

Student Examples: Syllogisms with Conjunctions

1. All vegetarians are skinny or non-muscular. Some dancers are vegetarians. So some dancers are skinny or non-muscular.
2. No red is green and brown. Some purple is red. So some purple is not green.
3. All pit bulls are mean and short. Some dogs are pit bulls. So some dogs are mean and short.
4. Some students don't like to exercise or study. All athletes like to exercise and study. So some students are not athletes.
5. All mechanics know how to fix cars or read blueprints. My dad is a mechanic. Therefore my dad knows how to fix cars.
6. All baseball players are fast or strong. No bowlers are fast. So no baseball players are bowlers.
7. All pit bulls are mean and angry. (All p is m&a)
Some dogs are pit bulls. (Some d are p)
So some dogs are mean and angry. (Some d are m&a)
8. All dogs are bone lovers and smelly. Sadam is not smelly. Therefore, Sadam is not a dog.
9. All vegetarians are skinny and smart. Some dancers are vegetarians. So some dancers are skinny.
10. All cars are red and fast. Red is pretty. So all cars are pretty.
11. All chairs are comfortable and soft. No tables are comfortable. So, no tables are chairs.
12. All guys on the planet lie and smell. All husbands are guys on the planet. Therefore all husbands lie and smell.
13. All pit bulls are mean and aggressive. Some dogs are pit bulls. So some dogs are aggressive.

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Answer Key (corrections, if any, to a student answer are in square brackets at the end of it):

1. 1st Rule: The middle term Vegetarians is distributed in at least one premise. 2nd Rule: The premise is positive and so is the conclusion. 3rd Rule: The middle term is distributed in a premise and

conclusion. Rule of 'or', one of the claims is affirmed (skinny or non-muscular).

2. *This is valid because it follows all three rules. [The first premise could be restated "Red is not green and brown," which means "Red is not green or not brown." So we can conclude that "Some purple is not green or not brown," but we don't know which, so we cannot conclude "Some purple is not green."]

3. Valid.

4. When you distribute a not you have to change the disjunction to a conjunction. This mean premise 1 will be "Some students don't like to exercise and study." When affirming an "and" you must affirm all or negate one. If we are affirming the whole argument then the conclusion is valid and it passes all 3 rules. [There's no reason to distribute a "not" here. The second premise has "exercise and study," and in order to negate that, we only need to negate one (or the other, or both). So the first premise could have read "Some students don't like to exercise," or "Some students don't like to study," or "Some students don't like to exercise or study" (as it does), and the conclusion would still remain the same.

5. Invalid. Without the "OR" this statement passes the 3 rules but because there is an "OR" it doesn't specify which one the dad knows. For example the dad could know how to read blueprints (making him a mechanic) but that doesn't mean he knows how to fix cars. It would be different with an "AND":

All mechanics know how to fix cars and read blueprints. My dad is a mechanic. Therefore my dad knows how to fix cars.

The "AND" states that you need both of those things to be a mechanic and since the dad is a mechanic the conclusion is definitely valid.

6. This is invalid, because when using "or" we need to make both terms negative and not one. To fix this we must change it like this:

All baseball players are fast or strong. No bowlers are fast or strong. So no baseball players are bowlers.

Now it is valid, because it follows the three rules and agrees with the negative "or" rule of making both all terms negative. If there was an "and" instead of "or" between "fast" and "strong" then no changes would be needed.

7. Valid because it passes the rules.

8. It is still valid because it follows the three rules. The middle term, which is "smelly" is distributed in the 2nd premise. There is a negative in the 2nd premise and

there is one in the conclusion. And "dog", the distributed term in the conclusion is also distributed in the 1st premise. And because there is "and", only one term needs to be negated in order for it to be true, and that term is "smelly."

9. Valid, because you are using the conjunction "and," so you only have to negate one to conclude that vegetarians are both skinny as well as smart. [That explanation doesn't make much sense to me, since nothing is negated here. Instead, by affirming the first premise, we are affirming *both* "skinny" and "smart," so if some dancers are "skinny *and* smart" then they must be "skinny."

10. This follows all three rules, and "and" is affirmed in all cases, therefore this is a valid argument. [Sort of. I should have said, in the original answer key, that there is a difference between something being pretty, and something having a pretty color. So if we said "Red is a pretty color, so all cars are a pretty color,"

that would be clearer. That stands out more with the conjunction, because (in a sense) the *whole* car is "fast," but only the color is "pretty."]

11. *This is valid because with "and" you only need to negate one term. [My fault: I should have corrected the original answer, because the original syllogism was invalid –comfortable is distributed in the conclusion and not in the premise – and that's true here, too. A valid form would have been: "All chairs are comfortable and soft. No comfortable things are tables. So, no tables are chairs."]

12. We can conclude that all husbands on the planet both lie and smell, because all parts must be affirmed. So they lie and smell, they don't just lie, and they don't just smell. This claim says they do BOTH! [You seem to be a little too pleased to conclude that guys lie and smell – it's just a hypothetical example!]

13. This is a valid argument.