1.

a) {1, -1}

b) {1,2,3,4,5,6,7,8,9,10,11}

c) {1,4,9,16,25,36,49,64,81}

d) { Ø }

2.

a) {x | x is a integer such that x = 3*n where 0 <= n<=4}

b) {x | -3 <= x <=3 }

c) { $x \in z$ | z is the alphabet letters where m <= x <= p }

3.

a) equal

b) not equal

c) not equal

4. $B \subset A, C \subset D, C \subset A$

5.

a) yes

b) no

c) yes

d) no

e) no

f) no

6.

a) no

b) no

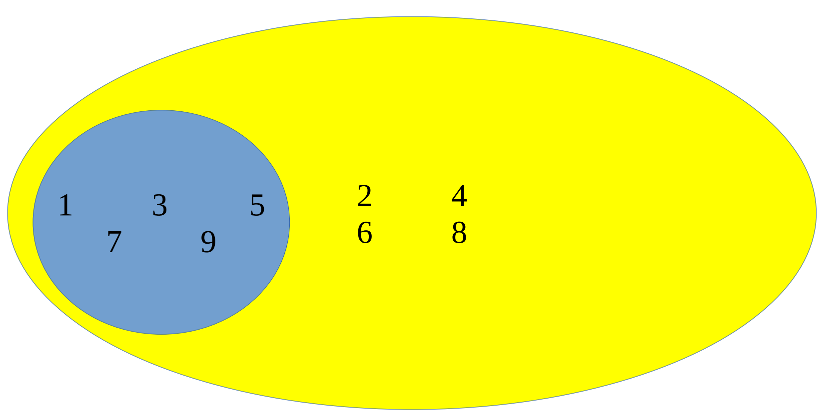
c) yes

d) yes

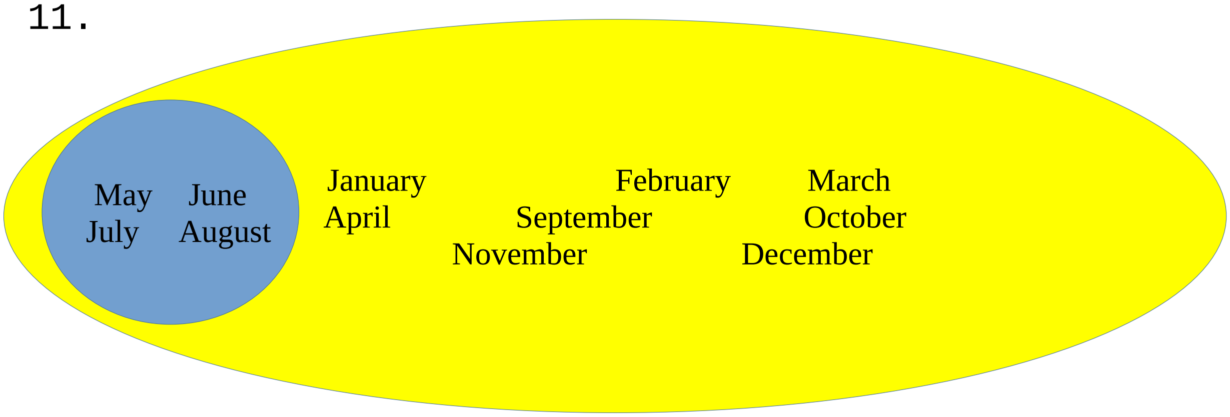
e) yes

f) no

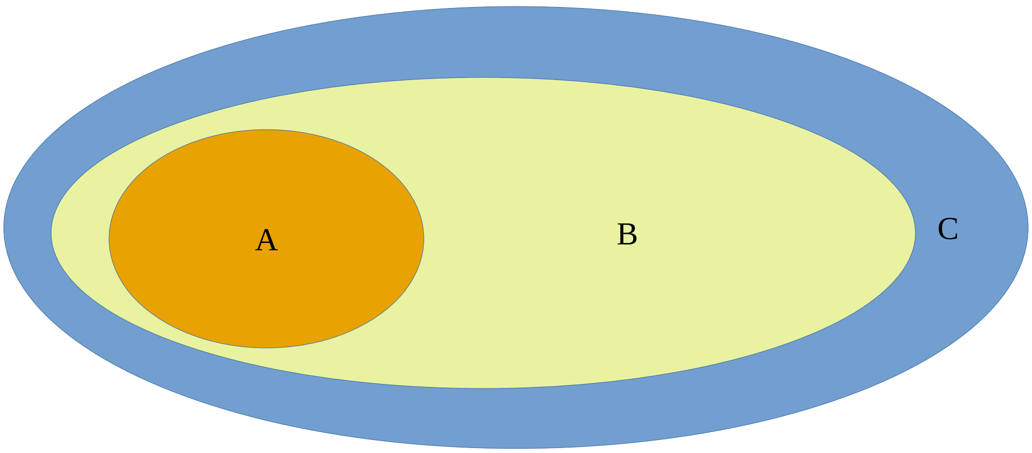
10.



11.



15.



suppose we have element a $a \in A$ if $a \in A$, then $a \in B$ which implies a is in c

16.
A = {1,2}, B = {1,2, {1,2}}

17.
a) 1
b) 1
c) 2
d) 3

18.
a) 0
b) 1
c) 2
d) 3

20. yes
if P(a) = P(b), then $a \subset b \wedge b \subset a$ leading to a = b

21.
a) 8
b) 16
c) 2

23.
a)
(a,y), (a,z)
(b,y), (b,z)
(c,y), (c,z)
(d,y), (d,z)

b)
(y, a), (y, b), (y, c), (y, d)
(z, a), (z, b), (z, c), (z, d)

26. a and b are empty sets

27. from the difinition of cartesian products
A x B = {(a,b) | $a \in A \wedge b \in B$ }, and since b is $\emptyset$ then
A x $\emptyset$ is $\emptyset$.

30.

suppose that A is the set {a1, a2, ……, an} and B is {b1, b2, ……, bn} then
A x B is {(a1, b1), (a2, b2), … (an, bn)}
and
B x A is {(b1, a1), (b2, a2), … (bn, an)}
which is not equal!

31.

let A be the set {a1, a2, ……, an}
and B {b1, b2, ……, bn}
and C {c1, c2, ……, cn}

A x B x C = {(a1, b1, c1), (a1, b1, c2), … (an, bn, cn)}
and

(A x B) x C={((a1, b1), c1),((a2, b2), c2),… ((an, bn),cn)}

33.

a)for every real number x, there is no x such that $x^2 = -1$

b)there exists an integer x, such that $x^2 =2$

c)for every integer x, $x^2 >0$

d)there exists integer x, such that $x^2 = x$

34.

a) there exist a real number x, such that $x^3 = -1$

b) there exists integer x, such that $x +1> x$

c) for every integer x, $x-1$ is also an integer

d) for every integer x, x^2 is also an integer

39. we start by choosing by computing every possible combination of the current number of members to choose from to n(number of the elements on the set)