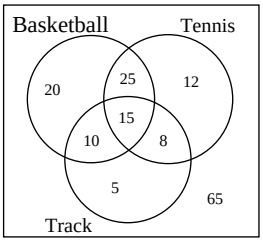
Week in Review #5

1. (a) Venn digram



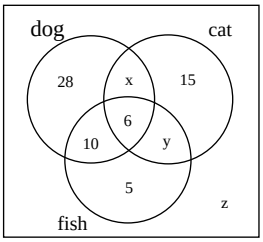
   (b) 38

   (c) 58

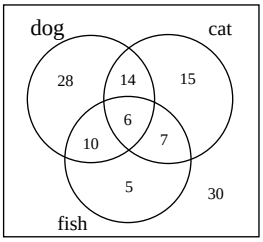
   (d) 57

2. (a) Use the information to fill in this venn diagram and use the information to get the simplified equations listed on the left.

$x + y = 21$
$x + z = 44$
$y + z = 37$



   Solve the system of equations to get the venn diagram.



   (b) 115

3. $4 * 3 * 2 * 1 = 4! = 24$

4. $2 * 2 * 2 * 4 * 4 * 4 * 4 * 4 = 2^3 * 4^5$

5. $4(2 * 1 * 1 * 3 * 2 * 1) = 48$

6. (a) $3 * 26 * 26 * 26 * 26 + 3 * 26 * 10 * 10 * 10 = 1448928$

   (b) $3 * 25 * 24 * 23 * 22 + 3 * 25 * 10 * 9 * 8 = 964800$

7. (a) $C(4, 2) * C(7, 4) = 210$

   (b) exactly two red and 4 other balls.
   $C(4, 2) * C(15, 4) = 8190$

   (c) at least means two or more green balls.
   $C(7, 2)*C(12, 4)+C(7, 3)*C(12, 3)+C(7, 4)*C(12, 2)+C(7, 5)*C(12, 1)+C(7, 6)*C(12, 0) = 20664$
   or work this by Total - don't want
   $C(19, 6) - [C(7, 0) * C(12, 6) + C(7, 1) * C(12, 5)] = 20664$

(d) the key word is or. Use the formula: $n(A \cup B) = n(A) + n(B) - n(A \cap B)$
$C(4,2) * C(15,4) + C(8,4) * C(11,2) - C(4,2) * C(8,4) = 11620$

(e) the key word is or. Use the formula: $n(A \cup B) = n(A) + n(B) - n(A \cap B)$
$C(4,2) * C(15,4) + C(7,3) * C(12,3) - C(4,2) * C(7,3) * C(8,1) = 14210$

8. For this problem somebody may have both vegetable dishes be the same or both vegetabel dishes be different. This means we have to break the problem into two parts.

   part I: both vegetable dishes different.

   $C(10,1) * C(13,2) * C(8,1)$ or $10 * C(13,2) * 8$

   Part II: both vegetable dishes the same.

   $C(10 * 1) * C(13,1) * C(8,1)$ or $10 * 13 * 8$

   Answer: $C(10,1) * C(13,2) * C(8,1) + C(10 * 1) * C(13,1) * C(8,1) = 6240 + 1020 = 7260$

9. $P(365,10) = 365 * 364 * 363 * 362 * 361 * 360 * 359 * 358 * 357 * 356$

10. $C(20,5) * C(15,5) * C(10,5) * C(5,5)$

11. $\frac{14!}{2!3!2!2!} = 1816214400$