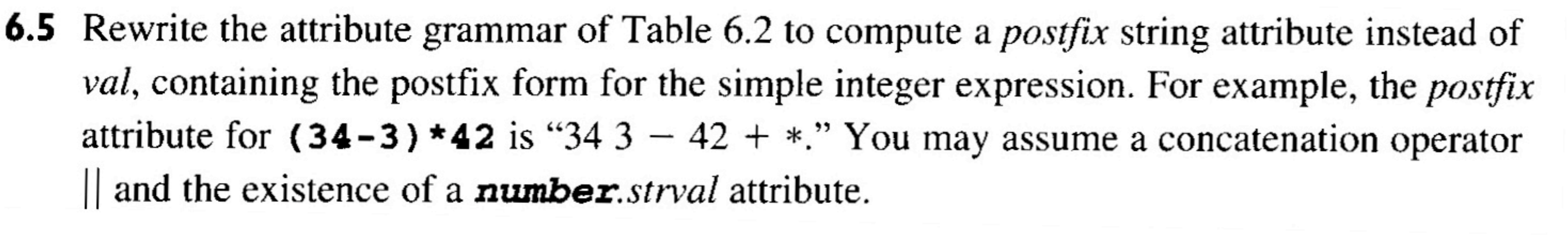
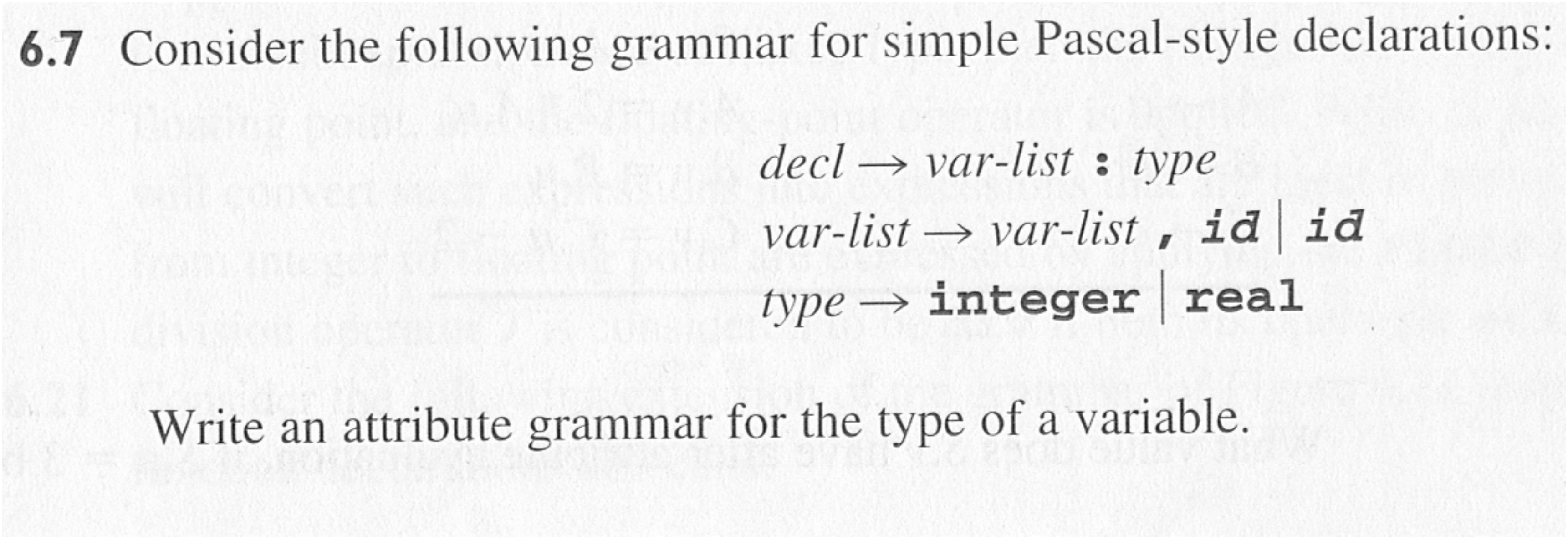


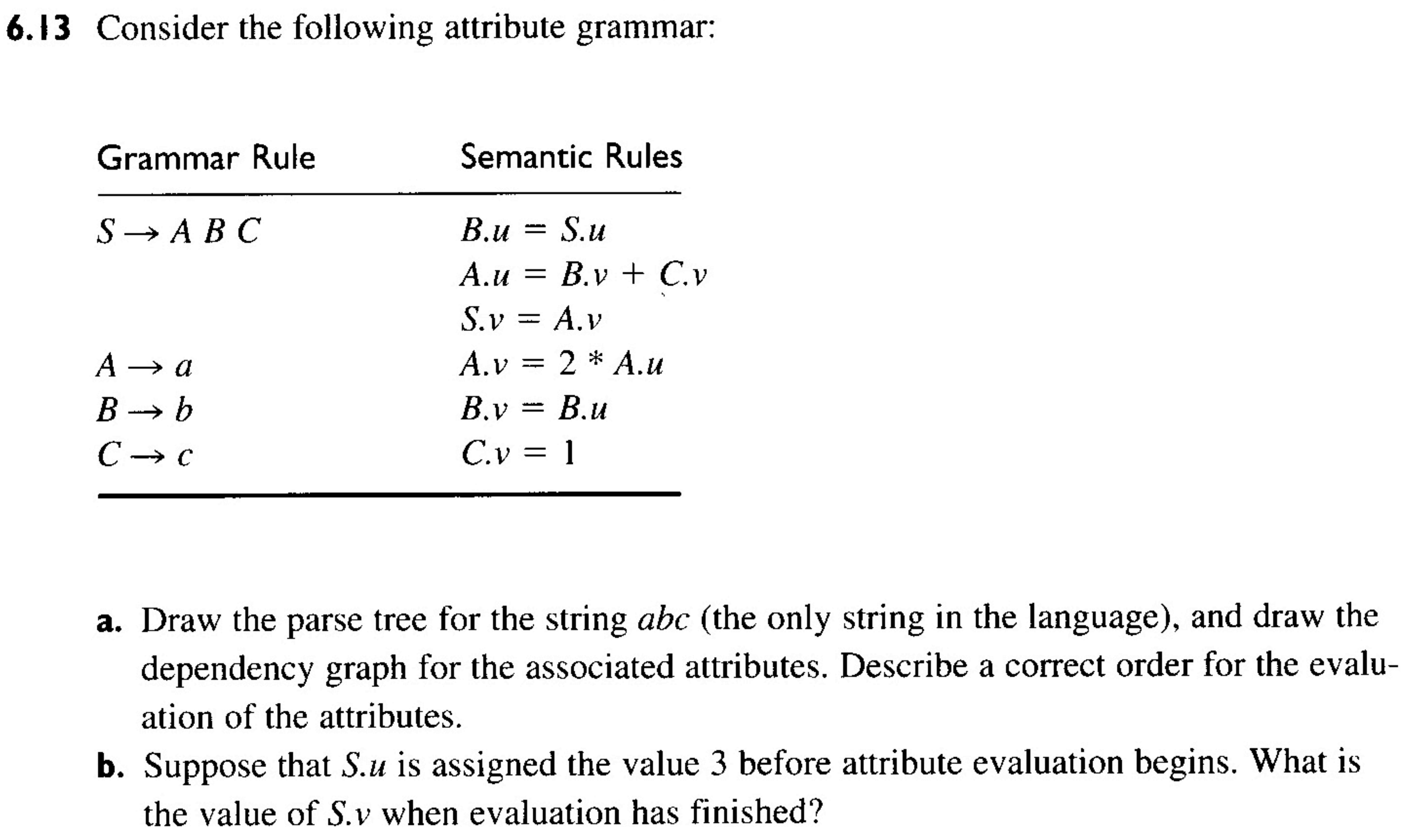
6.5 Rewrite the attribute grammar of Table 6.2 to compute a *postfix* string attribute instead of *val*, containing the postfix form for the simple integer expression. For example, the *postfix* attribute for **`(34-3)*42`** is "34 3 − 42 + ∗." You may assume a concatenation operator || and the existence of a ***`number`****.strval* attribute.



6.7 Consider the following grammar for simple Pascal-style declarations:

decl → *var-list* **`:`** *type*
var-list → *var-list* **`,`** ***`id`*** | ***`id`***
type → **`integer`** | **`real`**

Write an attribute grammar for the type of a variable.

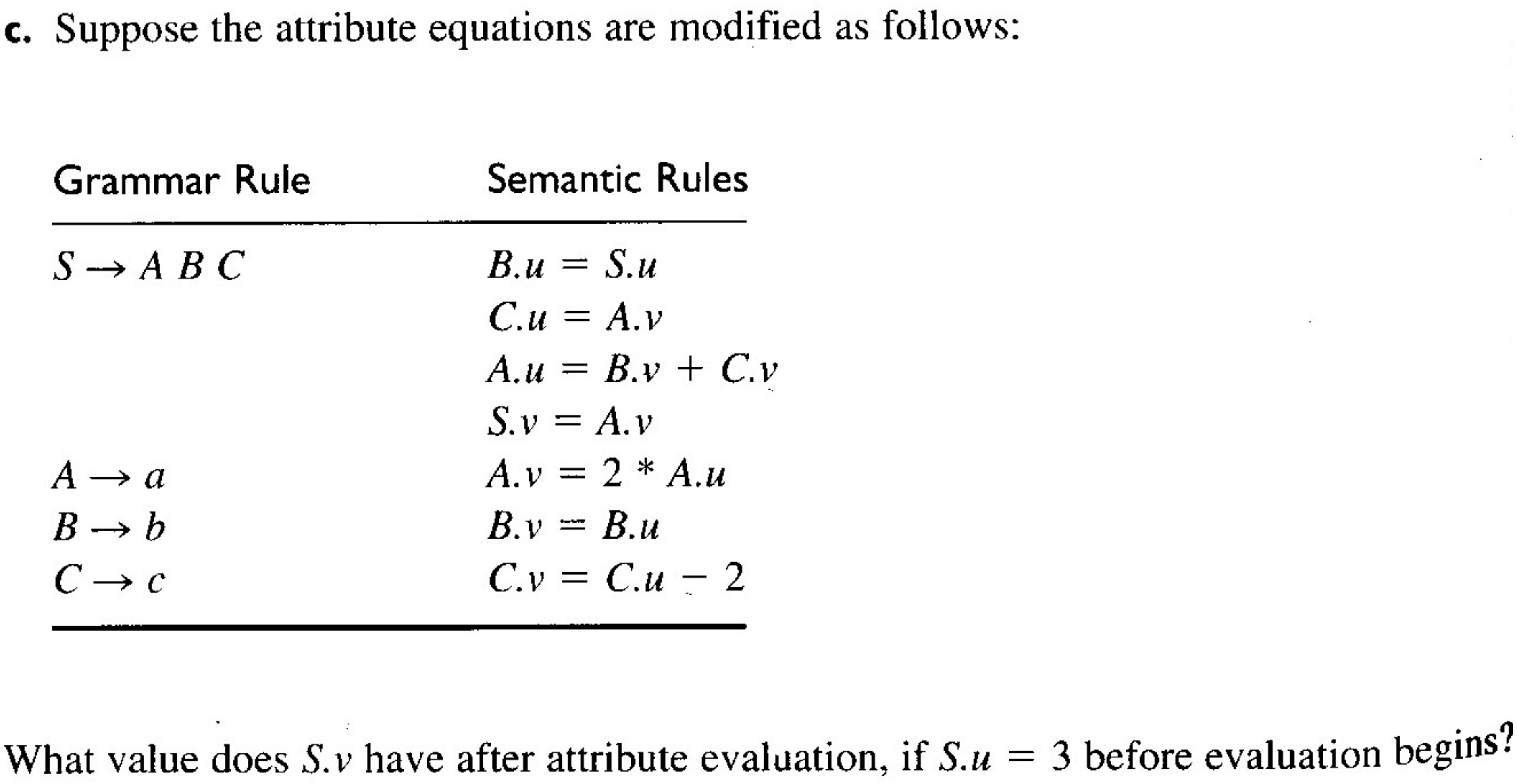


6.13 Consider the following attribute grammar:

Grammar Rule	Semantic Rules
$S \rightarrow A\ B\ C$	$B.u = S.u$
	$A.u = B.v + C.v$
	$S.v = A.v$
$A \rightarrow a$	$A.v = 2 * A.u$
$B \rightarrow b$	$B.v = B.u$
$C \rightarrow c$	$C.v = 1$

a. Draw the parse tree for the string *abc* (the only string in the language), and draw the dependency graph for the associated attributes. Describe a correct order for the evaluation of the attributes.

b. Suppose that $S.u$ is assigned the value 3 before attribute evaluation begins. What is the value of $S.v$ when evaluation has finished?



c. Suppose the attribute equations are modified as follows:

Grammar Rule	Semantic Rules
$S \rightarrow A\ B\ C$	$B.u = S.u$
	$C.u = A.v$
	$A.u = B.v + C.v$
	$S.v = A.v$
$A \rightarrow a$	$A.v = 2 * A.u$
$B \rightarrow b$	$B.v = B.u$
$C \rightarrow c$	$C.v = C.u - 2$

What value does $S.v$ have after attribute evaluation, if $S.u = 3$ before evaluation begins?

class → **class name** *superclass* { *decls* }

decls → *decls* **;** *decl* | *decl*

decl → *variable-decl*

decl → *method-decl*

method-decl → *type* **name** (*params*) *body*

type → **int** |**bool** | **void**

superclass → **name**

Ord i *kursiv* er non-terminaler, ord og tegn i **fet skrift** er terminalsymboler, mens ***name*** representerer et navn som scanneren leverer. Det kan antas at ***name*** har attributtet 'name'.

Metoder med samme navn som klassen er 'konstruktører', og det gjelder følgende regel: Konstruktører må være spesifisert med typen **void.**

Lag semantiske regler for denne regel i følgende fragment av en attributtgrammatikk.

Grammar Rule	Semantic Rule
class → **class name** { *decls* }	
decls → *decls* ; *decl*	
decls → *decl*	
decl → *variable-decl*	*Skal ikke fylles ut*
decl → *method-decl*	
method-decl → *type* **name** (*params*) *body*	
type → **int**	
type → **bool**	
type → **void**	