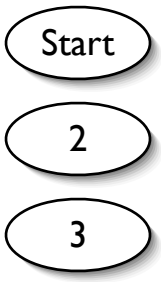
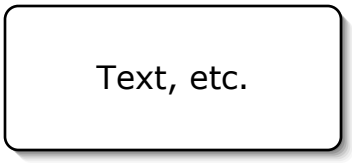
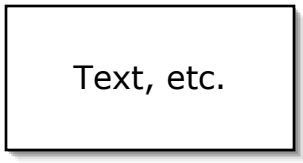
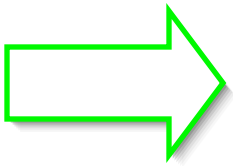
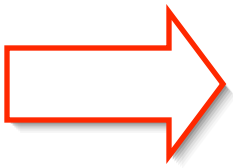
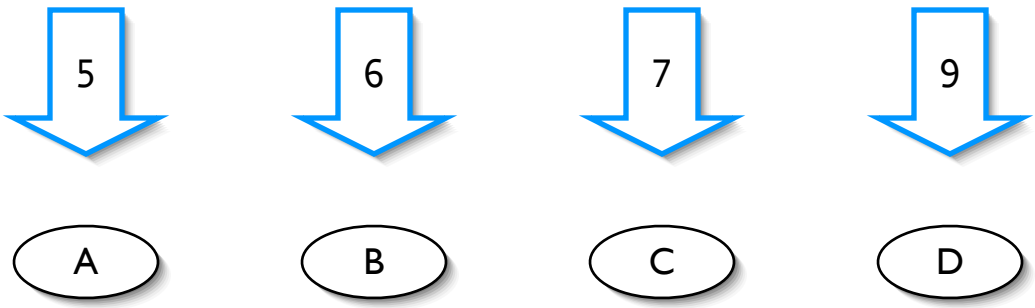
Legend:

State markers:	
Main user visible content and interface:	
Auxiliary user visible content and interface:	
Correct move:	
Incorrect move:	
Navigational move:	
Feedback content:	
Hint content:	

Start

Complete the following derivation by filling in the missing formulae. To fill in the formula on a given line, just click anywhere on that line.

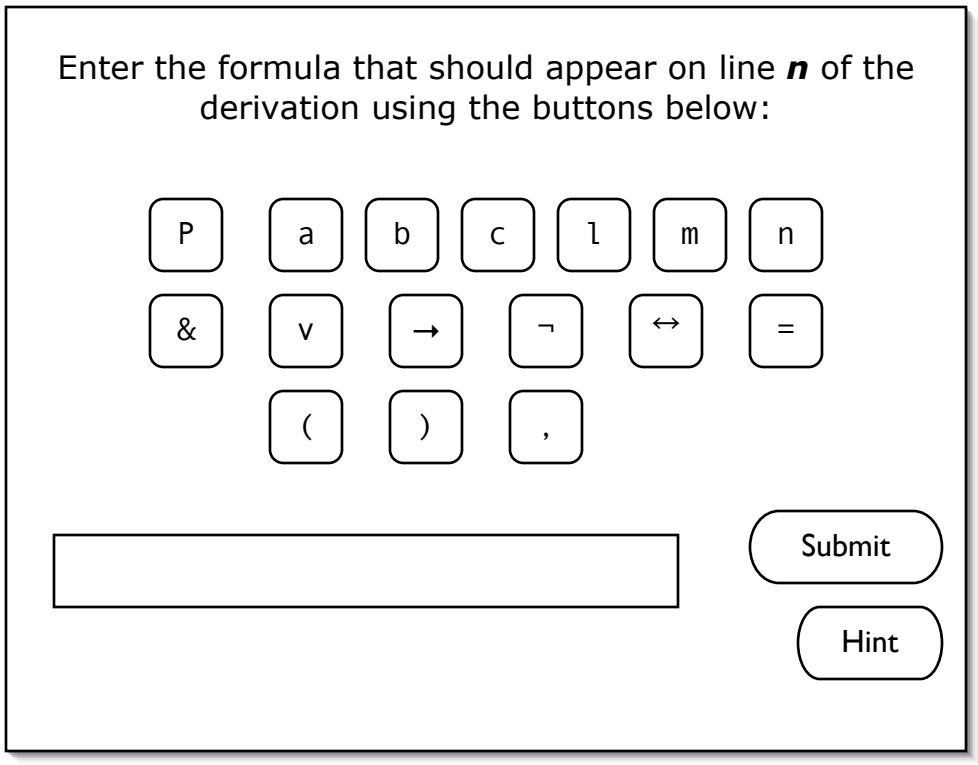
1.	P(a,b,c)	Premise
2.	a = l	Premise
3.	m = b	Premise
4.	c = n	Premise
5.	?	=E: 1, 2
6.	?	=E: 5, 4
7.	?	=I
8.	b = m	=E: 7, 3
9.	?	=E: 6, 8



Completed Derivation:

1.	P(a,b,c)	Premise
2.	a = l	Premise
3.	m = b	Premise
4.	c = n	Premise
5.	P(l,b,c)	=E: 1, 2
6.	P(l,b,n)	=E: 5, 4
7.	m = m	=I
8.	b = m	=E: 7, 3
9.	P(l,m,n)	=E: 6, 8

Interface for entering formulae:



I've included my ideal version of the interface, here.

If a standardized palette is going to be used for all exercises (for a given set of connectives), I'd prefer to use different letters than those above. Please let me know if that's the case so that I can make the appropriate changes to the script.

A

P(l,b,c)

That's right.

P(a,m,c)

You've got the identity wrong - it's the identity on line 2 that's been cited, not the one on line 3 (and in any case, the constant m doesn't appear in the formula on line 1, so the identity on line 3 couldn't be used to replace any terms in it).

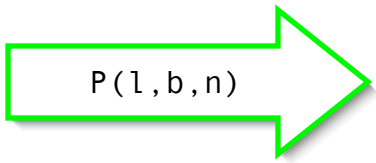
P(a,b,n)

You've got the identity wrong - it's the identity on line 2 that's been cited for this application of =E, not the one on line 4.

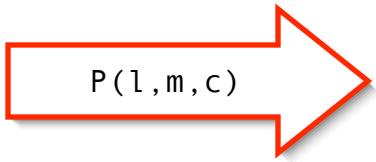
anything else

The formula derived by an application of =E will be the same as that on the first line cited with one exception: one or more occurrences of a term occurring in that formula, the same term that appears as the left-hand identical in the identity on the second line cited, are replaced with the right-hand term from the identity on the second line cited. If there is only one occurrence of that term in the formula on the first line cited, then it must be replaced.

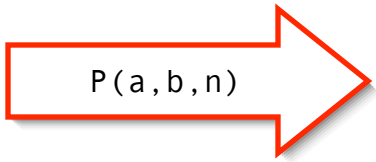
B



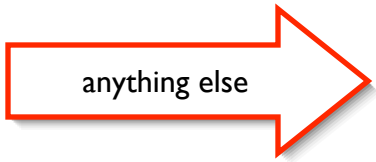
That's right.



You've got the identity wrong - it's the identity on line 4 that's been cited, not the one on line 3 (and in any case, the constant m doesn't appear in the formula on line 1, so the identity on line 3 couldn't be used to replace any terms in it).

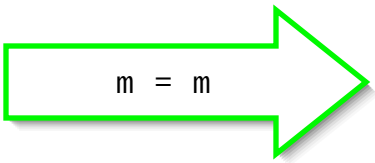


You've got the first line cited wrong - it's the formula on line 5 that's been cited for this application of =E, not the one on line 1.

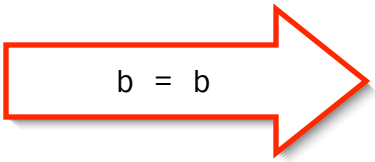


The formula derived by an application of =E will be the same as that on the first line cited with one exception: one or more occurrences of a term occurring in that formula, the same term that appears as the left-hand identical in the identity on the second line cited, are replaced with the right-hand term from the identity on the second line cited. If there is only one occurrence of that term in the formula on the first line cited, then it must be replaced.

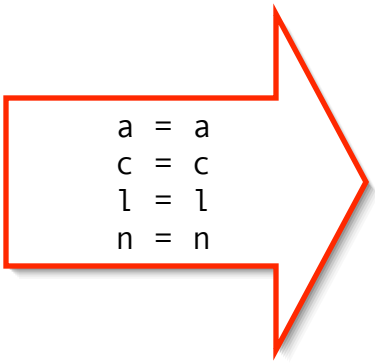
C



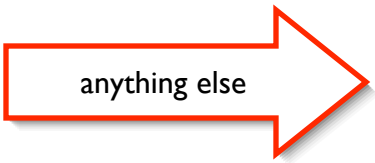
That's right.



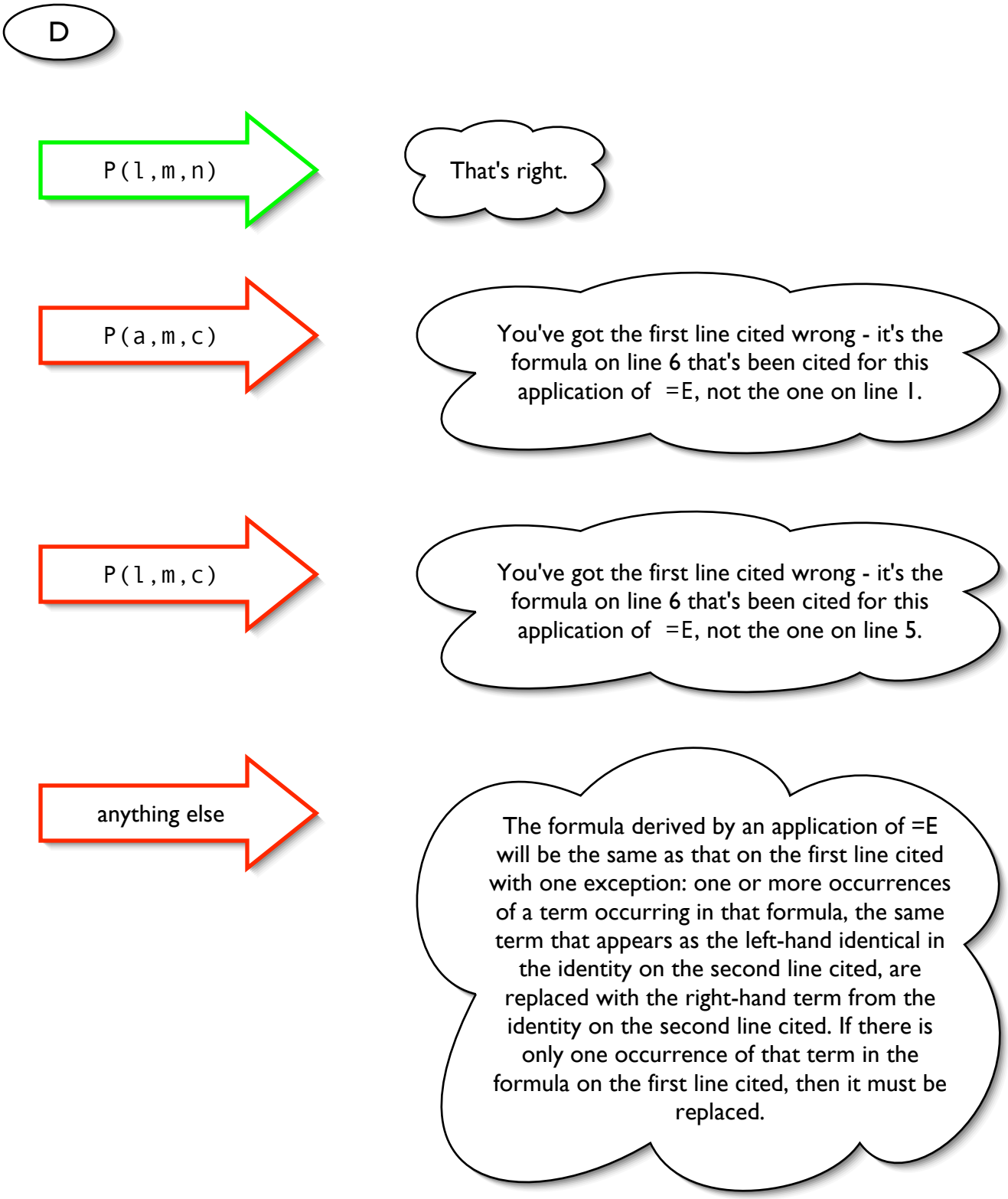
Not quite - you've chosen the wrong identical from the identity on line 3. Remember that it is occurrences of the left-hand equivalent in the formula that are replaced when =E is applied.



That formula could be derived by an application of =I, but it wouldn't do any good to do so here. Check later lines in the derivation to see if this line is cited in their justification.



An application of =I can only be used to derive a formula of the form ***x*** = ***x***, for some term ***x***. If you're having trouble determining which term, check later lines in the derivation to see if this line is cited in their justification.


D
P(l,m,n)
That's right.
P(a,m,c)
You've got the first line cited wrong - it's the formula on line 6 that's been cited for this application of =E, not the one on line 1.
P(l,m,c)
You've got the first line cited wrong - it's the formula on line 6 that's been cited for this application of =E, not the one on line 5.
anything else
The formula derived by an application of =E will be the same as that on the first line cited with one exception: one or more occurrences of a term occurring in that formula, the same term that appears as the left-hand identical in the identity on the second line cited, are replaced with the right-hand term from the identity on the second line cited. If there is only one occurrence of that term in the formula on the first line cited, then it must be replaced.

Hints

Each hint should contain the following, after specific hint content:

Click here to view the rules for identity.

The link should be to the following file:

missingformulae6hint.gif

A

Remember that in applying =E to a formula, at least one occurrence of the left-hand identical in the formula must be replaced by the right-hand identical. If there is only a single occurrence, then, it must be replaced.

The formula to enter here is the result of replacing the occurrence of a, the left-hand identical of the identity on line 2, in P(a,b,c) with l, the right-hand identical.

That result is P(l,b,c).

B

Remember that in applying =E to a formula, at least one occurrence of the left-hand identical in the formula must be replaced by the right-hand identical. If there is only a single occurrence, then, it must be replaced.

The formula to enter here is the result of replacing the occurrence of c, the left-hand identical of the identity on line 4, in P(l,b,c) with n, the right-hand identical.

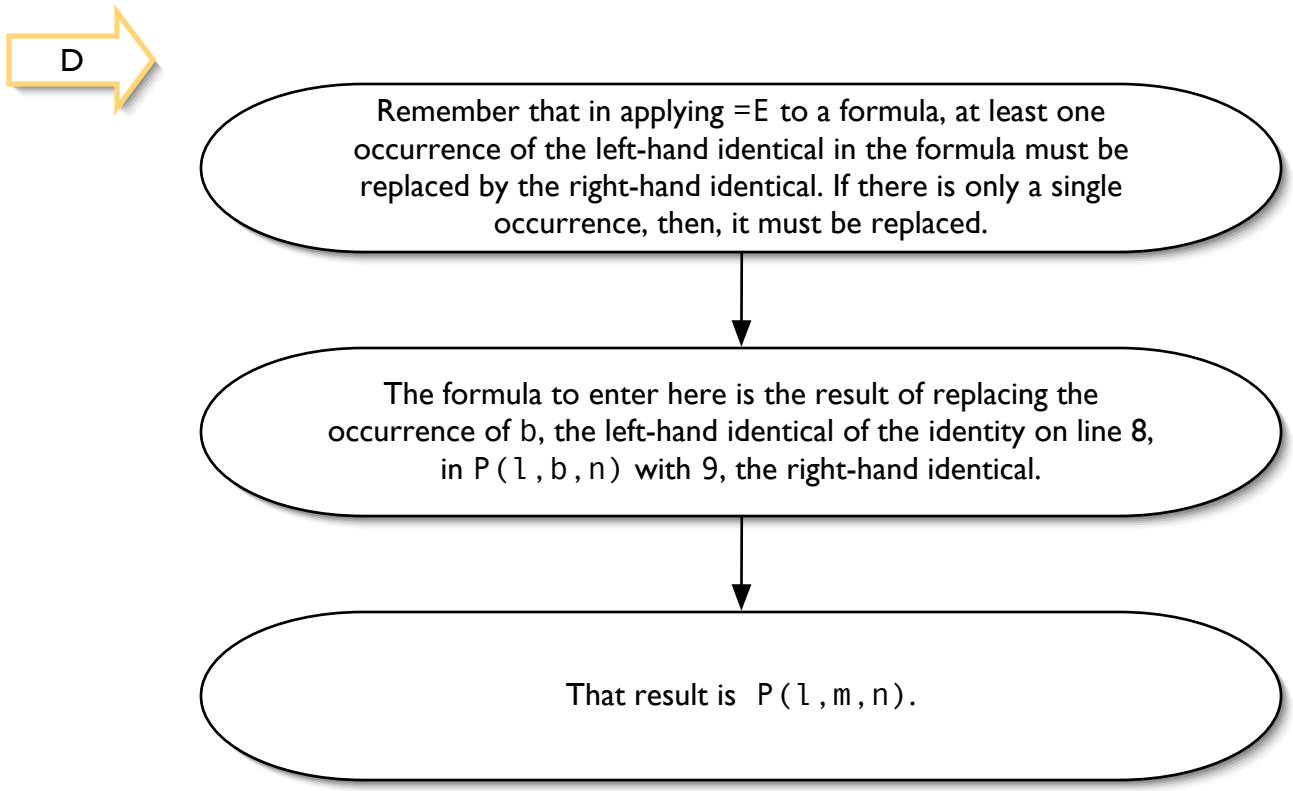
That result is P(l,b,n).

C

Remember that =I can only be used to introduce formulae of the form ***x*** = ***x***. Check other lines in the derivation to see if this line is cited in their justification to determine what term to use.

Line 8 is derived by an application of =E to this line and the identity on line 3, whose left identical is m.

The formula you should enter here is m = m.


D
Remember that in applying =E to a formula, at least one occurrence of the left-hand identical in the formula must be replaced by the right-hand identical. If there is only a single occurrence, then, it must be replaced.
The formula to enter here is the result of replacing the occurrence of b, the left-hand identical of the identity on line 8, in P(l,b,n) with 9, the right-hand identical.
That result is P(l,m,n).