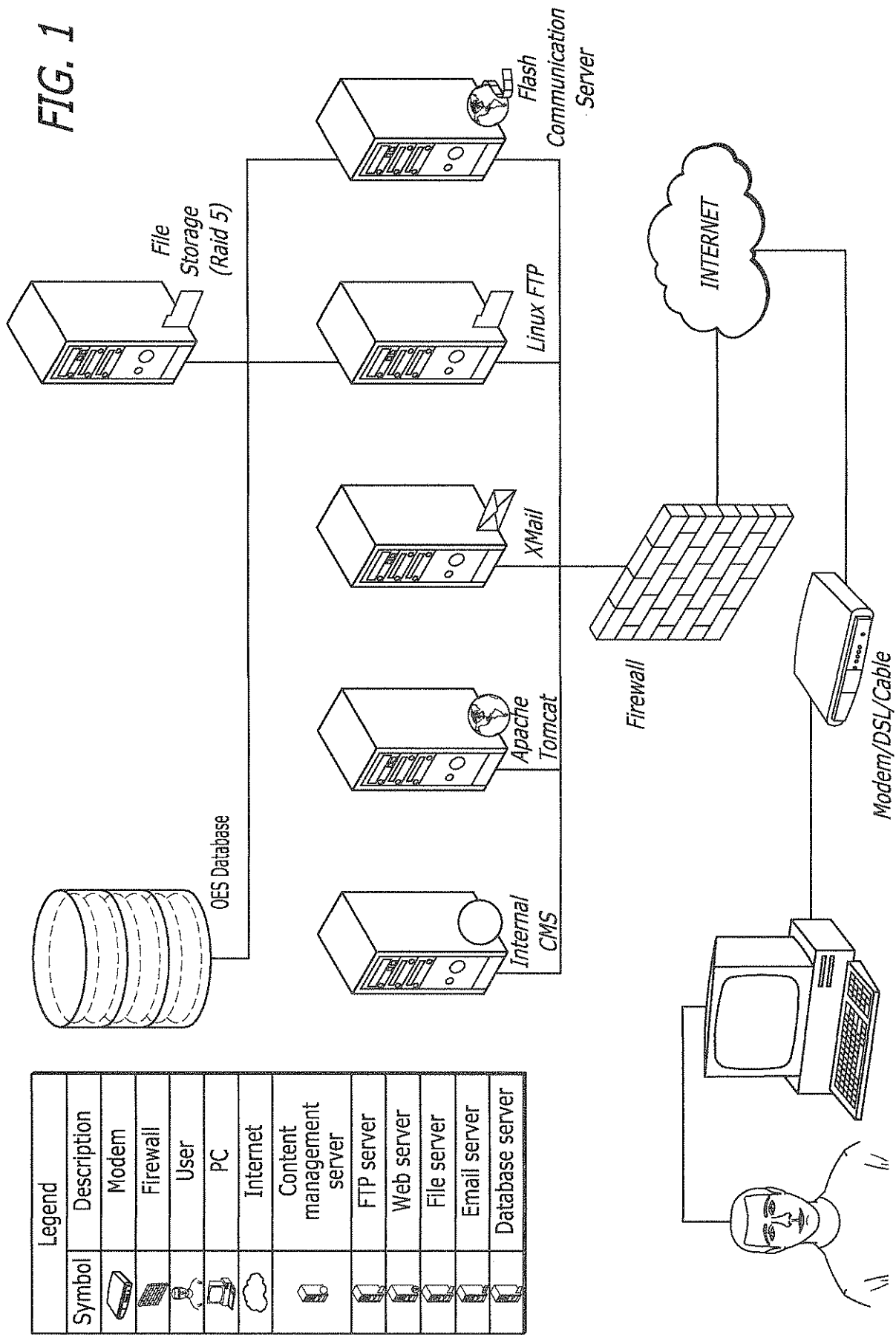


FIG. 1



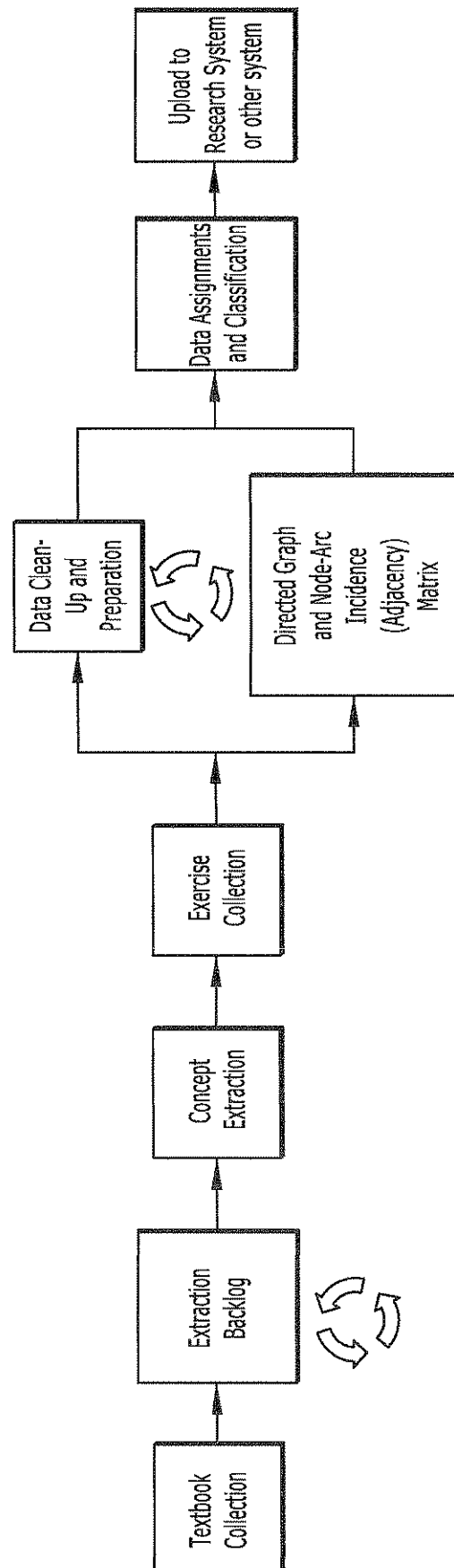
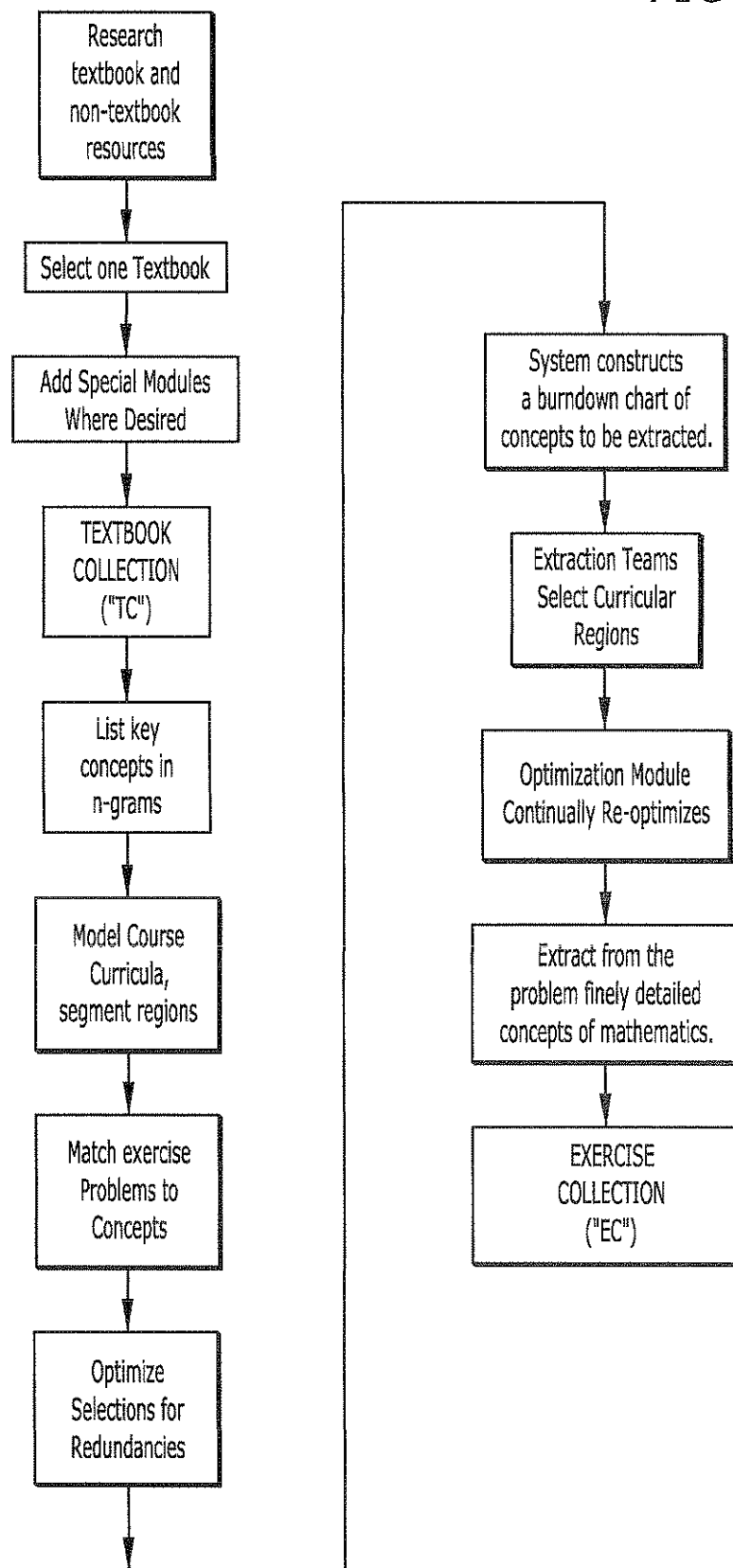


FIG. 3

FIG. 4

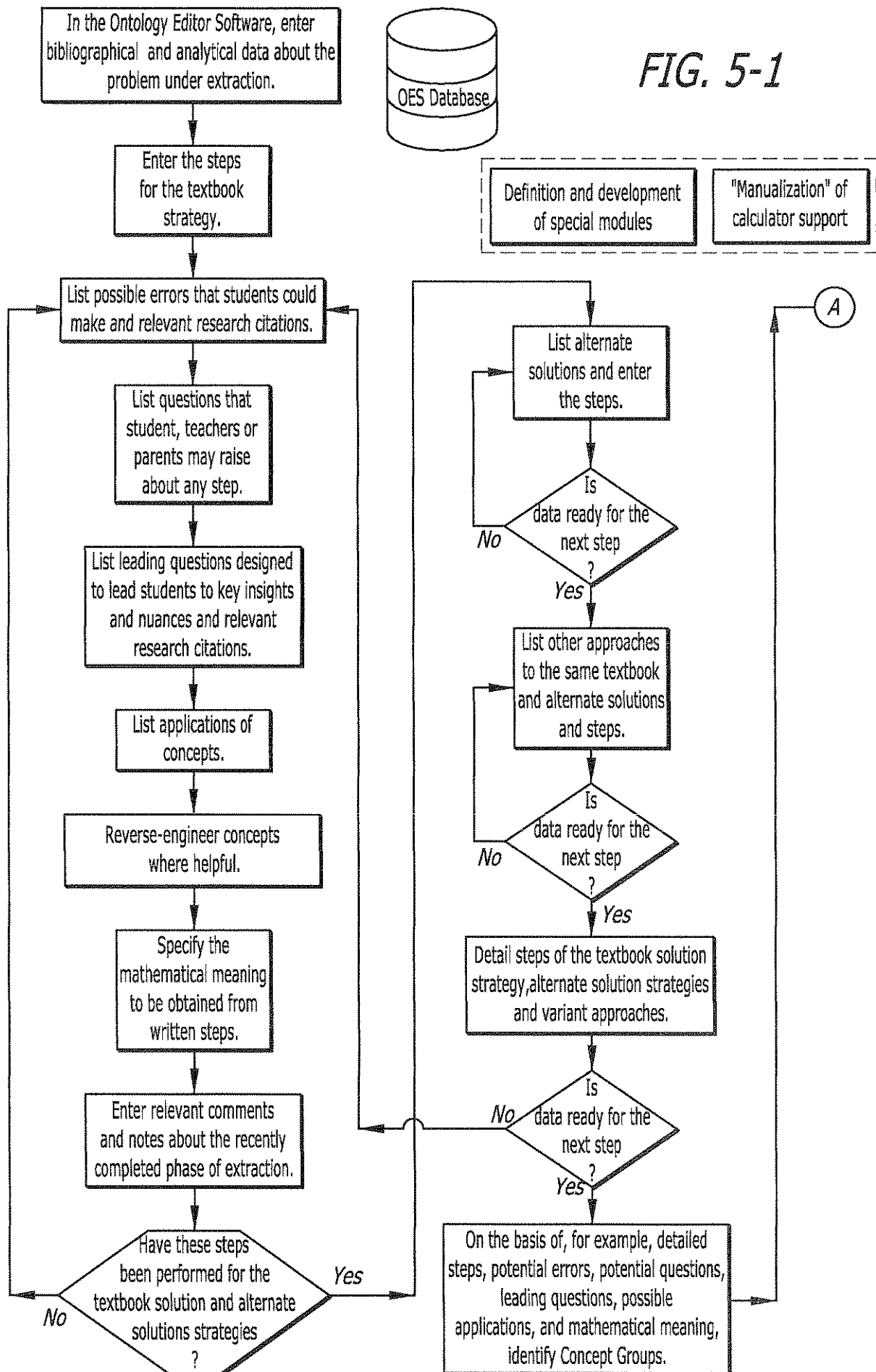


FIG. 5-2

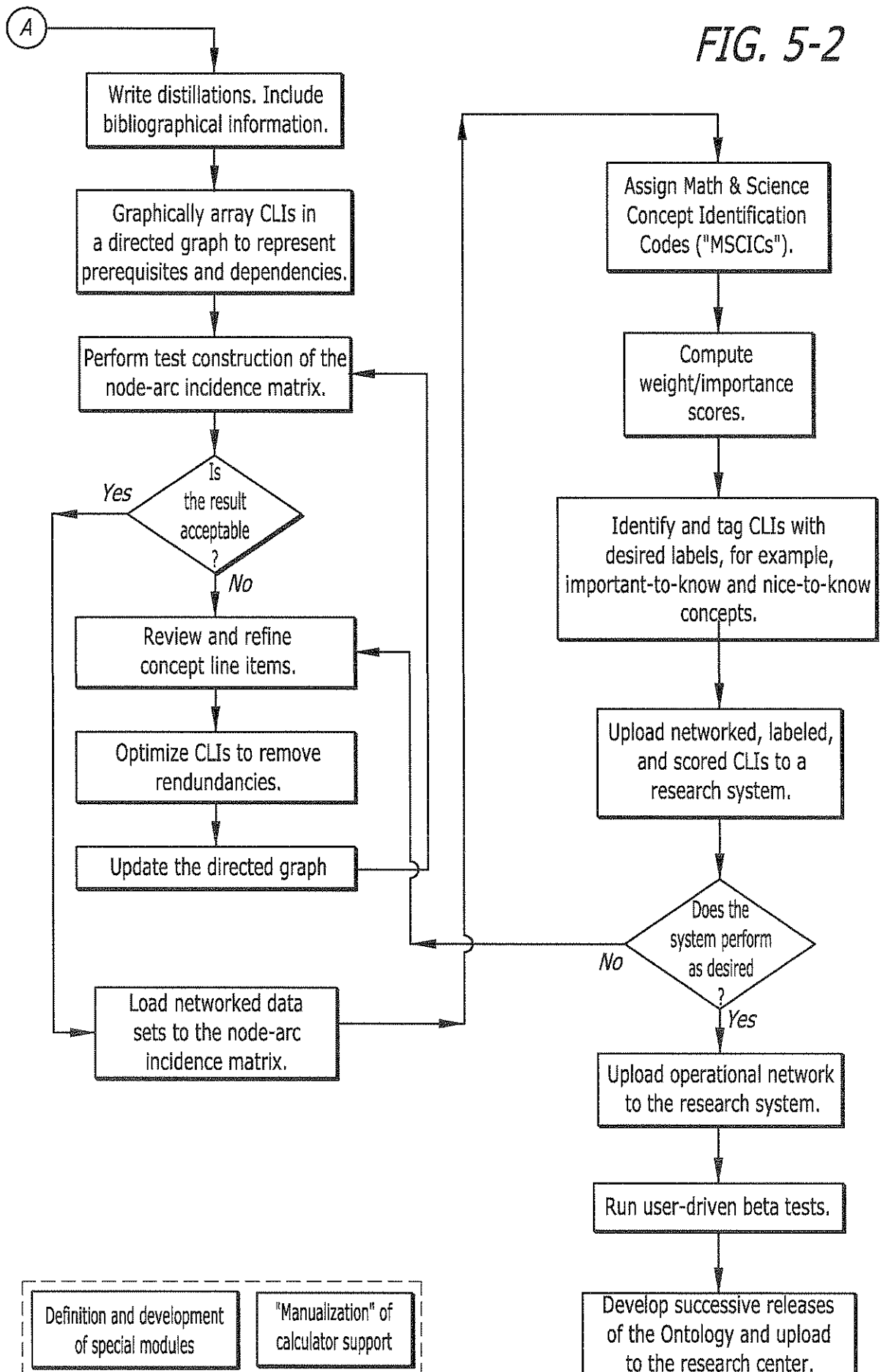


FIG. 6

Ontology Editor 2.1-Mark's Workspace

Connection Workspace My Bookmarks Administration Edit Help

Checkout Save All Update Commit Revert EquationTable Undo Redo Cut Copy Paste Share... Backup to Server Search... WEB...

Kindergarten Ontology

☒ 1 Sets
 ☒ 1.1 Object classification
 ☒ 1.1.1 Sorting by One Attribute
 ☐ 1.1.1.1 Composed Units
 ☐ 1.1.1.2 Counting Elements
 ☐ ...
 ☐ ...

Text:
 Importance:
 Level:
 Parent:
 Must Know
 Description:
 Version: #2-Edited
 History...

Line Item Details

Book References
 Reference Base
 CLI Pairs
 Flags
 Equation Table Ref

Add Book Ref
 Remove Book Ref
 Browse...

Book Name
 Page

Book A
 126 145 231

Book B
 42 54

Book C
 76

Notes

Title	Type	Author	Date	Body	Issue Ref
Origin	Info	Alice	1/1/10	I discovered this...	
Revise	Audit	Bob	1/2/10	CLIs not upto...	1234
Revise	Audit	Cathy	1/2/10	Also the reference...	1235

Candidate Dependencies

Parking Lot

New Parking Lot Delete Parking Lot Down Up

Lot One Lot Two Lot Three Lot Four

☒ 1.1 Addition
☒ 1.1.1 Subtraction

7 FIG.

Kindergarten Ontology

- 1 Sets
 - 1.1 Object classification
 - 1.1.1 Sorting by One Attribute (selected)
 - 1.1.1.1 Composed Units
 - 1.1.1.1.2 Counting Elements
 - ...

Toolbar: [Folder icon] [Ellipsis]

8
G
F

Line Item Details			
Text: <input type="text" value="Integers"/>	Importance: <input type="text" value="Level: 3: Unit Title"/>	Parent: <input type="text" value="Real Numbers"/>	
Description: <input type="text" value="Version: #2-Edited History..."/>	<div style="display: flex; justify-content: space-between;"> <div> ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ </div> <div> ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐ </div> </div>		
<div style="border: 1px solid black; height: 40px; margin-top: 10px;"></div>			

Book References	Reference Base	CLI Pairs	Flags	Equation Table Ref
<input type="button" value="Add Book Ref"/> <input type="button" value="Remove Book Ref"/> <input type="button" value="Browse...."/>				
Book Name	Page			
Book A	126 145 231			
Book B	42 54			
Book C	76			

Notes

Title	Type	Author	Date	Body	Issue Ref
Origin	Info	Alice	1/1/10	I discovered this...	
Revise	Audit	Bob	1/2/10	CLIs not upto...	1234
Revise	Audit	Cathy	1/2/10	Also the reference...	1235

V _____

Redundancies Management:

Incoming Links

2.1 Counting ...

Outgoing Links

4.1 Addition ...

Candidate Dependencies...

FIG. 9

History of Line Item Development (This is not intended to deal with the line items about the history of Mathematics)

Name:

Integers

Type:

Unit Title

Parent:

Real Numbers

Version:

#1

Importance:

Must Know

Description:

Description here...

Book References

Reference Base

CLI Pairs

Flags

Equation Table Ref

Add Book Ref

Remove Book Ref

Browse...

Book Name

Page

Book A

126 145 231

Book B

42 54

Book C

76

Notes

Title

Type

Author

Date

Body

Issue Ref

Incoming Links

2.1 Counting ...

Outgoing Links

Add

Edit

Remove

4.1 Addition ...

Change History

Version #

Author

Log

Date

0

Alice

Initial version added.

01/01/10

1

Alice

Added a place holder and defined a dependency to Addition unit title.

01/02/10

2

Bob

Added a note

01/04/10

3

Bob

Added a note

01/05/10

[illegible]

FIG. 10

Flags

Add Flag Remove Flag

International
Fundamental Concept

FIG. 11

Book References Reference Base CLI Pairs Flags Equation Table Ref

Add Book Ref Remove Book Ref Browse...

Book Name	Page
Book A	126 145 231
Book B	42 54
Book C	76

FIG. 12

Book A Details

Properties

Title: Book A
Authors: Giral et al
ISBN: 123
Publisher: Free Books
City: San Francisco
Country: USA
Number of Pages: 321
Copyright Date: 01/01/10

Cover

Book A, Firal et al. ISBN: 123

Practical
Algebra

A Self-Teaching
Guide

FIG. 13

Candidate Dependencies

Identified Candidates:

Sequence # ▾	Phrase	Importance	Promote as Item	
1	non-zero natural numbers	Must Know ▾	☒	▲
2	subset of the real numbers	▾	☐	
3	fractional	Nice to Know ▾	☒	▼

OK Cancel

FIG. 14

Parking Lot

New Parking Lot Open Save Save As Down Up + -

Lot One Lot Two Lot Three Lot Four

☒ 1.1 Addition
☒ 1.1.1 Subtraction

FIG. 15

FIG. 16

Equation Table

Add

Remove

Example Type	Textbook Problem	Chapter Title	Sub-Section
Word Problem	"It is 5:45 A.M. daylight savings time the first Sunday in April. What time was it 6 hours and 45 minutes ago?"	Time	3.16

Add

Remove

Distillations (Concept Line Items)

Rationale and Comments:

OK

Cancel

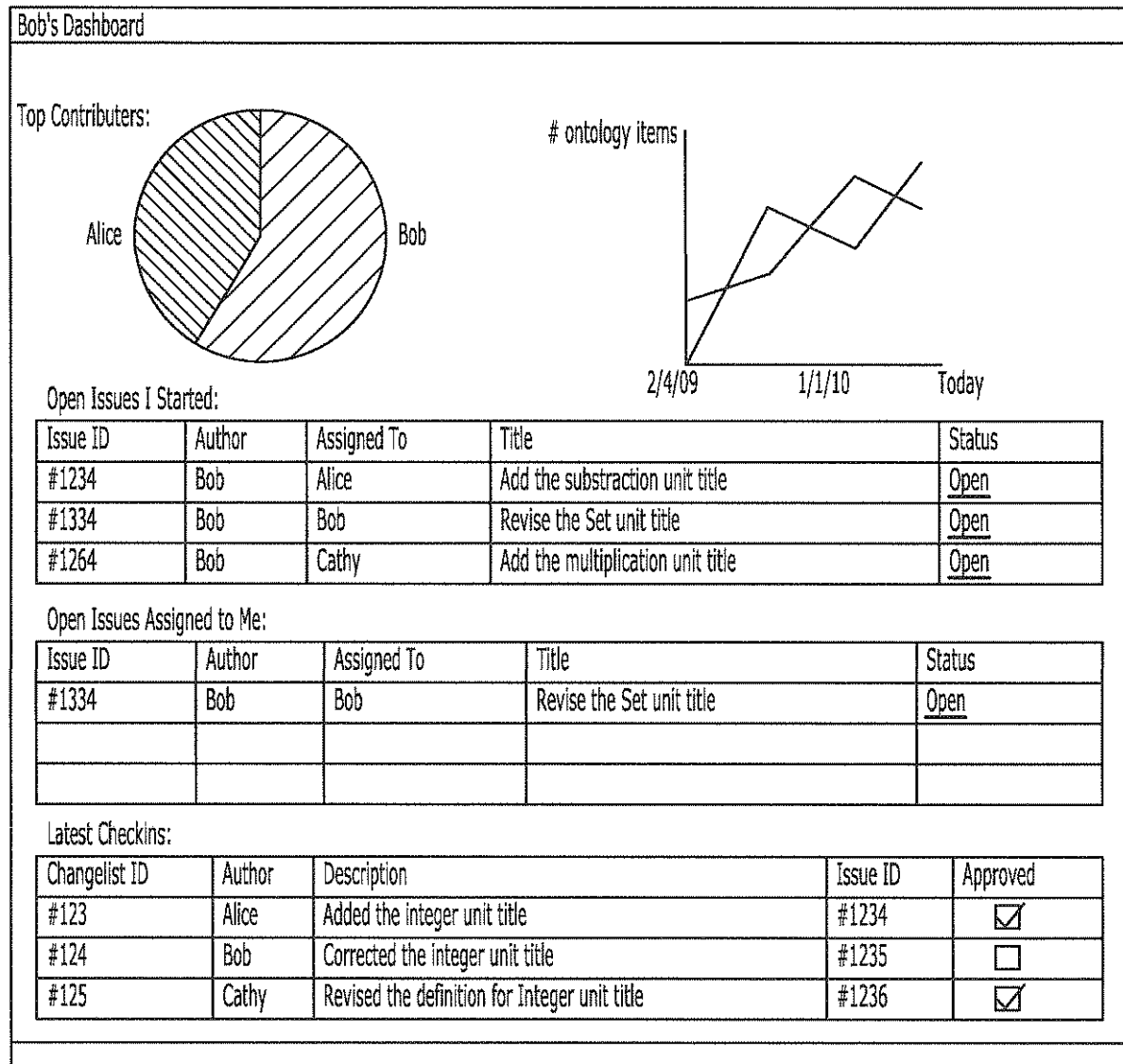
FIG. 17

FIG. 18

Node-Arc Incidence Matrix

Edit

Lock

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
4	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PREREQUISITES

DEPENDENCIES

OK

Cancel

FIG. 19

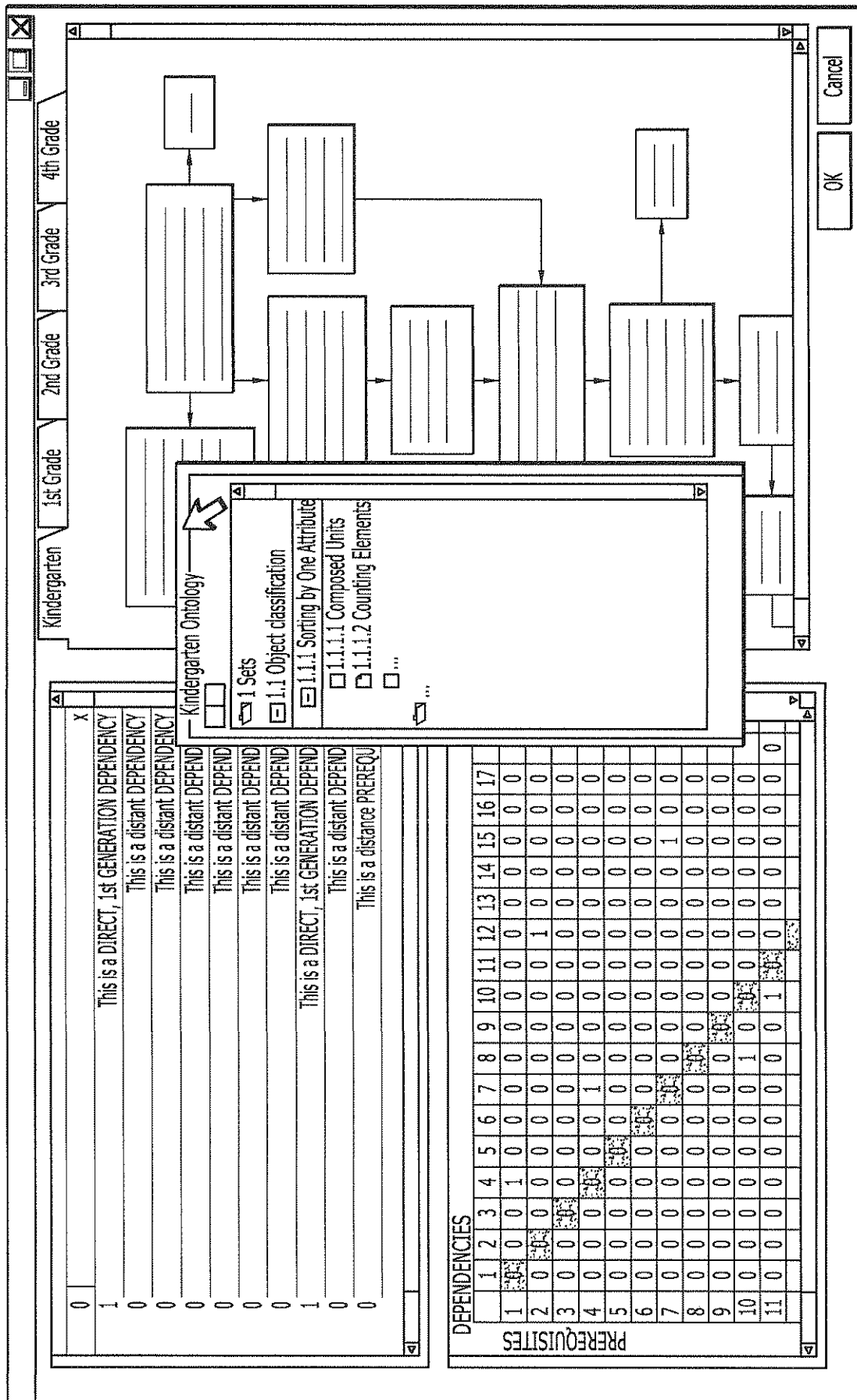


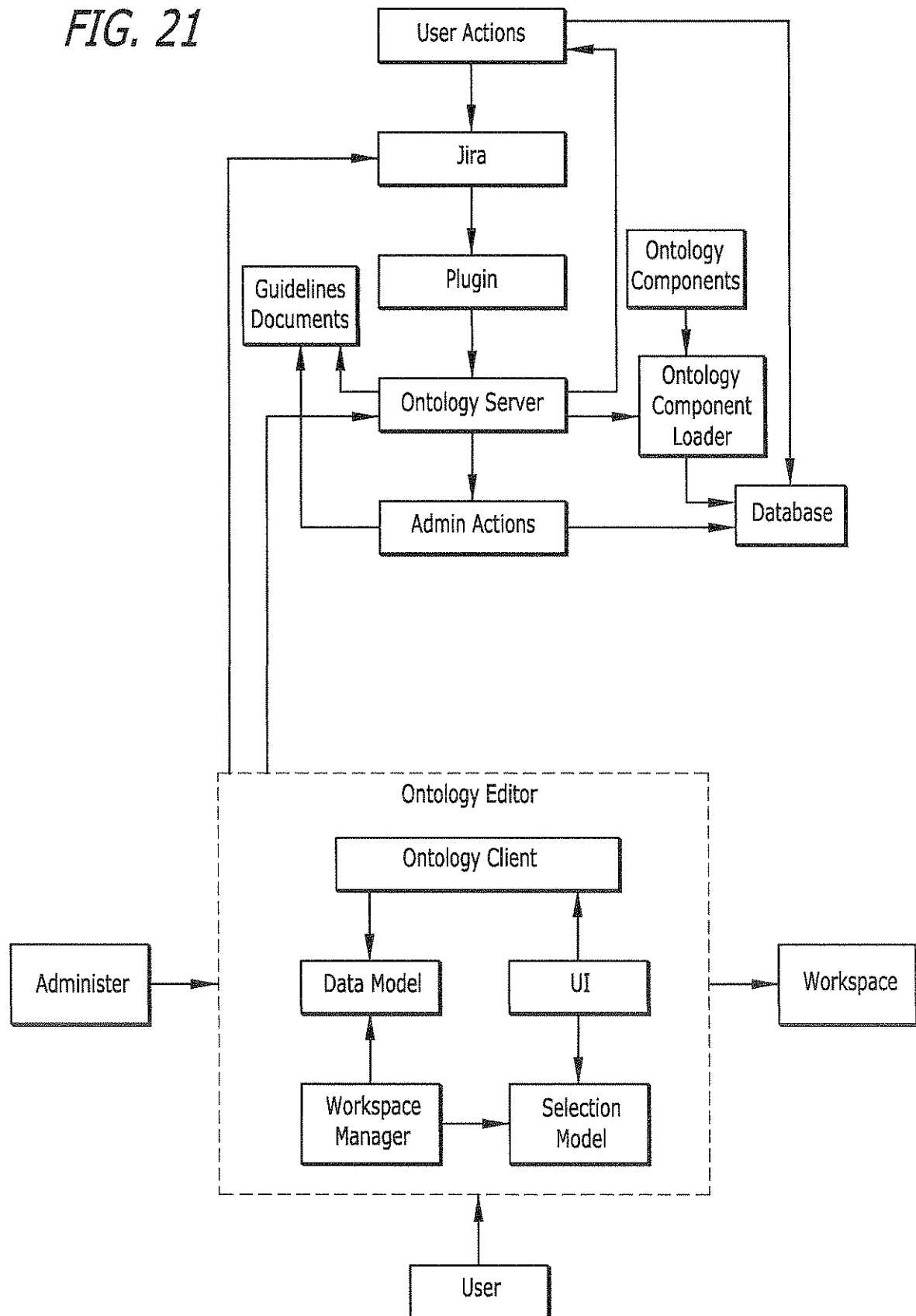
FIG. 20

Kindergarten
1st Grade
2nd Grade
3rd Grade
4th Grade

X	
0	
1	This is a DIRECT, 1st GENERATION DEPENDENCY
0	This is a distant DEPENDENCY
0	This is a distant DEPENDENCY
0	This is a distant DEPENDENCY
0	This is a distant DEPENDENCY
0	This is a distant DEPENDENCY
0	This is a distant DEPENDENCY
0	This is a distant DEPENDENCY
1	This is a DIRECT, 1st GENERATION DEPENDENCY
0	This is a distant DEPENDENCY
0	This is a distance PREREQUISITE

PREREQUISITES		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37
1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

OK
Cancel

FIG. 21

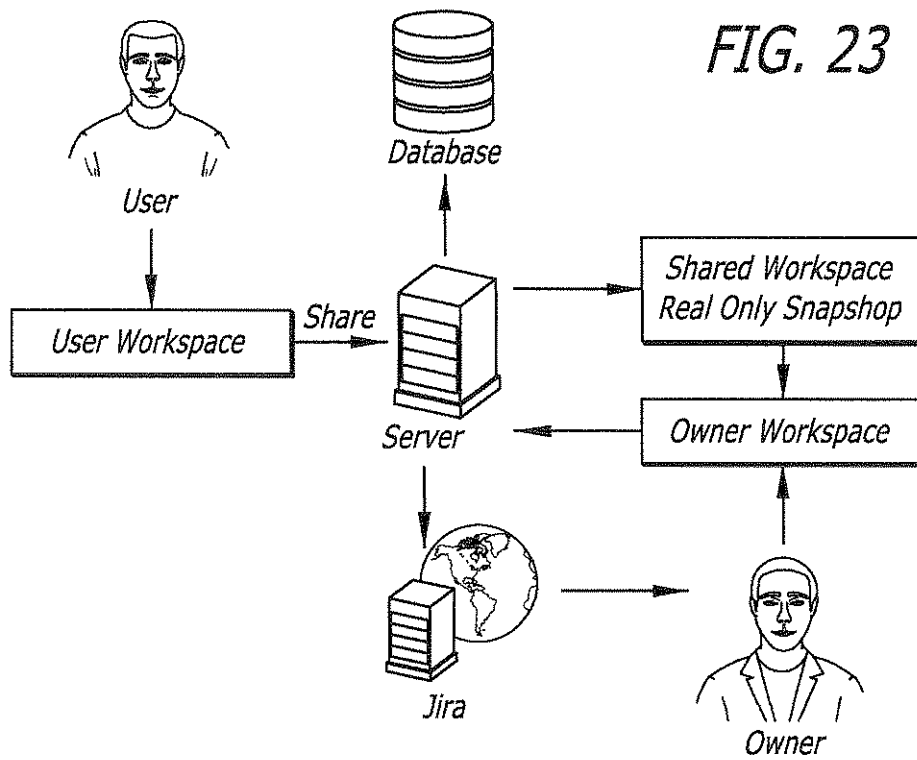
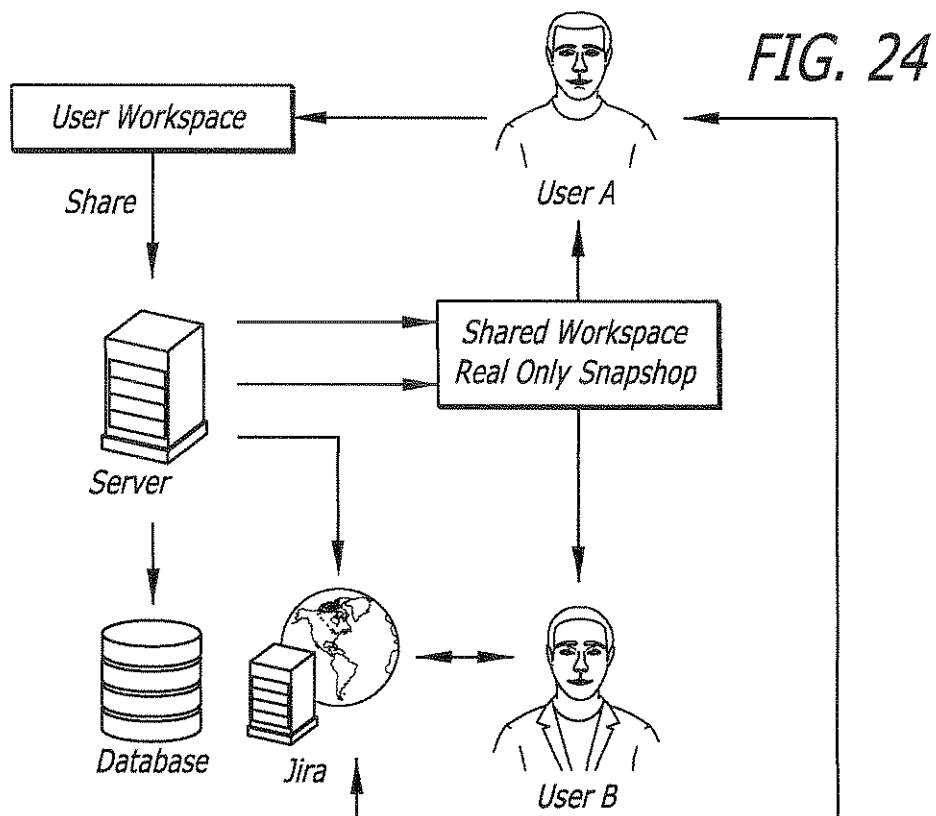


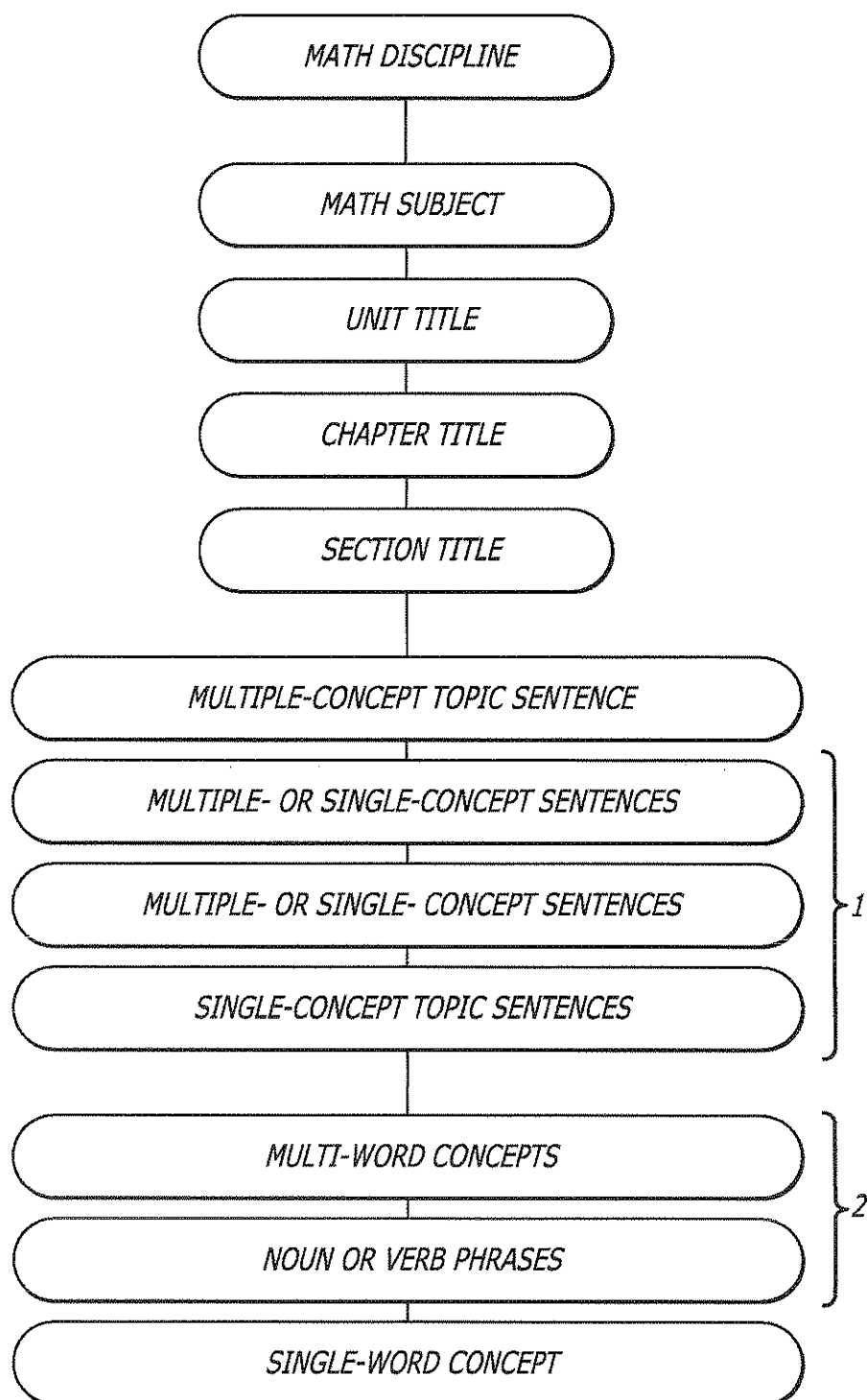
FIG. 25

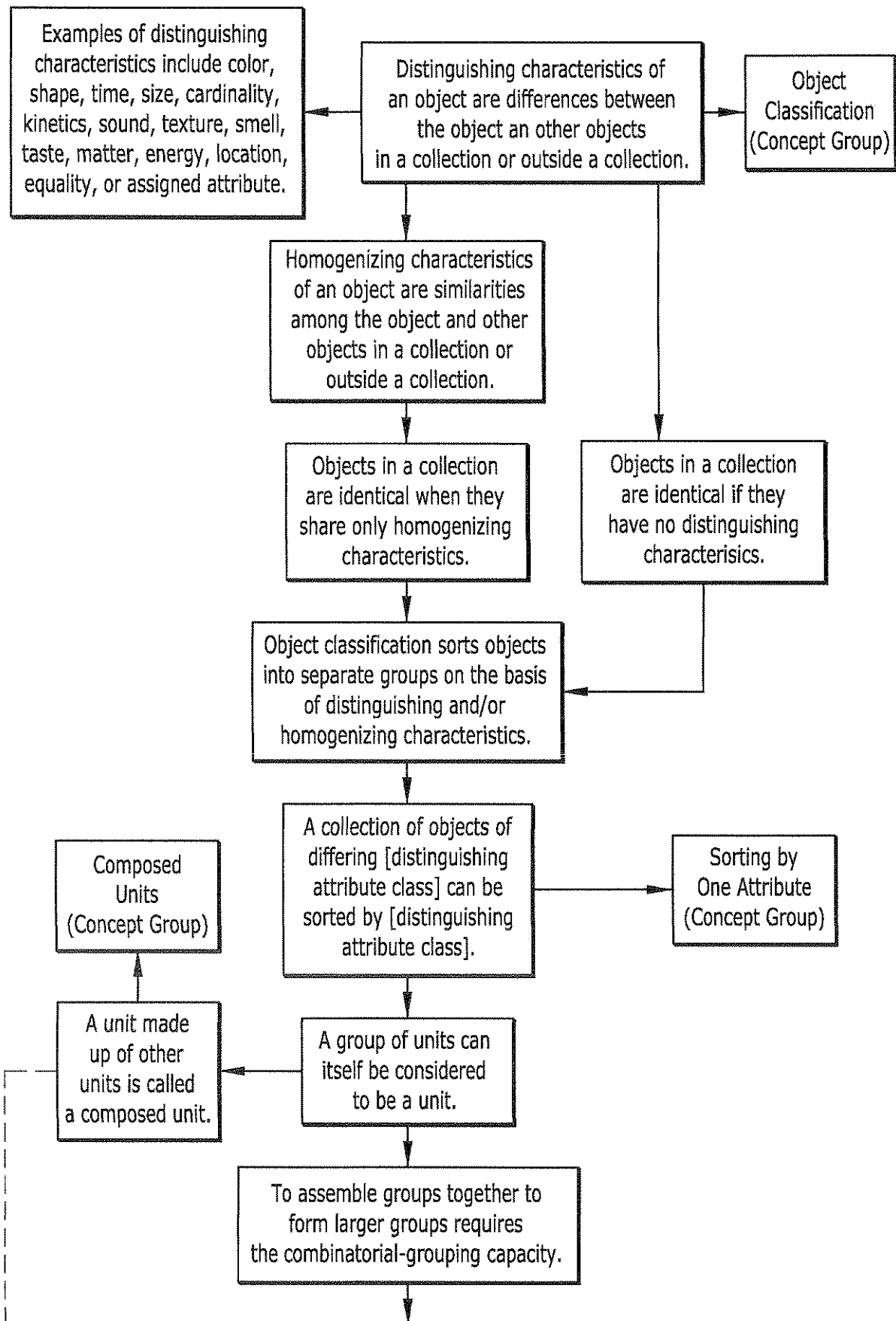
FIG. 26-1

FIG. 26-2

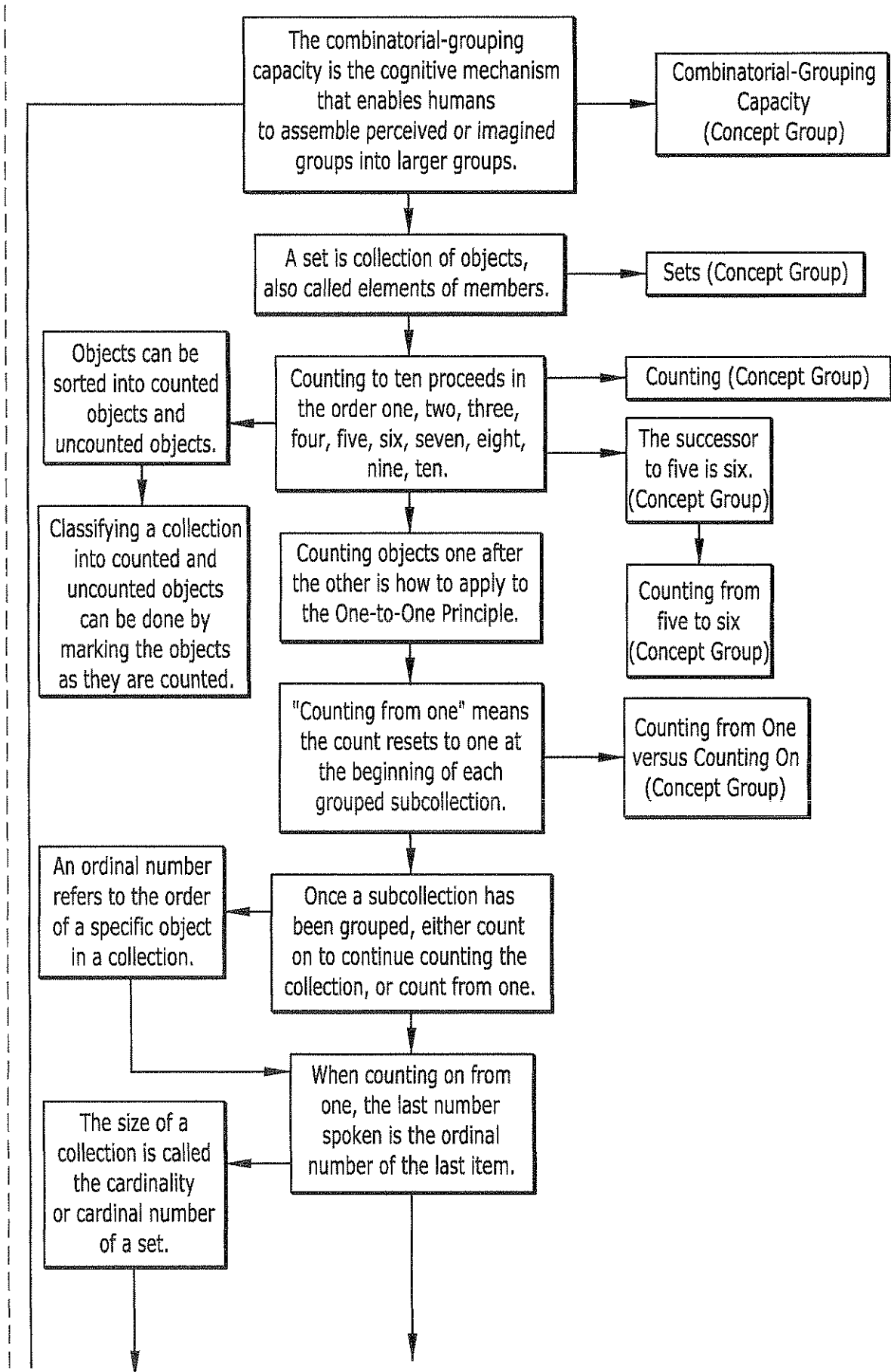


FIG. 26-3

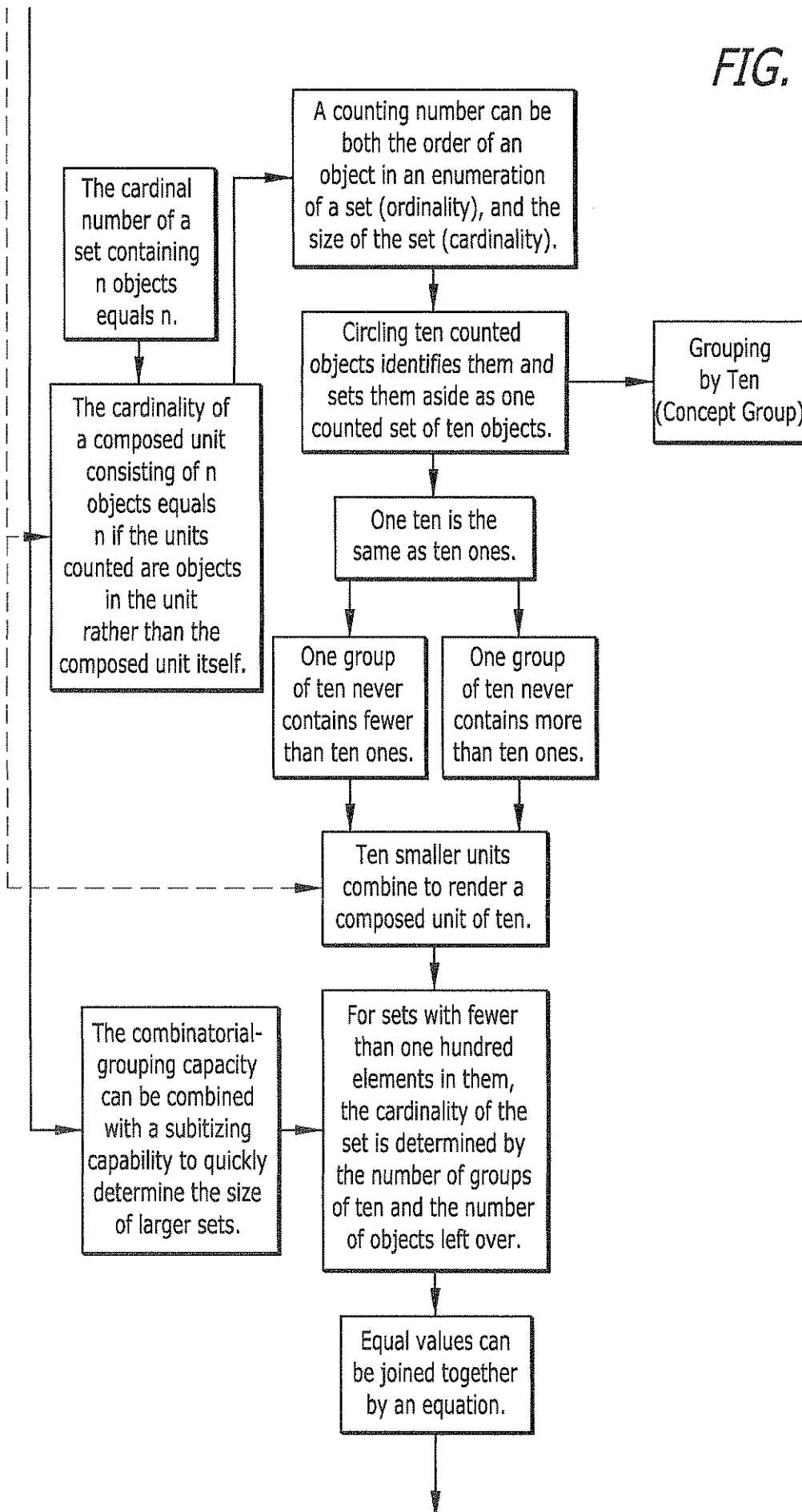
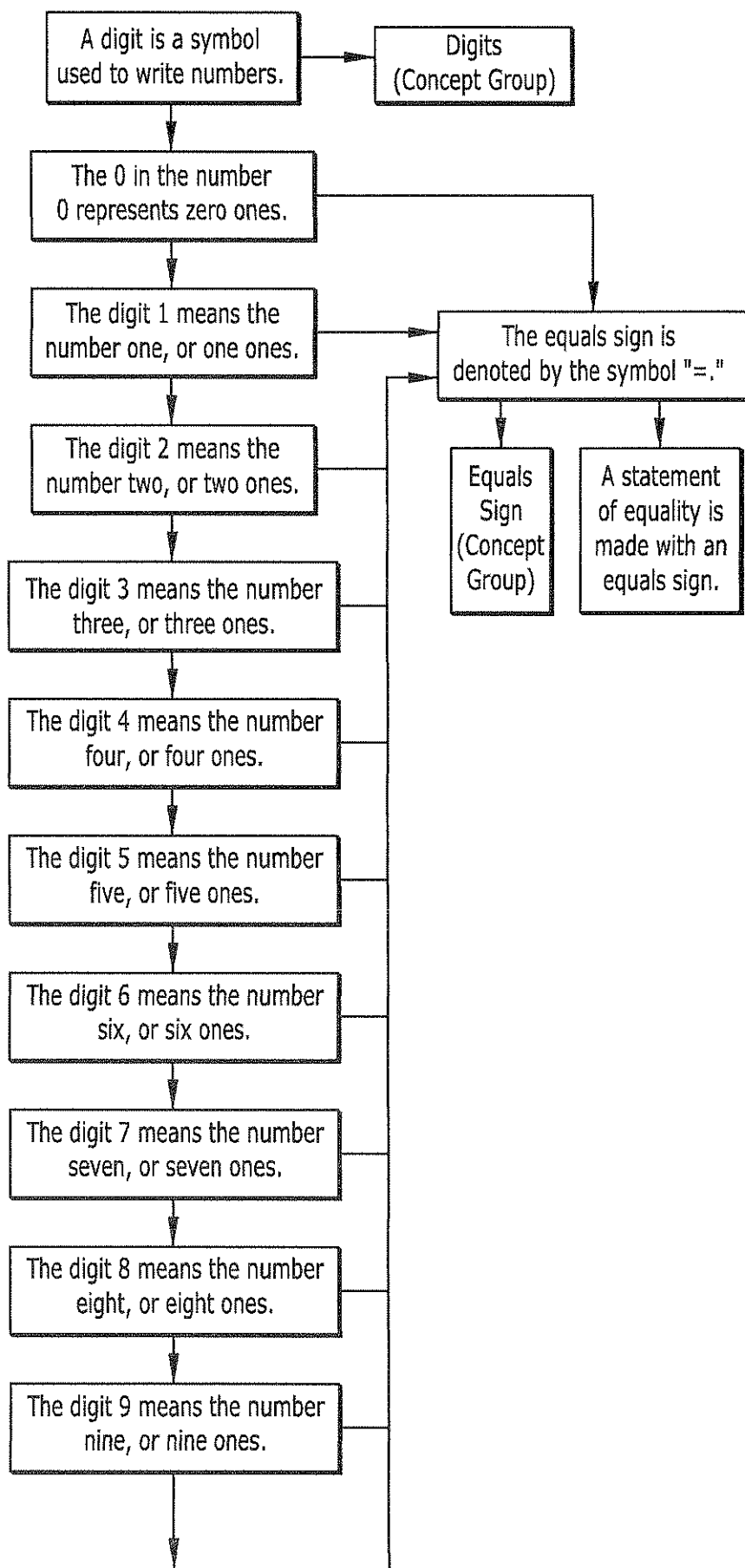


FIG. 26-4

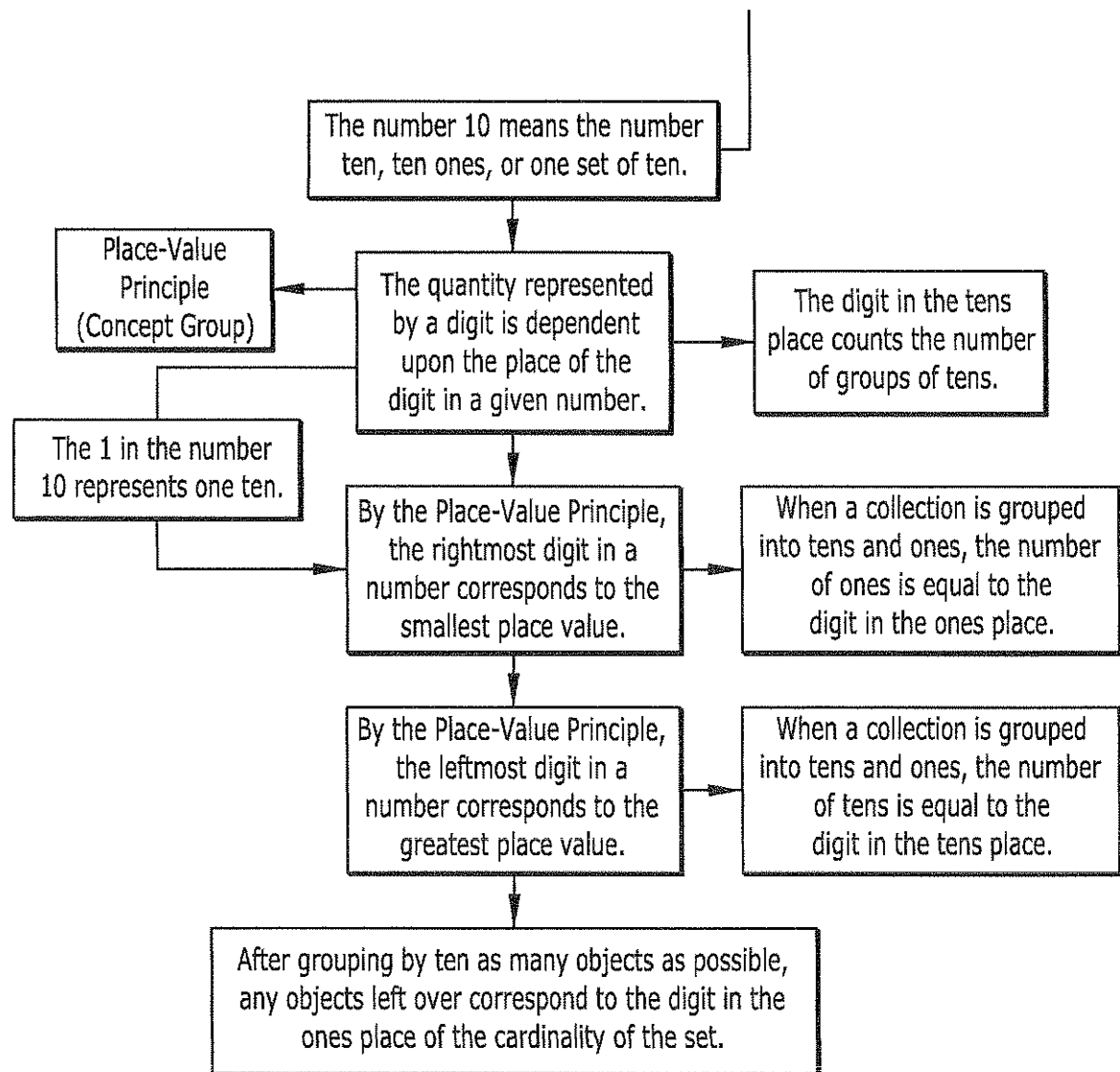
*FIG. 26-5*

FIG. 27

Phase 1: Bibliographic Information and Basic Analysis

2707

2708

2709

2710

2701

2702

2703

2704

2705

2706

2701

2702

2703

2704

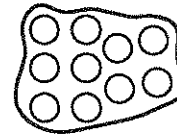
2705

2706

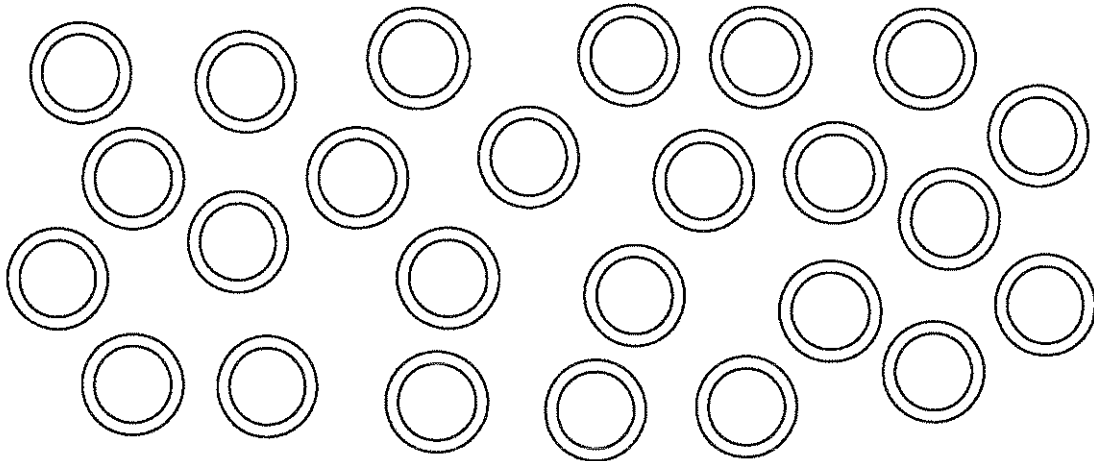
OK Cancel

FIG. 28

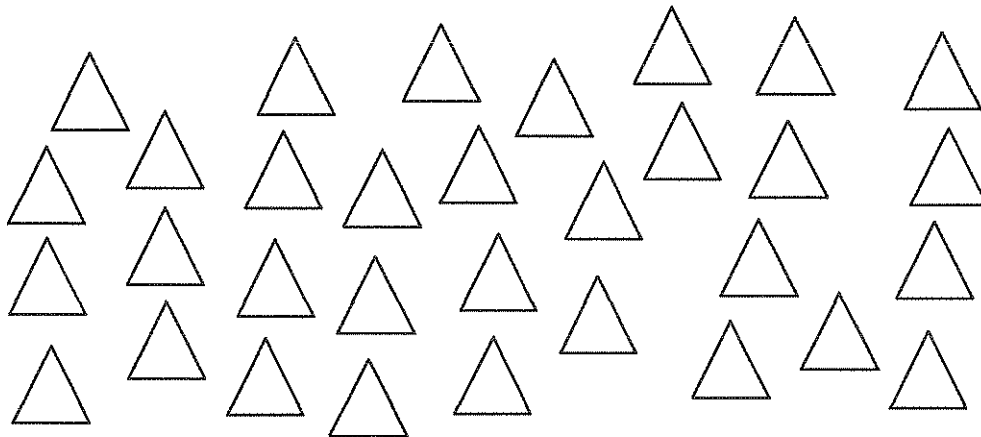
Circle sets of 10.
Then count and write.



1 ten 3 ones = 13



_____ tens _____ ones = _____



_____ tens _____ ones = _____

FIG. 29

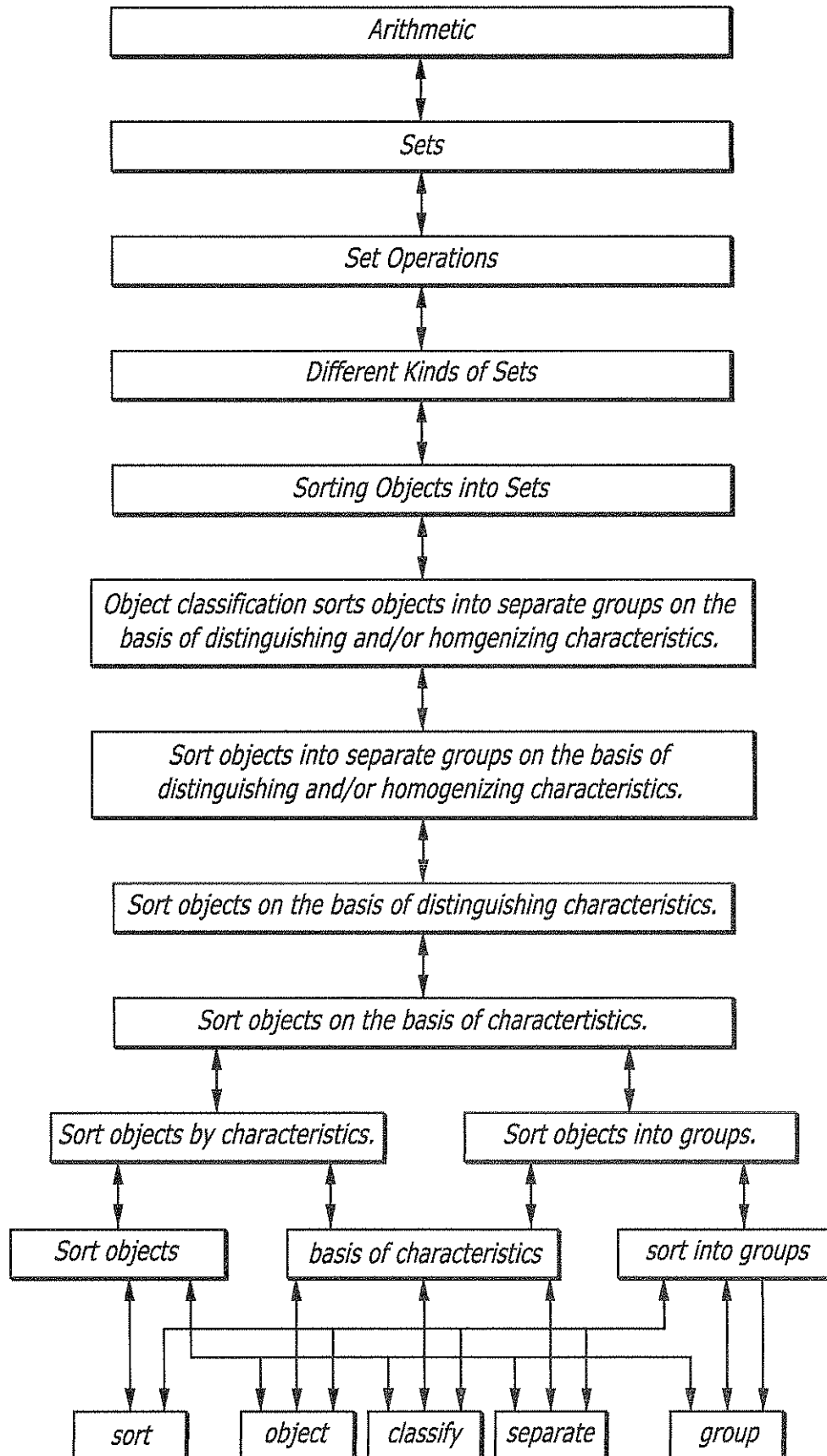


FIG. 30

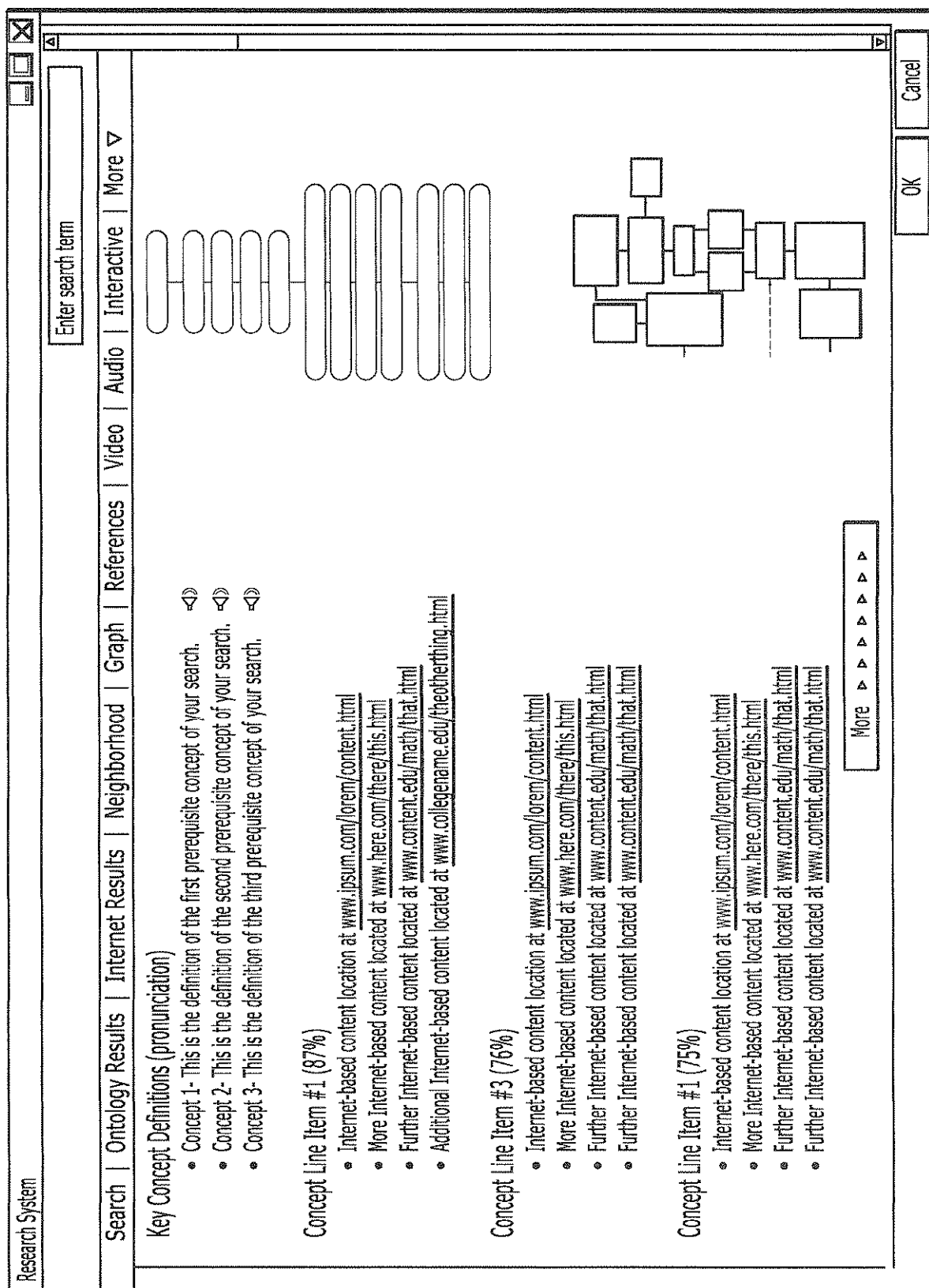


FIG. 31

		1	2	3	4	5	How many times this item is covered by all of the problems 2
1	Circles	0	0	1	1	0	2
2	Line	1	0	0	0	0	1
3	Circumscription	0	1	0	0	0	1
4	Adding integers	1	1	1	1	0	4
5	Subtracting integers	1	0	0	0	0	1
6	Semicircle	0	1	1	1	0	3
7	Circumference	1	1	0	0	0	2
8	Radius	1	0	1	1	0	3
9	Greek letter pi	0	0	0	0	1	1
10	Line segment	0	0	0	0	1	1
How many items are in this problem 3							