CRITICAL THINKING

Workshop #10

Inferences with Categorical Statements

Professor David Emmanuel Gray

Explanation of Annotations for These Solutions

The problem is in black Futura Std type.

The solution is in red Garamond Premier Pro type.

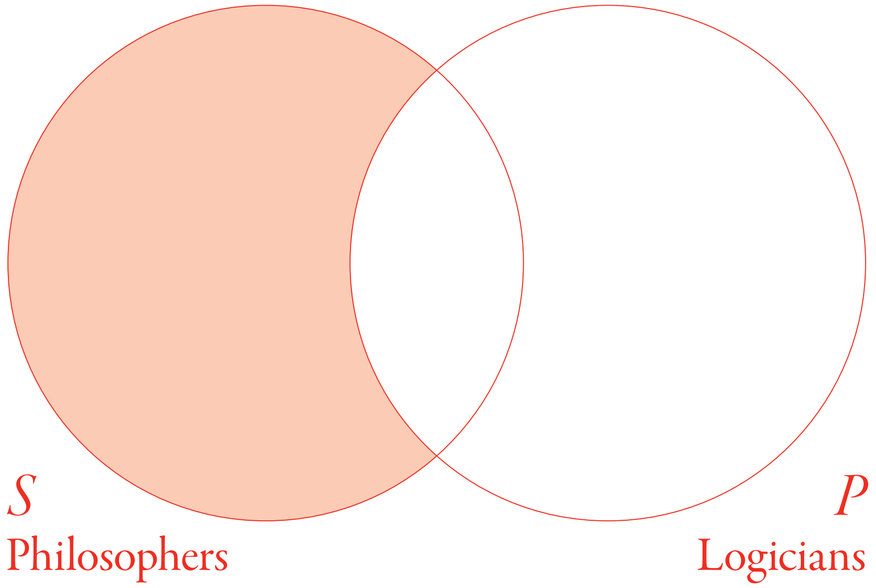
Any commentary is in blue Futura Std type.

Please Note: When solving these types of problems for a quiz or an exam, you are expected to format your own solutions in a similar manner as I have done on these slides. Failure to do so may result in a small penalty for not following instructions or even a larger penalty because I do not understand your solution.

Part I Solutions

All philosophers are logicians.

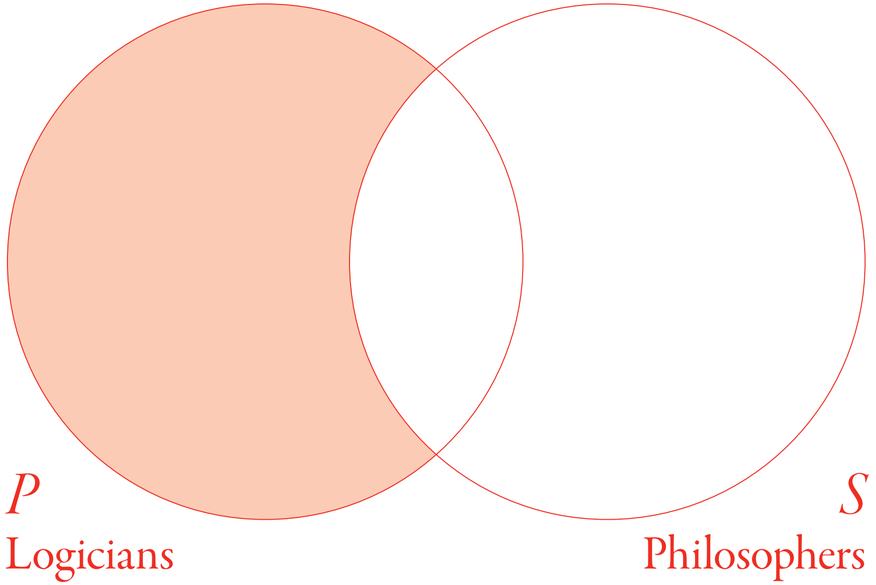
(An **A** statement: All *S* is *P*.)



Part I Solutions

1. All logicians are philosophers.

(All *P* is *S*.)



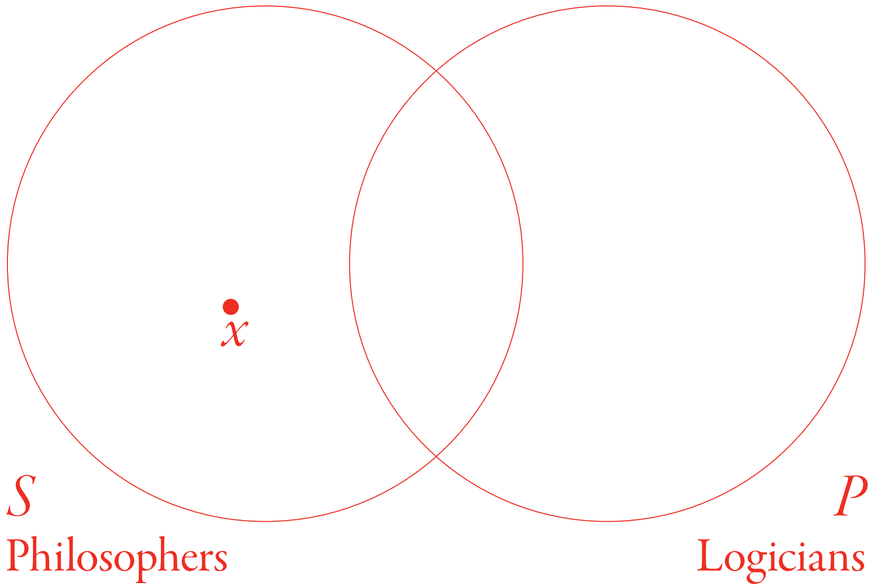
Statement 1 is *unknown*.

The truth of the original statement of Part I only tells us about the area of philosophers (*S*) outside of logicians (*P*) while telling us nothing about what is going on in the area of logicians (*P*) outside of philosophers (*S*). Since statement 1 only tells us about this area of logicians, it is therefore impossible to know whether statement 1 is true or false.

Part I Solutions

2. Some philosophers are not logicians.

(Some *S* is not *P*.)



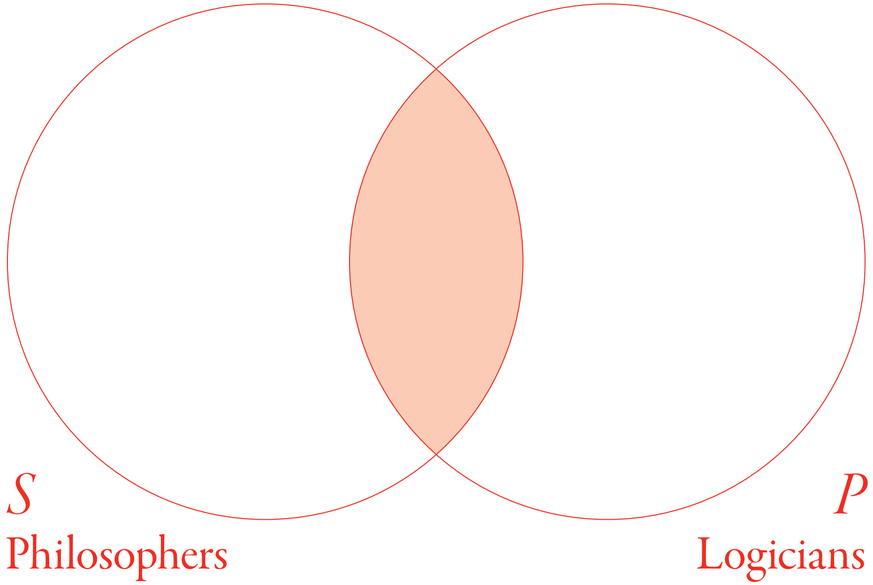
Statement 2 is *false*.

The truth of the original statement of Part I implies that there is nothing in the area of philosophers (*S*) outside of logicians (*P*), which the above Venn diagram for statement 2 clearly denies. So statement 2 cannot be true.

Part I Solutions

3. No philosophers are logicians.

(No *S* is *P*.)



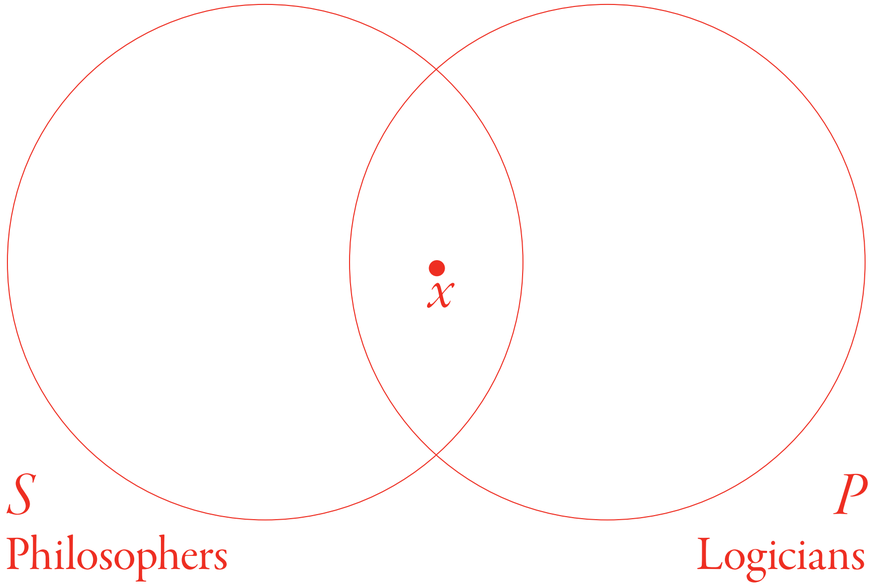
Statement 3 is *false*.

The truth of the original statement of Part I implies that there is nothing in the area of philosophers (*S*) outside of logicians (*P*). Since there must be at least one philosopher somewhere, there must be something in the area of overlap between philosophers (*S*) and logicians (*P*). However, the Venn diagram for statement 3 clearly denies this last point. So statement 3 cannot be true.

Part I Solutions

4. Some philosophers are logicians.

(Some *S* is *P*.)



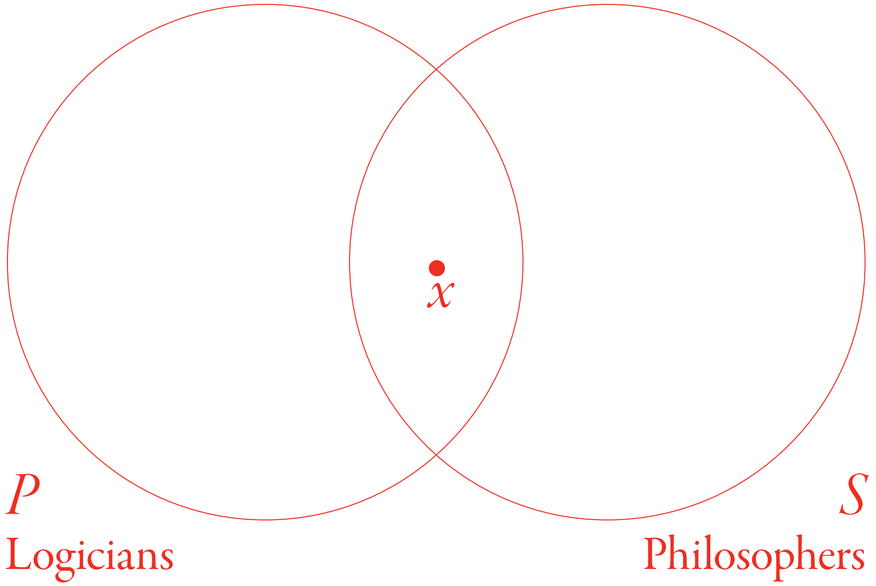
Statement 4 is *true*.

The truth of the original statement of Part I implies that there is nothing in the area of philosophers (*S*) outside of logicians (*P*). Since there must be at least one philosopher somewhere, there must be something in the area of overlap between philosophers (*S*) and logicians (*P*). The Venn diagram for statement 4 clearly conforms to this last point. So statement 4 must be true.

Part I Solutions

5. Some logicians are philosophers.

(Some *P* is *S*.)



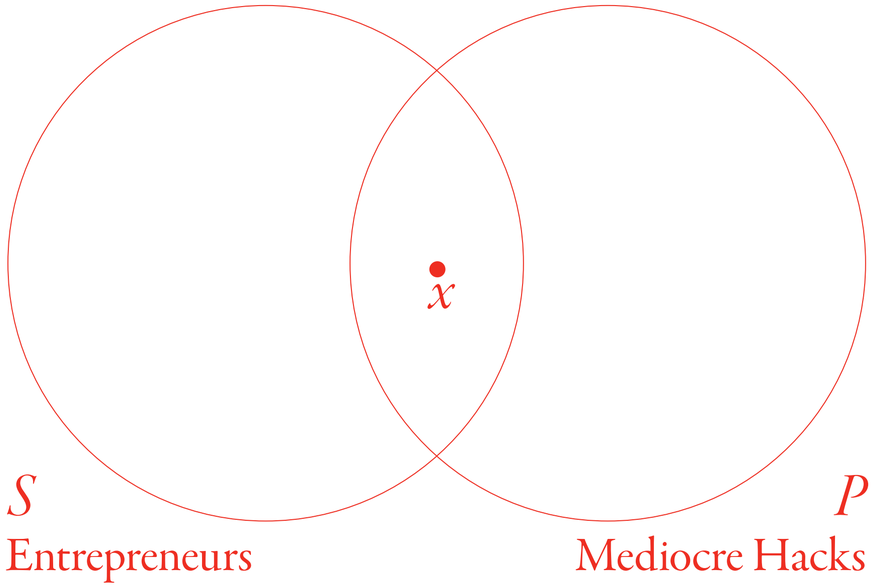
Statement 5 is *true*.

The truth of the original statement of Part I implies that there is nothing in the area of philosophers (*S*) outside of logicians (*P*). Since there must be at least one philosopher somewhere, there must be something in the area of overlap between philosophers (*S*) and logicians (*P*). The Venn diagram for statement 5 clearly conforms to this last point. So statement 5 must be true.

Part II Solutions

Some entrepreneurs are mediocre hacks.

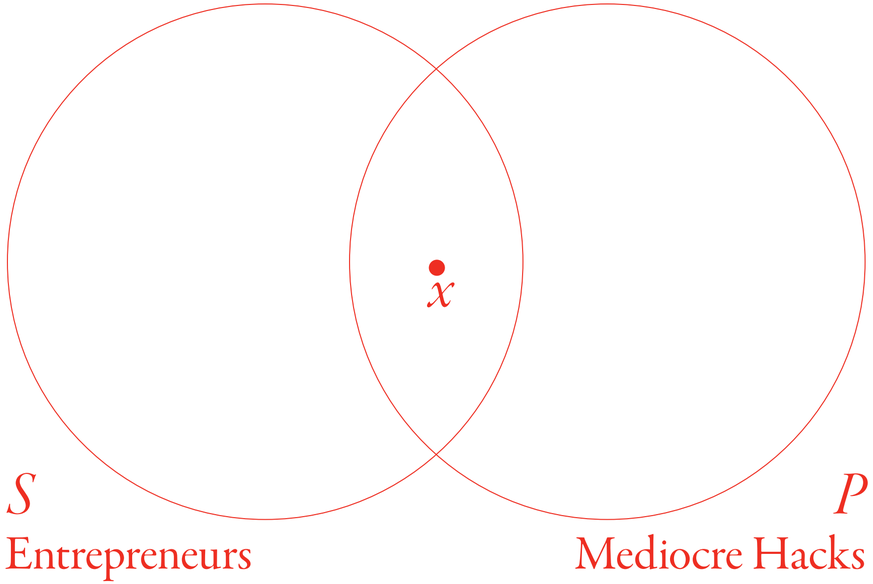
(An I statement: Some *S* is *P*.)



Part II Solutions

1. Some entrepreneurs are not non-mediocre hacks.

(Some *S* is not non-*P*.)



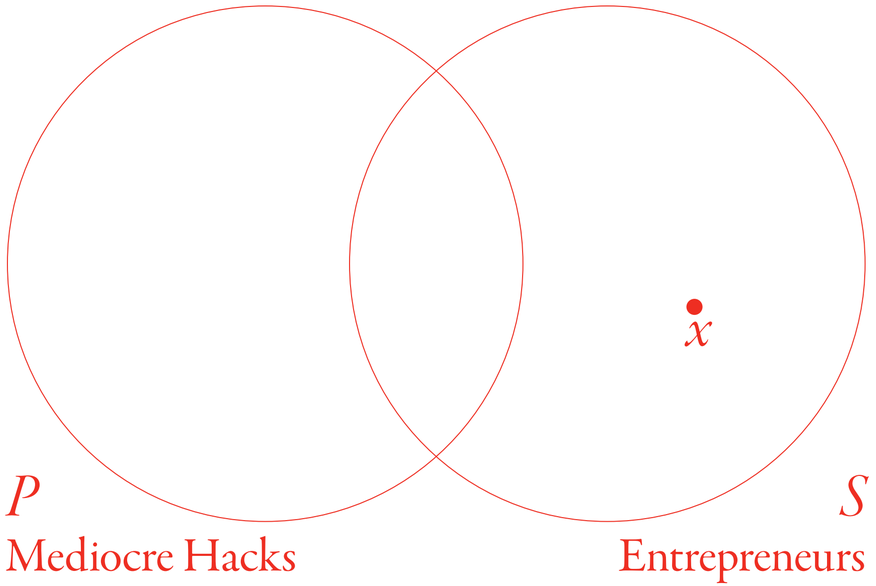
Statement 1 is *true*.

The truth of the original statement of Part II implies that there is something in the area of overlap between entrepreneurs (*S*) and mediocre hacks (*P*). Indeed the Venn diagram for that original statement is the same as that for the truth of statement 1. So statement 1 must be true.

Part II Solutions

2. Some non-mediocre hacks are entrepreneurs.

(Some non-*P* is *S*.)



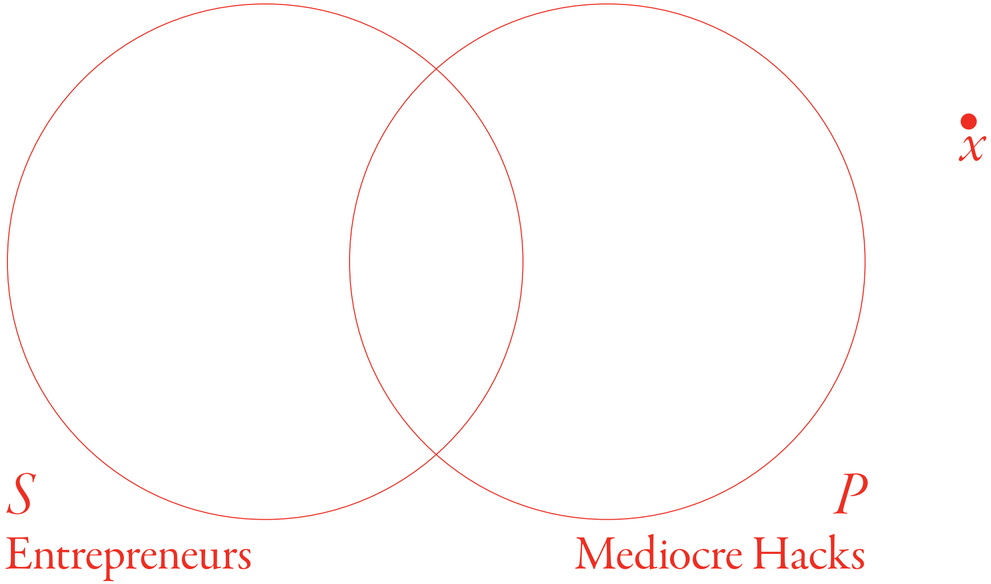
Statement 2 is *unknown*.

The truth of the original statement of Part II only tells us about the area of overlap between entrepreneurs (*S*) and mediocre hacks (*P*) while telling us nothing about what is going on in the area of entrepreneurs (*S*) outside of mediocre hacks (*P*). Since statement 2 only tells us about this area of entrepreneurs (*S*), it is therefore impossible to know whether statement 2 is true or false.

Part II Solutions

3. Some non-entrepreneurs are non-mediocre hacks.

(Some non-*S* is non-*P*.)



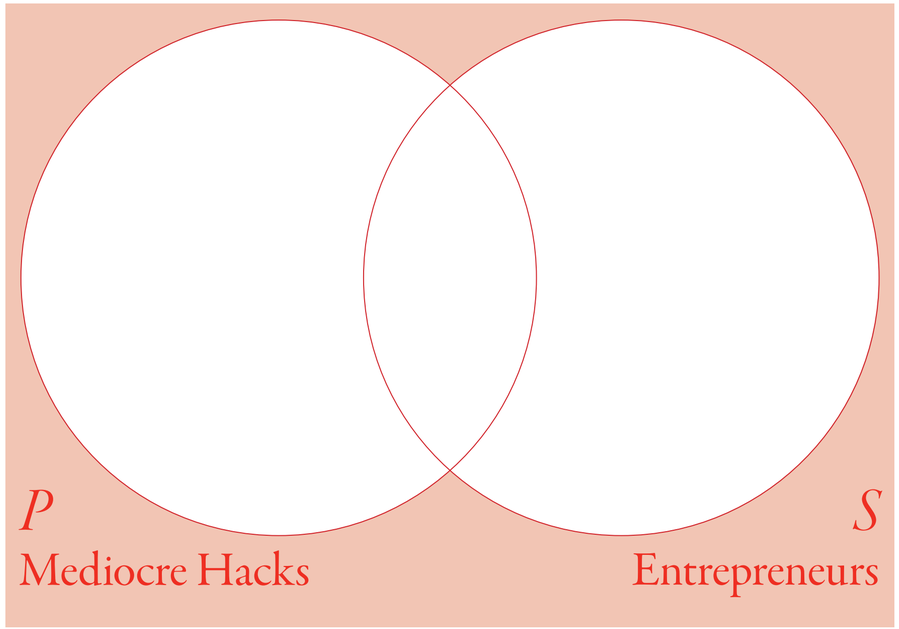
Statement 3 is *unknown*.

The truth of the original statement of Part II only tells us about the area of overlap between entrepreneurs (*S*) and mediocre hacks (*P*) while telling us nothing about what is going on in the area outside of both entrepreneurs (*S*) and mediocre hacks (*P*). Since statement 3 only tells us about this outside area, it is therefore impossible to know whether statement 3 is true or false.

Part II Solutions

4. All non-mediocre hacks are entrepreneurs.

(All non-*P* is *S*.)



Statement 4 is *unknown*.

The truth of the original statement of Part II only tells us about the area of overlap between entrepreneurs (*S*) and mediocre hacks (*P*) while telling us nothing about what is going on in the area outside of both entrepreneurs (*S*) and mediocre hacks (*P*). Since statement 4 only tells us about this outside area, it is therefore impossible to know whether statement 4 is true or false.

Next Class…

We will look at how to assess the validity of arguments known as categorical syllogisms.