

**Gramática sin problemas de factorización ni recursividad izquierda:**

$P \rightarrow \text{Block}\#$   
 $\text{Block} \rightarrow \text{ConstDecl VarDecl ProcDecl Statement}$   
 $\text{ConstDecl} \rightarrow \text{const ConstAssigList};\lambda$   
 $\text{ConstAssigList} \rightarrow \text{id} = \text{num ConstAssigList}'$   
 $\text{ConstAssigList}' \rightarrow , \text{id} = \text{num ConstAssigList}'\lambda$   
 $\text{VarDecl} \rightarrow \text{var IdList};\lambda$   
 $\text{IdList} \rightarrow \text{id IdList}$   
 $\text{IdList}' \rightarrow , \text{id IdList}'\lambda$   
 $\text{ProcDecl} \rightarrow \text{procedure id}; \text{Block}; \text{ProcDecl}\lambda$   
 $\text{Statement} \rightarrow \text{id} := \text{Expression} | \text{call id} | \text{begin StatementList end} | \text{if Condition then Statement} | \text{while Condition do Statement}\lambda$   
 $\text{StatementList} \rightarrow \text{Statement StatementList}'$   
 $\text{StatementList}' \rightarrow ; \text{Statement StatementList}'\lambda$   
 $\text{Condition} \rightarrow \text{Expression Relation Expression} | \text{odd Expression}$   
 $\text{Expression} \rightarrow \text{SumOperator Term Expression}' | \text{Term Expression}'$   
 $\text{Expression}' \rightarrow \text{SumOperator Term Expression}'\lambda$   
 $\text{Term} \rightarrow \text{Factor Term}'$   
 $\text{Term}' \rightarrow \text{MultOperator Factor Term}'\lambda$   
 $\text{Relation} \rightarrow = | < | < > | < = | > =$   
 $\text{SumOperator} \rightarrow + | -$   
 $\text{MultOperator} \rightarrow / | *$   
 $\text{Factor} \rightarrow (\text{Expression}) | \text{id} | \text{num}$

**Tabla de análisis sintáctico correspondiente:**

	Program	Block	ConstDecl	ConstAssigList	ConstAssigList'	VarDecl	IdList
Const	$P \rightarrow \text{Block}\#$	$\text{Block} \rightarrow \text{ConstDecl VarDecl ProcDecl Statement}$	$\text{ConstDecl} \rightarrow \text{const ConstAssigList};$				
#	$P \rightarrow \text{Block}\#$	$\text{Block} \rightarrow \text{ConstDecl VarDecl ProcDecl Statement}$	$\text{ConstDecl} \rightarrow \lambda$			$\text{VarDecl} \rightarrow \lambda$	
var	$P \rightarrow \text{Block}\#$	$\text{Block} \rightarrow \text{ConstDecl VarDecl ProcDecl Statement}$	$\text{ConstDecl} \rightarrow \lambda$			$\text{VarDecl} \rightarrow \text{var IdList};$	
procedure	$P \rightarrow \text{Block}\#$	$\text{Block} \rightarrow \text{ConstDecl VarDecl ProcDecl Statement}$	$\text{ConstDecl} \rightarrow \lambda$			$\text{VarDecl} \rightarrow \lambda$	
id	$P \rightarrow \text{Block}\#$	$\text{Block} \rightarrow$	$\text{ConstDecl}$	$\text{ConstAssigList}$		$\text{VarDecl}$	$\text{IdList} \rightarrow$

	#	ConstDec l VarDecl ProcDecl Statement	$l \rightarrow \lambda$	gList $\rightarrow$ id = num ConstAssi gList`		$\rightarrow \lambda$	id IdList`
call	P $\rightarrow$ Block #	Block $\rightarrow$ ConstDec l VarDecl ProcDecl Statement	ConstDec $l \rightarrow \lambda$			VarDecl $\rightarrow \lambda$	
begin	P $\rightarrow$ Block #	Block $\rightarrow$ ConstDec l VarDecl ProcDecl Statement	ConstDec $l \rightarrow \lambda$			VarDecl $\rightarrow \lambda$	
if	P $\rightarrow$ Block #	Block $\rightarrow$ ConstDec l VarDecl ProcDecl Statement	ConstDec $l \rightarrow \lambda$			VarDecl $\rightarrow \lambda$	
while	P $\rightarrow$ Block #	Block $\rightarrow$ ConstDec l VarDecl ProcDecl Statement	ConstDec $l \rightarrow \lambda$			VarDecl $\rightarrow \lambda$	
;		Block $\rightarrow$ ConstDec l VarDecl ProcDecl Statement	ConstDec $l \rightarrow \lambda$		ConstAssi gList $\rightarrow \lambda$	VarDecl $\rightarrow \lambda$	
,					ConstAssi gList $\rightarrow$ , id = num ConstAssi gList`		

	IdList`	ProDecl	Statement	Statement List	Statement List`	Condition	Expressio n
Const							
#		ProDecl $\rightarrow \lambda$	Statement $\rightarrow \lambda$				
var							
procedure		ProcDecl $\rightarrow$ proced					

		ure id ; Block ; ProcDecl					
id		ProDecl → λ	Statement → id :=Express ion	Statement List→ Statement Statement List`			
call		ProDecl → λ	Statement →call id	Statement List→ Statement Statement List`			
begin		ProDecl → λ	Statement →begin Statement List end	Statement List→ Statement Statement List`			
if		ProDecl → λ	Statement →if Condition then Statement	Statement List→ Statement Statement List`			
while		ProDecl → λ	Statement →while Condition do Statement	Statement List→ Statement Statement List`			
;	IdList → ,id IdList`	ProDecl → λ	Statement → λ		Statement List`→ ;Statemen t Statement List`		
end					Statement List`→ λ		
,	IdList → ,id IdList`						
+						Condition →Expres sion Relation Expressio n	Expressio n→ SumOper ator Term Expressio n`
(						Condition	Expressio

						$\rightarrow$ Expression Relation Expression	$n \rightarrow$ Term Expression $n'$
id						Condition $\rightarrow$ Expression Relation Expression	Expression $\rightarrow$ Term Expression $n'$
num						Condition $\rightarrow$ Expression Relation Expression	Expression $\rightarrow$ Term Expression $n'$
odd						Condition $\rightarrow$ odd Expression	
-						Condition $\rightarrow$ Expression Relation Expression	Expression $\rightarrow$ SumOperator Term Expression $n'$

	Expression $n'$	Term	Term'	Relation	SumOperator	MultOperator	Factor
#	Expression $n' \rightarrow \lambda$						
*			Term' $\rightarrow$ MultOperator Factor Term'			MultOperator $\rightarrow *$	
=	Expression $n' \rightarrow \lambda$			Relation $\rightarrow =$			
$\diamond$	Expression $n' \rightarrow \lambda$			Relation $\rightarrow \diamond$			
<	Expression $n' \rightarrow \lambda$			Relation $\rightarrow <$			
>	Expression			Relation			

	$n' \rightarrow \lambda$			$\rightarrow >$			
$\leq$	Expressio $n' \rightarrow \lambda$			Relation $\rightarrow \leq$			
$\geq$	Expressio $n' \rightarrow \lambda$			Relation $\rightarrow \geq$			
;	Expressio $n' \rightarrow \lambda$						
num		Term $\rightarrow$ Factor Term`					Factor $\rightarrow$ num
/			Term` $\rightarrow$ MultOper ator Factor Term`			MultOper ator $\rightarrow$ /	
+	Expressio $n' \rightarrow$ SumOper ator Term Expressio $n'$		Term` $\rightarrow \lambda$		SumOper ator $\rightarrow +$		
(		Term $\rightarrow$ Factor Term`					Factor $\rightarrow$ ( Expressio n)
id		Term $\rightarrow$ Factor Term`					Factor $\rightarrow$ id
do	Expressio $n' \rightarrow \lambda$						
then	Expressio $n' \rightarrow \lambda$						
-	Expressio $n' \rightarrow$ SumOper ator Term Expressio $n'$		Term` $\rightarrow \lambda$		SumOper ator $\rightarrow -$		
)	Expressio $n' \rightarrow \lambda$						