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	Speakers

Speakers

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OfficeHours_IS3_20151012_Seg02.pdf

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Participants: IS3 (striped shirt, glasses), S1 (green jacket, grey shirt)

Context: S1 goes to IS3's office hours for help. The background noise level is high.

0:00

XXX	S1:	a (.) couple of questions on um
XXX		um
XXX		obviously ((name)) gives us a lot of stuff ((laugh))
XXX		u:m (.) but
XXX		i have a couple of questions because i um
XXX		have been doing (the) practice problems,
XXX		u:m i don't know if uh you saw that
XXX		she posted them up but
XXX		um i've been doing them,
XXX		and um (.) uh
XXX		like i thought i did it right but in-
XXX		i put the answers in the back and
XXX		it says in the- in the back that um
XXX		(.1) like so for this one (is) number:
XXX		twelve,
XXX		so then twelve it says
XXX		(.2) like that,
XXX		((undecipherable))
XXX	IS3:	yeah
XXX	S1:	and i'm like (.) confused
XXX		[and same with this one
XXX	IS3:	[oh:
XXX	S1:	i did- i did eleven and (.)
XXX		she has something else
XXX	IS3:	u:m so you're wondering the differences?
XXX	S1:	um
XXX		yeah so i'm (.) wondering,
XXX		um
XXX		like
XXX		how come
XXX		for (.2)
XXX		um
XXX		how come (.) like (.1)
XXX		like do you want to check my work for twelve to see if it's
XXX		right
XXX		((undecipherable))

cause it may be wrong XXX 1:17 ((pause while IS3 checks the work)) XXX 1:47 CLF IS3: (the-)↑ CLF is this the answers to this question? that's- that's what i was asking cause xxx S1: she said that this was-XXX XXX these are the answers, but xxx IS3: i don't think so: xxx S1: right? like XXX isn't that confusing xxx IS3: yeah °it's really (.) [confusing XXX xxx S1: [and i- i could show you on my laptop she posted (.) XXX [the pretest XXX xxx IS3: [oh: xxx S1: yeah this is XXX i don't know if you saw it but this is called XXX [uh pretest a um xxx IS3: [oh: xxx S1: yeah= xxx IS3: =i didn't notice this= xxx S1: =oh okay she put up pretest a and then she put up the solutions, XXX xxx IS3: yeah xxx S1: (and) xxx IS3: but i check the answers (for it) xxx S1: yeah and does it seem right? XXX i know it's (.) XXX like (.) hard to read but XXX that's a b c and d ((pointing)) XXX 2:30 XXX ((pause while IS3 checks)) 2:44 xxx IS3: the f- the first one is right and (.2) XXX the second one ((pause)) XXX XXX ((undecipherable)) this one is right xxx S1: [okay [(the- this) xxx IS3: 3:00 uh: XXX

```
you- the formula you use here
XXX
          you use just like multipl-multiplication,
XXX
xxx S1:
          mhm
          um the-
xxx IS3:
          the thing you need to make sure before using this is
XXX
          these two ((undecipherable)) independent right?
XXX
xxx S1:
          mhm
xxx IS3: (and uh) actually,
           (.3) did you check this (independent right now?)
XXX
          ((undecipherable)) it's not independent
XXX
          cause
XXX
xxx S1:
          um she just-
          she gave us uh (.)
XXX
          this this (this that and then)
XXX
xxx IS3: cause um
          i check (with) this like uh
XXX
XXX
          if- (.1)
          if a and b are (.1) independent, it-
XXX
          it should follows this formula right?
XXX
xxx S1:
          yeah
xxx IS3:
          but actually you can see from here,
          they are not independent.
XXX
xxx S1:
          ((nods))
xxx IS3:
          right?
xxx S1: right
xxx IS3: so you can't use this formula
xxx S1: ((nods)) (mhm)
XXX
          and you only use it for when it's [independent okay
xxx IS3:
                                             [independent yeah
xxx S1:
          got it
xxx IS3:
          (you sure?)
          got it
xxx S1:
          alright
XXX
xxx IS3:
          so:
XXX
           (uh)
          this problem,
XXX
          uh:=
XXX
          =and- and where did you see that it's not independent?
xxx S1:
xxx IS3: because um
XXX
          you can check from here
          uh p- this is (p and b) right
XXX
xxx S1:
         mhm
xxx IS3: this (.) point (.) one
          ((undecipherable))
XXX
xxx S1:
         mhm
```

```
((laugh))
XXX
xxx IS3:
           this point (.) thirty five↑
xxx S1:
           ((nods))
           this is point (.) (twenty) five
xxx IS3:
           you can (multiply) ((undecipherable))
XXX
           (this number's four right)
XXX
xxx S1:
           m::
           okay okay got it
XXX
xxx IS3:
          ((nods))
           SO
XXX
           it's not independent
XXX
           a:nd um
XXX
           if a and b are not inde-independent you can check that
XXX
           a bar and b bar is ((undecipherable)) (independent is it?)
XXX
xxx S1:
           mhm
           okay cool
XXX
INT IS3:
           do you know how this ((gestures))
INT
           ((pause))
INT
           d- know-
           do you know how to- how to get this↑ one?
ххх
xxx S1:
           no
xxx IS3:
           okay
           you can- let me check that
XXX
           cause (.) u:m
XXX
           what we need to check is
XXX
ххх
           whether these two are:\downarrow
           equal right
XXX
xxx S1:
           mhm
xxx IS3:
           like uh:
           ((pause to write))
XXX
           [these two are equal right?
XXX
xxx S1:
           [okay
           mhm
XXX
xxx IS3:
           and uh:
           ((pause))
XXX
           ((mumbles to self))
XXX
           this can be (writ-written as)
XXX
           one (.) minus (.1)
XXX
           (and one) minus (.1)
XXX
           this right?
XXX
xxx S1:
           mhm
           and this could be ((undecipherable, too quiet))
xxx IS3:
XXX
           this right?
xxx S1:
           mhm
xxx IS3: and uh:
```

```
we can use the formula here,
XXX
6:01
          one minus this
XXX
xxx S1:
          ((nods))
xxx IS3: is one minus (.1)
          p a minus p b plus (.1)
XXX
          this (right?)
XXX
          and you just
XXX
          make it one by one
XXX
          minus (p a) minus (p b)
XXX
          plus ((undecipherable))
XXX
          ((nods))
xxx S1:
xxx IS3:
          uh: this part are the same↑
         but we already know that this part is not the same.
XXX
xxx S1:
          ((nods))
xxx IS3: so (.) ((undecipherable))
xxx S1:
         okay and so um (.2)
          wh- what is-
XXX
         does that mean not?
XXX
xxx IS3:
          yeah
xxx S1:
          okay
          and then um
XXX
           ((pause))
XXX
          i think i got (.) confused
XXX
xxx IS3:
          yeah
          this- this formula is the formula you use here,
XXX
xxx S1:
          mhm
          okay
XXX
xxx IS3:
          just one minus this
xxx S1:
         mhm
xxx IS3: uh
          (the other) is here
XXX
xxx S1:
          ((nods))
xxx IS3: it is one minus (.)
XXX
          p a: plus p b:
          minus p a and b
XXX
          you just (.)
XXX
          take it out↑
ХХХ
           (and left with this)
XXX
           ((pause))
XXX
xxx S1:
          okay↑
          u:m
XXX
           ((pause))
XXX
XXX
          yeah
          yeah i think i get it
XXX
```

```
((both nod))
XXX
xxx IS3:
          so: they are not independent
xxx S1: mhm
xxx IS3:
          so we can't use the- this formula for here
xxx S1:
        mhm
xxx IS3: u:m
          i guess
XXX
          uh:
XXX
XXX
          SO
          uh:
XXX
          so we still use this formula cause this formula always
XXX
XXX
          (helps)
xxx S1:
         mhm
xxx IS3:
          um
         like uh
XXX
         we want to (.)
XXX
XXX
          check (.)
XXX
          uh
          oh th-this one
XXX
          this one
XXX
XXX
          we want to check- °oops i messed up
xxx S1:
        that's okay
xxx IS3: we want to check this one right?
xxx S1: ((nods))
xxx IS3: uh actually
          we have this formula
XXX
          (.3) ((undecipherable)) plus (b) equals
XXX
XXX
          this. right?
xxx S1:
         mhm
xxx IS3:
          uh:
          this (formula)
XXX
          is (.3)
XXX
          this right
XXX
xxx S1:
          ((nods)) yeah
xxx IS3:
          SO
          you can
XXX
          just one minus this?
XXX
xxx S1:
         ((nods))
XXX
          uh yeah
XXX
          right?
xxx IS3: and (.) you got these two right
         (.2.) uh yeah i just have to do [one minus that and that=
xxx S1:
xxx IS3:
                                         [yeah:
          =yeah:
XXX
XXX
          so you got this
```

```
xxx S1: (.1) yeah
xxx IS3: uh so
xxx S1: so it's almost like i have to do-
8:59
          i have to use this formula,
XXX
         [but i have to do
XXX
         [yeah
xxx IS3:
xxx S1: one minus that one minus that one minus that,=
xxx IS3: =yeah:
xxx S1: £and then-
         £[okay and then plug it in
XXX
xxx IS3: [use the formula
xxx S1: £okay
xxx IS3: ((nods))
xxx S1: got it=
xxx IS3: =a::nd uh:
         (yeah) this is right,
XXX
          a:nd uh:
XXX
         yeah this is right
XXX
xxx S1:
          oh
          thank you
XXX
          yeah so i'm gonna (.)
XXX
          star that
XXX
XXX
         cause that one i got (right)
xxx IS3:
          (yeah)
xxx S1: and the:n (.1)
          so do you think you can explain eleven to me
XXX
         [cause ((undecipherable))
XXX
xxx IS3: [oh okay
xxx S1: i'm sorry there's so many- so much=
xxx IS3: =no no no no
xxx S1: writing on it
xxx IS3: ((undecipherable, reading the problem to herself))
          yeah uh:
XXX
          a is right- correct actually
XXX
          a- do you have (answers) of this?
CLF
CLF S1:
          um (.1)
          that's uh:
CLF
CLF
          [why i'm
xxx IS3:
         [oh:: okay
xxx S1: yeah i- i a- i like went to check in the back and it's
xxx IS3: yeah
xxx S1: yeah it's not there
         maybe like i can look in my laptop again
XXX
xxx IS3: uh:
```

xxx S1: but i- yeah xxx IS3: no problem= xxx S1: =no? okay xxx IS3: uh the definition of independence is using this formula XXX XXX right? xxx S1: right. xxx IS3: u:m so when you check whether two events are independent XXX (uh) you can use this formula XXX we already know they are mutually exclusive so: XXX XXX which means this- they happen-XXX (the- the probability) they happen together so XXX cause (.) they can't happen at the same time XXX xxx S1: mhm xxx IS3: so the probability it (.) happen together is zero. xxx S1: okay xxx IS3: so: xxx S1: that- yeah that you just have to know right? xxx IS3: yeah= xxx S1: =okay xxx IS3: so: u:m XXX XXX you- u:m you want to make sure-XXX you want to check whether these two are equal XXX XXX if this zero equals one of them must be zero right xxx S1: mhm xxx IS3: but we don't knowwe don't know whether (zero) or not XXX mhm xxx S1: xxx IS3: (.2) uh most of the time it's not zero cause XXX XXX a happens xxx S1: ((nods)) okay XXX xxx IS3: right xxx S1: yeah it's (.) like a: give:n b right? xxx IS3: uh: xxx S1: orxxx IS3: just-just two simple events (um) XXX (but they) XXX XXX most of the time

they happen (so the) probability is not zero, XXX xxx S1: m: xxx IS3: it's more than zero xxx S1: okay xxx IS3: uh: so: XXX (.2)XXX so: XXX they are not= XXX =mhm= xxx S1: xxx IS3: =equal if they are not equal, XXX zero ((undecipherable)) XXX xxx S1: okay and the- and you said they're (.) XXX independent or de-dependent XXX xxx IS3: dependent xxx S1: okay okay got it ((pause)) XXX a:nd the xxx IS3: ((undecipherable)) XXX 11:59 XXX oh you- you need to make sure that (disjoint), is not the same thing as independent. XXX xxx S1: okay xxx IS3: actually when two things are (.) disjoint XXX XXX they: most of the time they are dependent xxx S1: oh xxx IS3: because of this cause (.2) XXX this (.) XXX uh: (.2) XXX i mean if two things both ha- probability of them XXX ((undecipherable)) XXX the (.) multiple of their-XXX (.) the multiple of these two values is not equal to zero. XXX XXX SO this formula- this formula XXX XXX doesn't (hold) xxx S1: mhm xxx IS3: so they're independent xxx S1: ((nods)) xxx IS3: and uh: XXX for this,

uh: XXX ((pause)) XXX y- this is the same thing of independance right? XXX mhm xxx S1: xxx IS3: if a and b are independent, this formula holds but, it is talking about disjoint a lot XXX uh p: a: (.1) XXX is equal to (.1) XXX °(p) (.1) XXX °plus XXX this- this right? XXX xxx S1: ((nods)) xxx IS3: um this ((undecipherable)) zero XXX XXX so this is zero xxx S1: ((nods)) xxx IS3: but we are not sure whether p a is zero or not xxx S1: mhm okay XXX and u:m XXX XXX this whole thing is zero right? xxx IS3: yeah xxx S1: oh okay alright XXX xxx IS3: cause this one is zero xxx S1: right XXX okay xxx IS3: so: is it okay? XXX (what's this?) XXX xxx S1: u:m s- and then XXX for (.) [d XXX xxx IS3: [for this one XXX ah absolutely we- [we don't know anything about this= xxx S1: [yeah =right right= XXX =yeah xxx IS3: okay and um, xxx S1: XXX (.1) so °okay so it's not that one XXX (then) XXX xxx IS3: yeah °it's that one? xxx S1: XXX ((pause))

```
((mouths okay))
XXX
           oh- uh:
XXX
           £that's an (a) ((laughs))
XXX
           there we go
XXX
           alright u:m
XXX
           ((pause))
XXX
           so:
XXX
           so (.)
XXX
           should i just- (.1)
XXX
           should i just remember that mutually exclusive (.)
XXX
           it's always gonna be dependent because u:m
XXX
XXX
           (.1) because
XXX
           um
           they can't (.) happen (.) at the (.) same time?
XXX
xxx IS3:
           yeah
xxx S1:
           okay
XXX
           and (.)
XXX
           independent,
           can happen at the same time
XXX
           u:m
XXX
           (.3) but
XXX
           uh if it was like that
XXX
           like the venn diagram,
XXX
xxx IS3: oh: you want to (.) explain this way
xxx S1:
          ((laughs))
xxx IS3: actually uh:
14:59
           this can tell you (whether they're) disjoint
XXX
           but (.) when you're talking about uh independence
XXX
           (.) it's like uh
XXX
           there are two events here
XXX
xxx S1:
           m
xxx IS3:
           if you- if today is (raining,)
           the probability that today's going to be raining,
XXX
XXX
           or if you- (.) whether you will miss a bus
           they're two (.) independences right
XXX
xxx S1:
           right
           you can't draw this ((undecipherable)) one (.)
xxx IS3:
           (such sample space)
XXX
xxx S1:
           right
xxx IS3:
           unless you: (.)
           put a (sample) space together,
XXX
           so:
XXX
xxx S1:
           so- so this- this can be independent and dependent right?
XXX
           like it could be either or?
```

XXX	IS3:	(.1) yeah
XXX	S1:	yeah okay
XXX		but
XXX	IS3:	the only thing you need to check is this one
XXX	S1:	right
XXX		but
XXX		um
XXX		this is always gonna be dependent.
XXX		right?
XXX	IS3:	yeah
XXX	S1:	okay=
XXX	IS3:	=i think so
XXX	S1:	yeah
XXX		okay
XXX		never independent
XXX	IS3:	um
XXX		uh:
XXX		unless (.)
XXX		one thing uh- one event's proba-probability is zero.
XXX	S1:	mhm
XXX	IS3:	so (.) this is ((undecipherable))
XXX	S1:	okay
XXX		[i-
XXX	IS3:	[if one of them is zero
XXX		[((undecipherable))
XXX	S1:	[yeah
XXX		i think the only thing (.) i-
XXX		(.1) i don't a hundred percent get is like
XXX		um
XXX		just
XXX		the dependent part like-
XXX		like explaining it in like the formula way?
XXX		instead of this way
XXX		um
XXX		and then in the independent part um
XXX		uh
XXX		in the formula (.) way. um
CLF	IS3:	this is (in the)-
CLF		if this is a, this is b,
CLF		this is (a)
XXX	S1:	mhm
XXX		((pause))
CLF	IS3:	uh:
CLF		cause it's using <multiplication></multiplication>
CLF		like- i think it can't (be sure) in (.) here

xxx S1: mhm CLF IS3: just need to check the probability CLF is equal to this multiply this or not. CLF xxx S1: okay XXX um but XXX uh i'm sorry but d- do you think uh you can explain to me XXX uh one more time like XXX using the formulas again um XXX [why XXX xxx IS3: [on the first one? xxx S1: yeah why it's [n- not dependent and why it xxx IS3: [oh sure xxx S1: why it is dependent and why it's not (.) independent. xxx IS3: okay uh:= XXX xxx S1: =thank you xxx IS3: ((laugh)) you're welcome we know that uh XXX a and b are mutually exclusive, XXX so: XXX this is a (narrow) space right? XXX xxx S1: mhm xxx IS3: so, (.2) this is th- cause it can't happen together XXX xxx S1: mhm xxx IS3: so the probability that (they) happen together is zero. xxx S1: mhm xxx IS3: and uh this is p a multiply p b XXX SO XXX if you say like this, XXX XXX you may say: probability of this one is one over three, XXX 18:01 (so) this is one over two, XXX xxx S1: mhm xxx IS3: you can say they're both not equal to zero right so the (.) multiplication w- can't be zero XXX xxx S1: right xxx IS3: if they can't be zero so these two must not equal because this one is zero this is not equal= XXX xxx S1: =right

```
xxx IS3: so this is- (.)
XXX
        must not be zero.
xxx S1: right
xxx IS3: not- not be equal
xxx S1: yeah=
xxx IS3: =so this one (.) doesn't hold
xxx S1: (.1) yeah and that means uh dependent=
xxx IS3: =independence=
xxx S1: =in-independent okay okay
xxx IS3: independence (.) is-
          is that ((undecipherable))
XXX
          °okay
xxx S1:
          °i'm gonna- i'm gonna star that
XXX
xxx IS3:
          yeah
xxx S1: (.1) okay
          and the:n for dependent?
XXX
xxx IS3: if it's not independent,
XXX
          it's dependent.
xxx S1:
         oh right yeah ((laughs))
          okay ((laughs))
XXX
          alright so:
XXX
          and then you said disjoint, (.1)
XXX
          disjoint means this
xxx IS3:
          (.3)
XXX
          they- they mean this-
xxx S1:
xxx IS3: they can happen at the same time
xxx S1: ((nods))
          yeah
XXX
          [but-
XXX
xxx IS3:
          [this is asking the probability they happen together
          at- they happen at the same time
XXX
xxx S1:
          mhm
xxx IS3:
          they tell you they can't happen at the same time
          so the probability happen at the same time is zero.
XXX
xxx S1:
          okay
          u:m
XXX
          (.1) so
XXX
          (.2) so that means that uh disjoint and independent
XXX
xxx IS3:
          it's not the same thing=
xxx S1:
          =yeah
          yeah it's not
XXX
          ((laughs))
XXX
XXX
          okay
          cause that means
XXX
          can't happen at the same time and independent means
XXX
```

```
um (.) that they're just not equal.
XXX
XXX
          [and
xxx IS3:
          [yeah
xxx S1:
          okay
          and it- that's the only difference between the two right?
XXX
          between [<disjoint> and independent?
XXX
xxx IS3:
                   [hm:
          ((nodding)) i th- uh
XXX
           ((pause))
XXX
          i think so
XXX
xxx S1:
          okay
xxx IS3:
          (.1) if you remember this it's enough for the exam
xxx S1:
          okay ((laughs))
          got it.
XXX
          yeah i- i understand now.
XXX
          (.2) and so i could just remember that
XXX
XXX
          mutually exclusive is (.) always gonna be dependent?
          ((nods))
xxx IS3:
xxx S1:
          okay
          u::m
XXX
          how long are you here until again?
XXX
CLF IS3: (.1) teaching a class?
xxx S1: uh well no how long (.)
         uh are you here in the=
XXX
xxx IS3: =office hour?
xxx S1: yeah
xxx IS3: three to five
xxx S1: oh okay
          and (.) i don't wanna:
XXX
          take up (.) a lot of your time so
XXX
xxx IS3: oh↑ no problem
xxx S1:
          um
          i don't know what time it is though so
XXX
xxx IS3: m no problem
xxx S1: u:m (.1)
          so the:n
XXX
          ((pause))
XXX
          u:m
XXX
           (.2) can i do: this one with you then?
XXX
xxx IS3:
          o↑kay↓
xxx S1:
          (okay)
xxx IS3: you mean number seven?
xxx S1:
          mhm
20:59
```

```
<sup>°</sup>uh: (classify) according to ((undecipherable, reading to
xxx IS3:
           herself))
XXX
           find
XXX
           oh for- for such problems
XXX
           you just need to count the numbers.
XXX
xxx S1:
           right
xxx IS3:
           ((undecipherable))
           if-?
XXX
           where's-?
XXX
           oh (freshman year)
XXX
           if y-y- uh
XXX
XXX
           only thing you can do is count the number.
xxx S1:
           mhm
           like
xxx IS3:
           you can count the total number of freshman,
XXX
           which is uh eighteen- i can write right here?
XXX
xxx S1:
           oh yeah yeah
           ((undecipherable))
xxx IS3:
           eighteen right?
XXX
           mhm (.1)
xxx S1:
xxx IS3:
           this plus this plus this
           °is eighteen
XXX
           i- i'll tell you what to do next that way (.)
xxx S1:
           [you tell me if i'm wrong or not okay
XXX
           [yeah yeah sure okay
xxx IS3:
xxx S1:
           so the:n u:m
           ((undecipherable, mumbling to herself))
XXX
           forty two?
XXX
           ((pause))
XXX
           and the:n
XXX
           *twenty six twenty seven twenty eight twenty nine thirty
XXX
           °thirty two,
XXX
           and the:n
XXX
           *twenty two (twenty three twenty four twenty five twenty
XXX
six
           °twenty seven) twenty eight,
XXX
xxx IS3:
           yeah
xxx S1:
           okay.
           and the:n
XXX
XXX
           okay i'm gonna do a first,
22:23
XXX
           ((pause))
22:42
XXX
           u:m
XXX
           ((pause))
```

```
okay °so ((undecipherable)) f
XXX
           ((pause))
XXX
           so f is
XXX
           ((pause))
XXX
           so would this one be:
XXX
           (.1) eight over eighteen?
XXX
xxx IS3:
           uh:: no. [you-
xxx S1:
                    [oh
xxx IS3:
           you need to-
           ((pause))
XXX
           you need to know what's the:
XXX
XXX
           hm
           uh:
XXX
           ((undecipherable))?
XXX
         mhm
xxx S1:
           right so it'd be like
XXX
XXX
           um
XXX
           ((pause))
xxx IS3:
           oh no you can't [use this formula (to write)
xxx S1:
                           [oh
           oh no?
XXX
xxx IS3: remember
XXX
           (it-) you should make sure that (independent) =
           =right right
xxx S1:
XXX
           yeah
           okay
XXX
xxx IS3:
          you just-
           for this uh this sort of problem
XXX
           they give you the numbers
XXX
           you just need to count the numbers (that's okay)
XXX
xxx S1:
           okay.
xxx IS3:
           the- the:
           uh:
XXX
           (.1) i'm not sure,
XXX
           uh there are two number-
XXX
23:59
           two numbers here and here
XXX
           what's (the) name?
XXX
           which- which one is denominator?
XXX
xxx S1:
         ((points)) [denominator.
                      [(°this one?)
xxx IS3:
           [thank you
XXX
xxx S1:
          [mhm
         no [no problem
XXX
xxx IS3:
           [so- so what's this one?
```

```
xxx S1: n:umerator.
xxx IS3: numerator (right)
         so (.) you're numerator is eight
XXX
         that's correct
XXX
xxx S1:
         mhm
xxx IS3: but uh:
         you need to make sure the denominator
XXX
         i:s eighteen right?
xxx S1:
xxx IS3: no
xxx S1: no
xxx IS3: cause
XXX
         the (sample space) here,
XXX
         is all of the students
         ((nods))
xxx S1:
xxx IS3: all of the students here.
         so: what's the total number of (our) students
XXX
xxx S1:
         twenty eight
XXX
          ((pause))
          (oh wrong?)
XXX
          £oh yeah one twenty n- sorry ((laugh))
XXX
          ((laughs)) yeah so:
xxx IS3:
          if- if the:
XXX
          uh:
XXX
          if they ask to to de- the denominator is eighteen,
XXX
          the:- it tell-
XXX
          it must tell you that (.1)
XXX
          (the) probability (uh) given that he is a freshman
XXX
xxx S1:
          okay
xxx IS3: if s- they didn't say anything
          the- so the denominator will be the whole (sample space)
XXX
xxx S1:
         mhm
          okay
XXX
          so: u:m
XXX
          ((pause))
XXX
XXX
          so um i'm sorry d- [do you mind uh showing me?
xxx IS3:
                             [yeah (.) sure
xxx S1: thank you
xxx IS3: uh: the number of (.) this
          uh (.2)
XXX
XXX
          if i (.) use this to: refer to the whole sample space
          (.1) i mean
XXX
          one twenty [students,
XXX
xxx S1:
                     [the- the students [yeah
xxx IS3:
                                       [yeah: yeah yeah
          (.1) and you just need to get the number or you-
XXX
```

```
you understand this
XXX
xxx S1:
          yeah?
          yeah. and then i just put-
XXX
         this one
xxx IS3:
xxx this one is f and p happens together,
          °mhm
xxx S1:
xxx IS3:
         (see it?)
xxx S1:
         ((nod))
xxx IS3: (it holds (.) one two three) and just-
xxx S1: that's it
xxx IS3: yeah:=
xxx S1: =okay. okay.
          °um
XXX
         (.2) okay
XXX
          got it
XXX
          °and then for b,
XXX
26:08
         ((pause to write))
XXX
26:39
          °(yeah) ((undecipherable mumble))
XXX
xxx IS3:
          hm:
XXX
        this
          (if) or↑
XXX
xxx S1: oh oh yeah
        so::
XXX
XXX
        ((pause))
xxx IS3: it means (.) f happens or (.2)
xxx S1: ((nods))
xxx IS3: r happens.
xxx S1: (°mhm)
27:00
xxx IS3: °so (.) um
XXX
        only if-
          on-
XXX
XXX
          you only need one of them
XXX
          to happen
XXX
          (that's okay)
xxx S1:
         ((nods))
xxx IS3:
          so you can-
          you can say
XXX
         (okay so) for here,
XXX
          like uh:
XXX
XXX
          this is (.) r happens (.) ((undecipherable))
          °mhm
xxx S1:
xxx IS3: this is (.) f happens ((undecipherable))
```

XXX	S1:	°mhm
CLF	IS3:	SO
CLF		((undecipherable))
CLF		(if these are) together
CLF		that's okay
CLF		((pause))
CLF		one of them happens,
CLF		that's okay.
XXX	S1:	mhm
XXX		(.2) sorry could you repeat that
XXX	IS3:	yeah
XXX	S1:	thank you
XXX	IS3:	hm:
XXX		wh- when we see f or r happens
XXX	S1:	mhm=
XXX	IS3:	=means uh:
XXX		we don't need both of them to happen
XXX	S1:	mhm
XXX	IS3:	here,
XXX		we (.) use this number because
XXX		it's-
XXX		it's (the on-)
XXX		it's the number of they both happen
XXX	S1:	mhm
XXX	IS3:	and (.) for here we just need one of them to happen
XXX		this (.1)
XXX		place (.1)
XXX		refers to (.) r happens
XXX	S1:	mhm=
XXX	IS3:	=the number of r happens
XXX		in different places.
XXX		in the freshman or sophomore or something
XXX		(.1) this is the place of where f happens
XXX		(.2) i mean uh:
XXX		these are numbers of freshman u:m
XXX		taking course or (.) (rootbeer) and this one
XXX		just add this together,
XXX		is what f or r happens
XXX	S1:	so you can (.)
XXX		really just like add them=
XXX	IS3:	=yeah
XXX	S1:	(and-) okay
XXX		alright
XXX	IS3:	just (.) add the- this one this one this one this one this
XXX		one this one

XXX	S1:	and that'll be my: answer?
XXX	IS3:	oh you need to
XXX		[(divide it) by denominator.
XXX	S1:	[oh.
XXX	IS3:	you need to divide it by (.) one twenty.
XXX		cause you're calculating probability
XXX	S1:	right
XXX		right
XXX		okay
XXX		°okay
XXX		((pause))
XXX		°um
XXX		((pause))
29:1	.2	
XXX		((pause to write))
29:2	3	
XXX	IS3:	yeah
XXX	S1:	okay
XXX		and then:
XXX		C
29:2	9	
XXX		((pause))
29:4	2	
XXX		oh
XXX		(that's not right) ((laugh))
XXX XXX		(.3) ((laugh))
XXX XXX XXX	IS3:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem,</pre>
XXX XXX XXX XXX	IS3:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3)</pre>
XXX XXX XXX XXX XXX	IS3:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.)</pre>
XXX XXX XXX XXX XXX XXX	IS3:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)?</pre>
XXX XXX XXX XXX XXX XXX XXX	IS3: S1:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs))</pre>
xxx xxx xxx xxx xxx xxx xxx 29:5	IS3: S1: 9	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs))</pre>
xxx xxx xxx xxx xxx xxx xxx 29:5 xxx	IS3: S1: 9	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((pause))</pre>
xxx xxx xxx xxx xxx xxx 29:5 xxx xxx	IS3: S1: 9 IS3:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((pause)) yeah the probability form- (.) mhm.</pre>
xxx xxx xxx xxx xxx xxx 29:5 xxx xxx xxx xxx	IS3: S1: 9 IS3:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((pause)) yeah the probability form- (.) mhm. ((pause))</pre>
xxx xxx xxx xxx xxx xxx 29:5 xxx xxx xxx xxx xxx	IS3: S1: 9 IS3:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((laughs)) ((pause)) yeah the probability form- (.) mhm. ((pause)) (what is) ((undecipherable))?</pre>
xxx xxx xxx xxx xxx xxx 29:5 xxx xxx xxx xxx xxx xxx xxx	IS3: S1: 9 IS3:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((laughs)) ((pause)) yeah the probability form- (.) mhm. ((pause)) (what is) ((undecipherable))? oh: [((undecipherable))</pre>
xxx xxx xxx xxx xxx 29:5 xxx xxx xxx xxx xxx xxx xxx xxx	IS3: S1: 9 IS3: S1:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((laughs)) ((laughs)) ((pause)) yeah the probability form- (.) mhm. ((pause)) (what is) ((undecipherable))? oh: [((undecipherable)) [uh- uh:</pre>
xxx xxx xxx xxx xxx 29:5 xxx xxx xxx xxx xxx xxx xxx xxx xxx x	IS3: S1: 9 IS3: S1: IS3:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((laughs)) ((laughs)) ((laughs)) ((pause)) yeah the probability form- (.) mhm. ((pause)) (what is) ((undecipherable))? oh: [((undecipherable)) [uh- uh: oh sophomore</pre>
xxx xxx xxx xxx xxx xxx 29:5 xxx xxx xxx xxx xxx xxx xxx xxx xxx x	IS3: S1: 9 IS3: S1: IS3: S1:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((laughs)) ((laughs)) ((pause)) yeah the probability form- (.) mhm. ((pause)) (what is) ((undecipherable))? oh: [((undecipherable)) [uh- uh: oh sophomore mhm</pre>
xxx xxx xxx xxx xxx 29:5 xxx xxx xxx xxx xxx xxx xxx xxx xxx x	IS3: S1: 9 IS3: S1: IS3: S1: IS3:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((laughs)) ((pause)) ((laughs)) ((pause)) ((undecipherable))? oh: [((undecipherable))? oh: [((undecipherable)) [uh- uh: oh sophomore mhm oh:</pre>
xxx xxx xxx xxx xxx xxx 29:5 xxx xxx xxx xxx xxx xxx xxx xxx xxx x	IS3: S1: 9 IS3: S1: IS3: S1: IS3: S1: IS3: S1:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((laughs)) ((pause)) yeah the probability form- (.) mhm. ((pause)) (what is) ((undecipherable))? oh: [((undecipherable)) [uh- uh: oh sophomore mhm oh: ((laughs))</pre>
xxx xxx xxx xxx xxx 29:5 xxx xxx xxx xxx xxx xxx xxx xxx xxx x	IS3: S1: 9 IS3: S1: IS3: S1: IS3: S1:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((pause)) ((laughs)) ((pause)) (what is) ((undecipherable))? oh: [((undecipherable)) [uh- uh: oh sophomore mhm oh: ((laughs)) um</pre>
xxx xxx xxx xxx xxx 29:5 xxx xxx xxx xxx xxx xxx xxx xxx xxx x	IS3: S1: 9 IS3: S1: IS3: S1: IS3: S1: S1:	<pre>(that's not right) ((laugh)) (.3) (this is a traditional) probability problem, (.3) can you remember the (.) formula of (.) (yeah)? ((laughs)) ((laughs)) ((pause)) ((undecipherable))? oh: [((undecipherable))? oh: [((undecipherable)) [uh- uh: oh sophomore mhm oh: ((laughs)) um ((pause))</pre>

(.2) yeah xxx IS3: °mhm xxx S1: xxx IS3: it is 30:29 XXX ((pause)) 30:48 xxx IS3: m XXX S1: ((nods)) xxx IS3: (.2) yeah that's it okay↑ ((laughs)) xxx S1: 30:53 XXX ((pause)) 31:04 xx IS3: (c) or r XXX uh: yeah 31:09 XXX ((pause)) 31:35 xxx S1: ((laugh)) xxx IS3: ((laugh you- you can write it down first and (.) then figure it out (like that) XXX £oh okay xxx S1: XXX u:m i w- i mean um XXX i was just gonna put (.) XXX s o and (.) XXX c u uh- c: union (.) r, XXX xxx IS3: ((nods)) and then over: xxx S1: [c union XXX xxx IS3: [cur okay okay xxx S1: °(got it) XXX 31:58 XXX ((pause)) 32:11 xxx IS3: yeah this one ((undecipherable)) xxx S1: hm? xxx IS3: there is a p here, xxx S1: oh- yeah xxx IS3: hm ((pause)) XXX so:: XXX for this, XXX uh XXX

((pause)) XXX °c: (and) r XXX °hm? where's c? XXX uh: XXX oh c's here r is here right? XXX xxx S1: ((nods)) 32:41 ((pause)) XXX 32:53 xxx IS3: so do you know how to do this one xxx S1: SO XXX um (.2) well XXX 32:59 you can just do: XXX (.3) can't you (.) add them- these two up? XXX XXX [right? [uh: xxx IS3: m:-XXX you don't need to do so (.) first cause you need to XXX give (an) intersection of this, XXX xxx S1: ((nods)) xxx IS3: if you just count and you- you don't know how to do the (last one) XXX ((nods)) xxx S1: xxx IS3: okay then um XXX oh when you count numbers you need to figure out XXX what part↑ of them you need to count. ХХХ xxx S1: mhm= xxx IS3: =so you need to figure out what this refers to xxx S1: ((nods)) xxx IS3: (.2) l:ike uh: c (.1) or r XXX XXX (.1) oh there is a formula dealing with this problem xxx S1: ((nods)) xxx IS3: you remember? .hhh uh ((undecipherable)) XXX right XXX xxx S1: (.2) right u:m XXX can you show me that? xxx IS3: sure xxx S1: thank you xxx IS3: so this ((pause to write)) XXX

```
((nods))
xxx S1:
xxx IS3:
          ((laughs))
          m- you- you can also think of it this way
XXX
          this part is <c:: or r>
XXX
           (.2) then (you do) happen with
XXX
           ((undecipherable)) at the same time,
XXX
          so:
XXX
          it will be this one or this one
XXX
          [right
XXX
xxx S1:
          [mhm
xxx IS3: just plus this one and this one
xxx S1: ((nods))
xxx IS3: that's okay
xxx S1: okay
XXX
          u:m
xxx IS3: (.2) actually this one is here (.)
XXX
          this one is here.
          ((pause))
XXX
          it's like uh
XXX
           °uh this is ((undecipherable)) and this is
XXX
           ((undecipherable)) and this is sophomore,
XXX
          and (.) we need to count the (.) areas (they) intercept,
XXX
xxx S1:
          ((nods))
xxx IS3:
          it will be this place and this place
xxx S1:
          ((nods))
           ((pause))
XXX
           °okay
XXX
          u:m
XXX
          ((pause))
XXX
          so (.2)
XXX
          um
XXX
          sorry do you mind (.) um [((undecipherable))
XXX
xxx IS3:
                                   [su:re
XXX
          um you mean this formula?
          um (.) like (.) plugging in the numbers for- [for this
xxx S1:
xxx IS3:
                                                       [oh!: sure.
          °here i got,
XXX
          °m:
XXX
           °((undecipherable))
XXX
           °uh:
XXX
          °and to count the number
XXX
          actually,
XXX
           °count the numbers okay
XXX
          this o:ne is uh sixteen,
XXX
36:02
```

```
and then this one is twenty
XXX
           °uh:
XXX
           (.1) and the number here is, (.)
XXX
           oh just add this up.
XXX
           (.3) uh:↑
XXX
           (.3) ((undecipherable mumbling))
XXX
XXX
           u:m (forty) two:
           (forty) eight
XXX
           fifty?
XXX
           fifty right?
XXX
           this is fifty
XXX
           (.1) and this is uh ten thir- thirty four↑
XXX
           right?
XXX
           °this is fifty and this (thirty four)
XXX
           °((undecipherable))
XXX
XXX
           yes
           °((undecipherable))
XXX
xxx S1:
           ((nods))
           °u:m
xxx IS3:
           i: think i need to go=
XXX
xxx S1:
           =okay=
xxx IS3:
           =for my next class,
xxx S1: okay yeah yeah
           do you mind coming wednesday?
xxx IS3:
           yeah i can come- uh wednesday. [((undecipherable))
xxx S1:
xxx IS3:
                                           [or
xxx S1:
           i think i can
           what- what time
XXX
           four to five
xxx IS3:
xxx S1:
           °four to five
           i: m:ay °be able to
XXX
           i'm not (.) sure i'm- i- (.2)
XXX
           u:m cause i have class,
XXX
           [(like)
XXX
           [oh::
xxx IS3:
xxx S1:
           but
XXX
           u:m
xxx IS3: m:
           ((pause))
XXX
           but i- i could try i th- like- ma- maybe i could.
xxx S1:
           but i'm not sure
XXX
           cause i have like a class like (.) um (.2)
XXX
           uh that starts like at five and it's like in the hospital
XXX
SO
           i gotta (.) [walk all the way there
XXX
```

XXX	IS3:	[oh okay
XXX	S1:	[yeah yeah
XXX	IS3:	[okay
XXX	S1:	u:m
XXX		but
XXX		but no like i- i understood (.) a lot of this so
XXX		thank you
XXX		[thank you so much for all your help
XXX	IS3:	[(oh no problem)
XXX	S1:	thank you
XXX		((laugh))
INT	IS3:	°my- my office hour is on monday and wednesday
XXX	S1:	your- your-
XXX	IS3:	office hour
XXX	S1:	oh okay thank you and do you mind if i keep that=
XXX	IS3:	=yeah! sure=
XXX	S1:	=okay. thank you
XXX		no no it's okay. thank you

- •
- •

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