Venn Diagrams, Validity, and the Hypothetical and Existential Viewpoint

With many syllogisms, it does not really matter whether or not our S, P, and M terms are things that actually exist. In most syllogisms, we do the Venn diagram and check for validity without a problem. But there are some syllogisms in which we do have to stop and ask if the existence of "at least some one member" of a term group matters. Usually, these are syllogisms with two universal premises (All or No), and a particular conclusion.

For example, consider:

No minors medically fit for military service are paraplegics.
All students who can run a mile in four minutes are minors medically fit for military service.
Therefore, Some students who can run a mile in four minutes are not paraplegics.

This is a syllogism of mood EAO, in figure 1. When we do a Venn diagram for it, we have to take the "Existential Viewpoint" and assume that there is at least some one student who can run a mile in four minutes who is not paraplegic for the syllogism to be valid. See if you can tell where you would need a "star" to show where that student would exist:
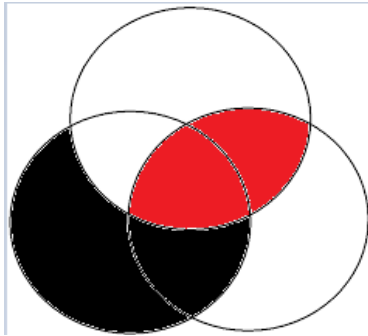
Here are two lists of "valid" syllogisms. The first chart shows the 15 forms that are valid from the Hypothetical Viewpoint (no existence assumed.) The second group of 9 are only valid if we use the Existential Viewpoint, and make assumptions about specific groups having at least one existing member.

Figure 1	Figure 2	Figure 3	Figure 4	
AAA	EAE	IAI	AEE	*valid from hypothetical view*
EAE	AEE	AII	IAI	
AII	EIO	OAO	EIO	
EIO	AOO	EIO		

Nine additional forms are valid, provided that appropriate existential pre-suppositions are made[12]:

Figure 1	Figure 2	Figure 3	Figure 4	Presupposition required	
			AEO	S exist	*valid with these existential presuppositions*
AAI	AEO				
EAO	EAO				
		AAI	EAO	M exist	
		EAO			
			AAI	P exist	

Other examples to work on are below. Tell the mood, figure, and whether or not it is valid:

1. No persons who can run a three-minute mile are Americans. All persons who can run a three minute mile are great athletes. So some great athletes are not Americans.

2. All natives of Tokyo are Japanese. No Japanese are blondes. So some blondes are not natives of Tokyo.

3. All contest winners are residents of this city. No Martians are residents of this city. So some Martians are not contest winners.

4. No inexpensive articles are good buys. Some mink-lined sneakers are not inexpensive articles. So some mink-lined sneakers are good buys.

5. All vagrants are homeless persons. All homeless persons are needy persons. So some needy persons are vagrants.

1. Given the following syllogism,

Some P are M.
All S are M.
Some S are P.
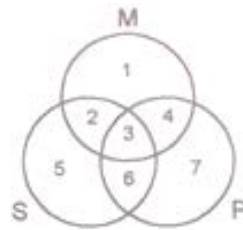
After filling in the Venn diagram,
a. Areas 1 and 4 are shaded, and there is an X in Area 3.
b. Areas 5 and 6 are shaded, and there is an X in Area 4.
c. Areas 2 and 3 are shaded, and there is an X in Area 4.
d. Areas 5 and 6 are shaded, and there is an X on the line between Areas 3 and 4.
e. Area 5 is shaded, and there is an X on the line between Areas 3 and 4.

2. For the syllogism in problem 1, the correct mood and figure is:
a. IAI-2
b. AIA-2
c. IAO-4
d. IAI-3
e. IEI-1

3. For the syllogism in problem 1, the correct answer from the Boolean standpoint is:
a. Invalid, illicit major.
b. Invalid, exclusive premises.
c. Invalid, drawing an affirmative conclusion from a negative premise.
d. Valid, no fallacy.
e. Invalid, undistributed middle.

4. Given the following syllogism,

No M are P.
All M are S.
No S are P.
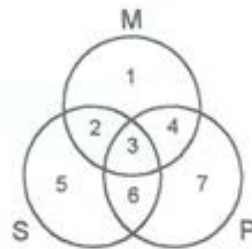
After filling in the Venn diagram,
a. Areas 1, 3, 4, and 6 are shaded.
b. Areas 1, 2, and 3 are shaded.
c. Areas 1, 3, and 4 only are shaded.
d. Areas 1 and 4 only are shaded.
e. Areas 1, 3, 4, and 6 are shaded, and there is an X in Area 2.

5. For the syllogism in problem 4, the correct mood and figure is:
a. AEA-2
b. EAE-3
c. IAI-3
d. AEA-2
e. EAE-2