


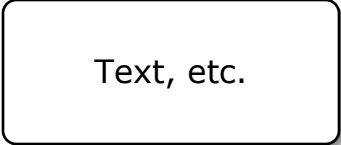
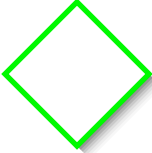

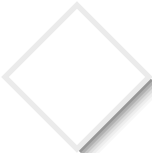

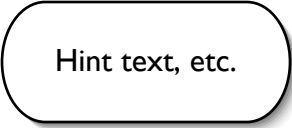


Legend:

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State markers:	  
User visible content and interface:	
Correct move:	
Incorrect move:	
Disabled move:	
Feedback content:	
Hint content:	

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Start

Insert the missing parentheses into the following formula. To insert a pair of parentheses, click on the main connective of the subformula around which the first set of parentheses should go.

$$P \ \& \ Q \ \vee \ R \ \rightarrow \ \neg S \ \& \ T$$

Hint

&

$\vee$

$\rightarrow$

$\neg$

&

When there are multiple occurrences of a connective in a formula, parentheses are inserted around the rightmost occurrence first.

Recall the order of precedence of the connectives:  
 $\neg$ ,  $\&$ ,  $\vee$ ,  $\rightarrow$

We never put parentheses around negations.

That's right

2

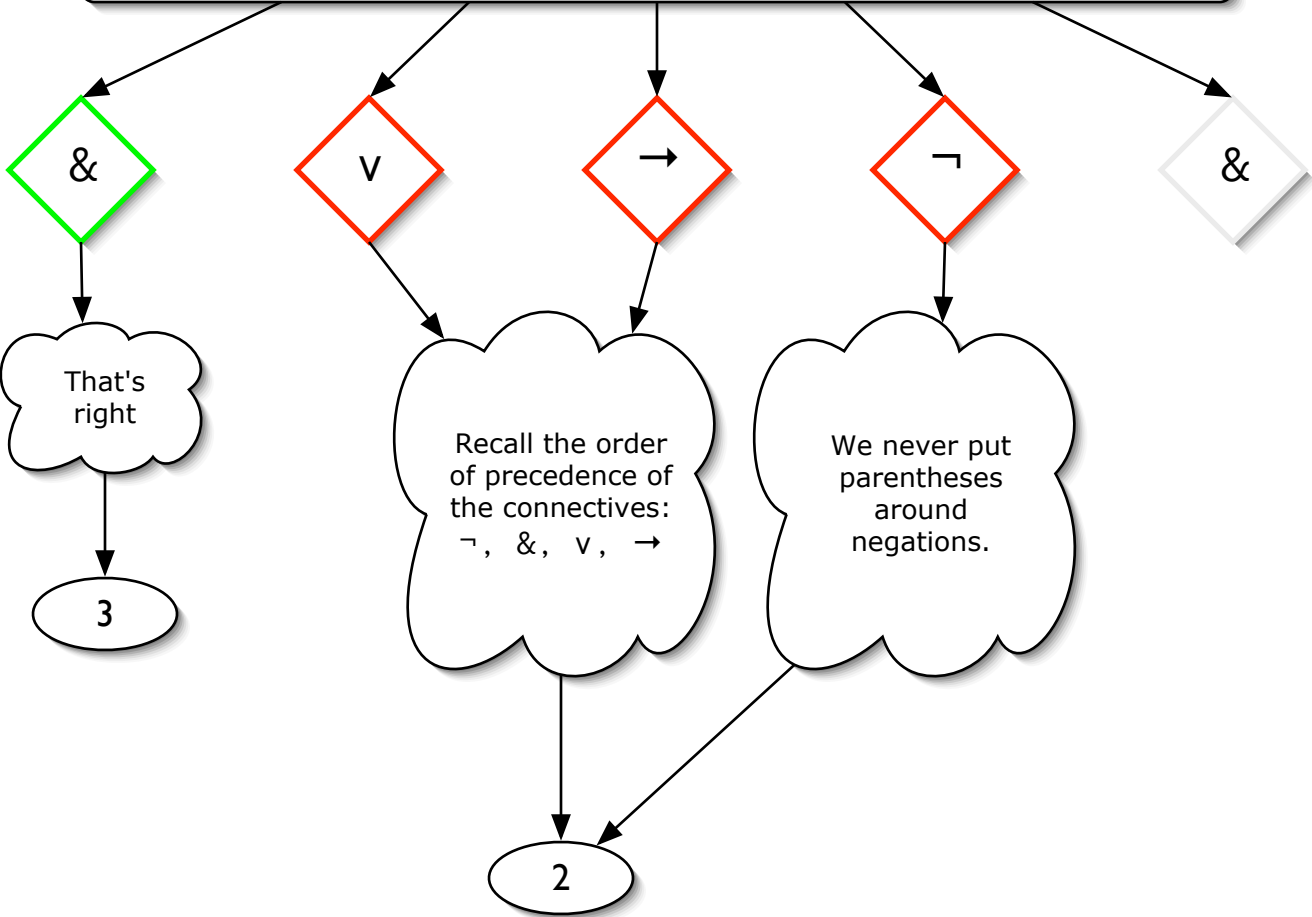
Start

2

Insert the missing parentheses into the following formula. To insert a pair of parentheses, click on the main connective of the subformula around which the next set of parentheses should go.

$$P \ \& \ Q \ \vee \ R \ \rightarrow \ (\neg S \ \& \ T)$$

Hint

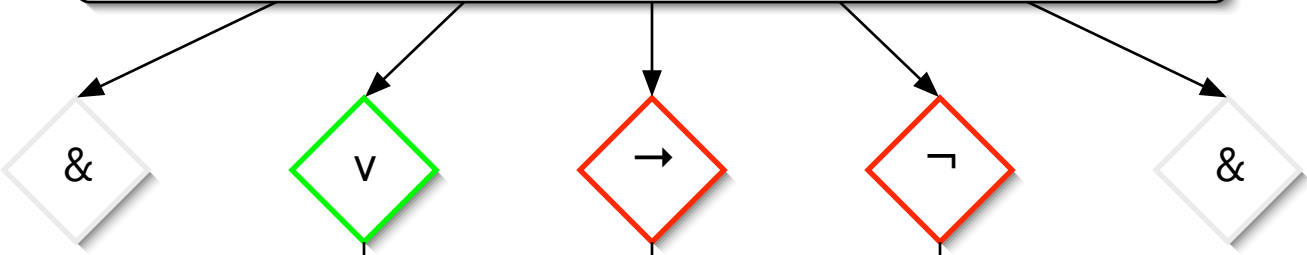


3

Insert the missing parentheses into the following formula. To insert a pair of parentheses, click on the main connective of the subformula around which the next set of parentheses should go.

$$( P \ \& \ Q ) \vee R \rightarrow ( \neg S \ \& \ T )$$

Hint



That's right

4

Recall the order of precedence of the connectives:  
¬, &, v, →

We never put parentheses around negations.

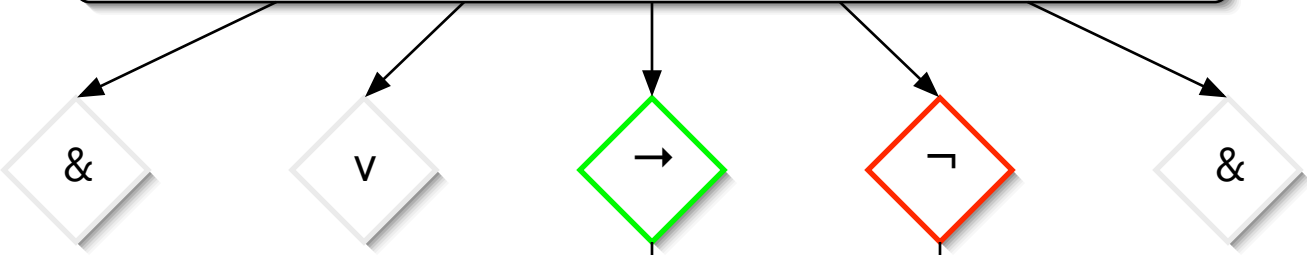
3

4

Insert the missing parentheses into the following formula. To insert a pair of parentheses, click on the main connective of the subformula around which the next set of parentheses should go.

$$(( P \ \& \ Q ) \vee R ) \rightarrow ( \neg S \ \& \ T )$$

Hint



That's right

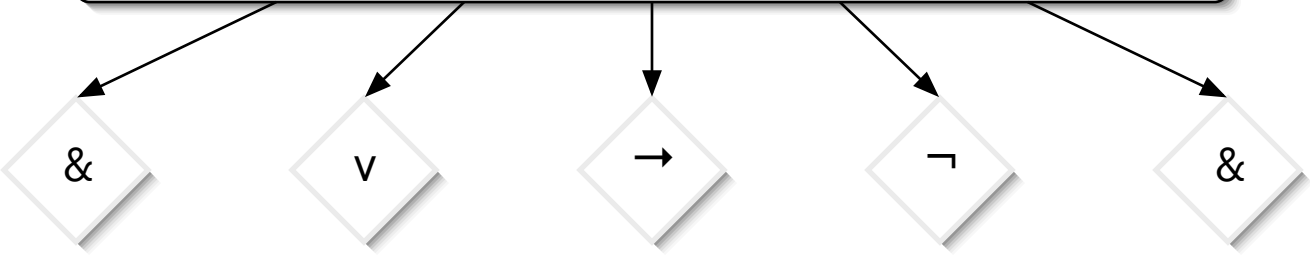
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We never put parentheses around negations.

4

5

Correct!  
 $(( ( P \ \& \ Q ) \vee R ) \rightarrow ( \neg S \ \& \ T ) )$



## Hint sequences by state:

Start

Recall the two things that determine the order in which we insert missing parentheses:

- 1) The order of precedence of the connectives  
( $\neg$ ,  $\&$ ,  $\vee$ ,  $\rightarrow$ )
- 2) The convention that if there are multiple occurrences of a given connective, we insert parentheses around the rightmost occurrence first.

Since we never insert parentheses around negations, the connective with the highest precedence, the first connective around which parentheses should be inserted is conjunction, the connective with the next highest precedence.

There are two occurrences of a conjunction symbol in this formula, so the rightmost of these is the one around which the first pair of parentheses should be inserted.

2

Recall the order of precedence of the connectives:  
( $\neg$ ,  $\&$ ,  $\vee$ ,  $\rightarrow$ )  
You just finished inserting parentheses around all the occurrences of disjunction.

If there are multiple occurrences of a given connective in a formula, parentheses should be inserted around the rightmost occurrence first.

There are two conjunctions in this formula, and you've already inserted parentheses around one of them, so the next set of parentheses should be inserted around the remaining conjunction.

3

Recall the order of precedence of the connectives:  
( $\neg$ ,  $\&$ ,  $\vee$ ,  $\rightarrow$ )  
You just finished inserting parentheses around all the occurrences  
of conjunction.

There is only a single occurrence of a disjunction symbol in this  
formula, so that is the one around which the next pair of  
parentheses should be inserted.

4

Recall the order of precedence of the connectives:  
( $\neg$ ,  $\&$ ,  $\vee$ ,  $\rightarrow$ )  
You just finished inserting parentheses around all the occurrences  
of disjunction.

There is only a single occurrence of a conditional in this formula,  
so that is the connective around which the next pair of parentheses  
should be inserted.



