Example questions:

A={Amy, Bob, Carol}
B={Bob, Jake, Tara, Sam}
C={Sam, Carol, Bob, Fiona}
D={Lynn, Joseph, Amy}

Complete equation:
B∩C={Bob,Sam}
C-B=
(BUA) ∩ (CUA)=
|D|=
|DUA|=|{Amy, Bob, Carol, Lynn, Joseph}|=5
|D∩A|=
P(A)=
AxD={(Amy,Lynn), (Amy,Joseph), (Amy,Amy), (Bob,Lynn), (Bob,Joseph), (Bob,Amy), (Carol,Lynn), (Carol,Joseph), (Carol,Amy)}
BxD=

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A={1,4,9,3}
B={3,6,7}
C={2,4,9}
U={1,2,3,4,5,6,7,8,9,10} *universal set*

Give elements and draw Venn diagram
A'={2,5,6,7,8,10}
C-A
B∩C={}
(A∩B)'
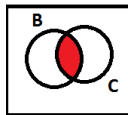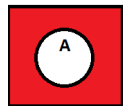
Answer true or false:
{3,4}⊆A FALSE
{3,4}⊆B
2∈C
{2,9}⊆C TRUE
{3,6,7}⊂B

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Give elements:
A={x : x∈Z and 2x≤11} = {…,-2,-1,0,1,2,3,4,5}
B={3x | x∈N and x²<25}
C={y | y=2x+1 and x∈N} = {1,3,5,7,…}
D={x | x∈R and 3x=5}
E={x : x∈Z and 3x=5}

In a class of students, 24 students own a pet parrot or a pet cat. 20 students own a pet cat, 8 students own a pet parrot. How many student own **both** a parrot and a cat?

In a group of friends, 10 people like dancing and 15 like singing. 5 people like **both** dancing and singing. How many people like only dancing? How many people like dancing or singing (including the people who like both as well)?

|D|=10 |S|=15 |D∩S|=5
|DUS|=|D|+|S|-|D∩S|
Only dancing: |D|-|D∩S|=10-5=**5**
Dancing or singing: |DUS| = 10+15-5 = **20**

Give the truth table of:
(p∨q)→r

p	q	r	p∨q	(p∨q)→r
T	T	T	T	T
T	T	F	T	F
T	F	T	T	T
T	F	F	T	F
F	T	T	T	T
F	T	F	T	F
F	F	T	F	T
F	F	F	F	T

p'↔q
(p∨q) ∨(p'∧q')

Use a truth table to prove:
a∨(b∧c)' ≡ (b→a)∨c'
(a∨c)' ≡ a'∧c'

a	c	a∨c	(a∨c)'	a'	c'	a'∧c'
T	T	T	F	F	F	F
T	F	T	F	F	T	F
F	T	T	F	T	F	F
F	F	F	T	T	T	T

r⊕t ≡ (r∧t') ∨ (r'∧t)

Apply propositional laws to find equivalent expression:
For example, a∨a ≡ a   using idempotent law (you don't have to name law you are using)
(a')' ≡
a∨(b∧c)

(a∨b)' ≡ a'∧b' using DeMorgan's law

m = Maia likes comedy movies
p = There is a comedy movie playing in the theater
s = Jane wants to see Maia
g = Jane will go to the theater

Write each of the following as propositions using the four variables m, p, s, and g.
If there is a comedy movie playing in the theater and Maia likes comedy movies, Jane will not go to the theater.
Jane will go to the theater if and only if Jane wants to see Maia.
g ↔ s
Jane will go the theater or there is not a comedy movie playing in the theater. Moreover, Maia does not like comedy movies.