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Week 9, Practice Problems

The practice problems fall into four groups:

- Conversational implicature
- Scales
- Probability
- Conditional probability

Conversational Implicature

Before beginning this set of practice problems, it might be good to conversational implicature from Week 9, Lecture 1.

Example 1.

Suppose the speaker says: "On my walk, I saw a big dog with spots". Which is the following is a conversational implicature of the speaker's having said that?

Which one?

- The speaker does not know when he saw the big dog with spots.
- The speaker does not believe that he went for a walk.
- The speaker saw his own big spotted dog on his walk.
- The speaker saw a big spotted dog which was distinct from his own dog.

Check

Example 2.

Suppose that Laura asks "Where is the coffee shop?" and Sofia replies "If it is before 6pm, then there's coffee in Lu Valle Commons." Which is the following is a conversational implicature of the Sofia's having said that?

Which one?

- Sofia believes that the physical presence of coffee shops in buildings depends on the time of day: sometimes they are there, and other times they are not.
- Sofia does not know exactly what time it is now, but she knows that the coffee shop in Lu Valle Commons closes at 6pm.
- Sofia does know exactly what time it is now, and she believes that the time is presently after 6pm or that that there's coffee in Lu Valle Commons.
- Sofia does know exactly what time it is now, and she does not believe that the time is presently after 6pm or that that there's coffee in Lu Valle Commons.

Check

Example 3.

Suppose that Laura asks "What do I have to do to graduate next term?" and the Students Affairs Officer (SAO) replies "The requirements are such that you can graduate next term only if you complete courses A, B, and C." Which is the following is a conversational implicature of the SOA having said that, it being part of background information that SAO's want to help students graduate in a timely way?

Which one?

- The SAO does not believe that if Laura completes courses A,B, and C, then Laura can graduate next term.
- The SAO believes that if Laura completes courses A,B, and C, then Laura can graduate next term.
- The SAO does not believe that Laura can complete courses A,B, and C.
- The SAO believes that Laura has many more requirements to complete than just courses A,B, and C.

Check

Example 4.

Suppose the speaker says: "I am not sure but I think that he's pretty well versed on what happened." The speaker seems to have intentionally flagged that they are opting out of one of the maxims. Which one?

Which one?

- Quantity
- Quality
- Relation
- Manner

Check

Example 5.

Suppose the speaker says: "Sorry to go on so long, but this is something which I think everyone should care more about." The speaker seems to have intentionally flagged that they are opting out of one of the maxims. Which one?

Which one?

- Quantity
- Quality
- Relation
- Manner

Check

Scales

Before beginning this set of practice problems, it might be good to review Scales, which we went over in section.

Example 6.

Consider the following scale which we might use to rank applicants: (top 10%, top 20%, top 30%, top 40%). Which of the following is a conversational implicature of the recommendation letter writer having said "The applicant is within the top 30% of her class"?

Which is it?

- The letter writer does not believe that "The applicant is within the top 40% of her class"
- The letter writer does not believe that "The applicant is within the top 30% of her class"
- The letter writer does not believe that "The applicant is within the top 20% of her class"
- The letter writer does not believe that "The applicant is within the top 10% of her class"

Check

Example 7.

Consider the following scale which we might use to informally rank universities: (prestigious, excellent, good, decent). Which of the following is a conversational implicature of someone saying that "This campus is not good"? *Hint*: when we negate entries, the scale flips around.

Which is it?

- The speaker does not believe that "The campus is not prestigious"
- The speaker does not believe that "The campus is not excellent"
- The speaker does not believe that "The campus is not good"
- The speaker does not believe that "The campus is not decent"

Check

Example 8.

Show the following:

exercise

¬(a ∨ b) ⊢ ¬(a ∧ b)

1. ~(a∨b) :assumption

Example 9.

Determine whether the argument is valid or invalid:

¬(a ∧ b) ⊢ ¬(a ∨ b)

a	b	¬	(	a	∧	b	)	⊢	¬	(	a	∨	b	)
T	T		T		T				T			T		T
T	F		T		F				T			F		F
F	T		F		T				F			T		T
F	F		F		F				F			F		F

Counterexample | Check

Example 10.

The previous example suggests a scale (~(a\/b), ~(a/\b)). Which of the following is a conversational implicature of the speaker having said that "It's not the case that Alex and Brianna attended"?

Which one?

- The speaker believes that "Alex attended and Brianna attended"
- The speaker does not believe "It's not the case that Alex attended and Brianna attended"
- The speaker does not believe "Alex attended or Brianna attended"
- The speaker does not believe "It's not the case that Alex attended or Brianna attended"

Check

(p ∨ (q ∧ r))

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

Check

Probability

This material pertains to the Week 9, Lecture 2 material. Please do not try this material until after that lecture.

Example 11

Complete the following truth-table, just like in Week 1.

Example 12

This example builds off of the previous example. Suppose that each of the rows is weighted equally, that is each has equal chance of happening, namely a 1/8 chance of happening.

What is the probability of p\/(q/\r) happening?

- 3/8
- 4/8
- 5/8
- 6/8

Check

Example 13

This example builds off of Example 11. Suppose that we assign the following probabilities to the rows in that truth-table:

.1 -- TTT
.1 -- TTF
.1 -- TFT
.2 -- TFF
.3 -- FTT
.05 -- FTF
.05 -- FFT
.1 -- FFF

What is the probability of p\/(q/\r) happening?

- .55
- .60
- .75
- .80

Check

Example 14

Suppose that you know that the probability of p is 25% and the probability of q is 25% and that the probability of p\/q is 40%. What is the probability of p/\q?

What is the probability of p/\q?

- 5%
- 6.25%
- 10%
- 30%

Check

Example 15

Suppose that you know that the probability of p is 25% and the probability of q is 25% and that the probability of p\/q is 40%. What is the probability of $\neg p \wedge \neg q$? *Hint*: use DeMorgan.

What is the probability of ~p/\~q?

- 50%
- 60%
- 70%
- 80%

Check

Conditional probability

This material pertains to the **Week 10**, Lecture 1 material. Please do not try this material until after that lecture.

Example 16

Complete the following truth-tables, just like in Week 1 and Week 3:

((¬(p ∨ q) ∨ ¬r) ∧ r)

p	q	r	((	¬	(	p	∨	q	)	∨	¬	r	)	∧	r	)
T	T	T			T		T			T			T		T	
T	T	F			T		T			F			F		F	
T	F	T			T		F			T			T		T	
T	F	F			T		F			F			F		F	
F	T	T			F		T			T			T		T	
F	T	F			F		T			F			F		F	
F	F	T			F		F			T			T		T	
F	F	F			F		F			F			F		F	

Check

(¬(p ∨ q) ∨ ¬r) ⊢ (¬r ∨ ¬q)

p	q	r	(	¬	(	p	∨	q	)	∨	¬	r	)	⊢	(	¬	r	∨	¬	q	)
T	T	T			T		T			T			T								T
T	T	F			T		T			F			F				F				T
T	F	T			T		F			T			T								F
T	F	F			T		F			F			F				F				F
F	T	T			F		T			T			T								T
F	T	F			F		T			F			F				F				T
F	F	T			F		F			T			T								F
F	F	F			F		F			F			F				F				F

Counterexample | Check

Example 17

Suppose that each of the rows in the previous truth-tables are weighted equally, that is each has equal chance of happening, namely a 1/8 chance of happening. What is the probability of ~(p\/q)\/~r conditional on r?

What is the probability of ~(p\/q)\/~r conditional on r?

- 1/8
- 2/8
- 3/8
- 4/8

Check

Example 19

Show the following, using distribution:

exercise

(¬(p ∨ q) ∨ ¬r) ⊢ (¬r ∨ ¬q)

1. ~(p∨q)∨~r :assumption

Example 20

Suppose that each of the rows in the truth-table in Example 16 is weighted equally, that is each has equal chance of happening, namely a 1/8 chance of happening. Use Bayes's theorem, and the tables in Example 16, to calculate the probability of ~(p\/q)\/~r conditional on ~r\/~q.

What is the probability of ~(p\/q)\/~r conditional on ~r\/~q?

- 5/6
- 1/8
- 1/6
- 6/8

Check

This is a practice problem set for this course. It is run on the Carnap software, which is an: