

IBM PERSONAL COMPUTER AT (R) 5170 MODELS 319 AND 339

Contents

[Announcement Letter Number 186-052 dated April 2, 1986](#)

[US - Last Revised on April 2, 1986](#)

Brief Description of Announcement, Charges, and Availability

The IBM Personal Computer family has been enhanced with the addition of two new models of the IBM Personal Computer AT. The new models maintain compatibility with most existing hardware and software products for the IBM Personal Computer AT family.

The new Model 339, with the following enhancements, corresponds to the current AT (TM) Model 239:

- o Increased processor speed from 6 MHz to 8 MHz
- o A new keyboard with separate numeric and cursor keys, indicator lights, and 12 function keys.

The new Model 319 is identical to Model 339, with the exception of the keyboard, which is the current AT keyboard.

In addition, IBM announces two new memory expansion cards and a memory module kit for all models of the AT family.

Customer Letter Section**HIGHLIGHTS**

- o Faster processor speed
- o Hardware and software compatibility with most IBM Personal Computer AT family products
- o Same expansion slot capabilities as the current models
- o Enhanced Personal Computer Keyboard
 - New 101-key keyboard designed to enhance user productivity (Model 339)
 - International Standards Organization (ISO)

- 101-key U.S. Version
- Recappable
- o Selectric (R) typing section
- o Dedicated numeric pad
- o Dedicated cursor and screen controls
- o Twelve Function Keys
- o Indicator lights
- o 9 foot cable

DESCRIPTION

The newly announced models of the Personal Computer AT provide exceptional performance for professional applications, office environments, IBM network server functions and personal productivity.

The system unit in Models 319 and 339 includes 512K bytes of planar memory, a single 1.2Mb High Capacity Diskette Drive, a combination Fixed Disk and Diskette Drive Adapter, a Serial/Parallel Adapter and a 30Mb Fixed Disk Drive.

The new models are based on the high-performance 16 bit Intel 80286 Microprocessor. These models also include the BASIC language and clock/calendar with battery backup.

ENHANCED PERSONAL COMPUTER KEYBOARD

The Enhanced Personal Computer Keyboard represents an advance in keyboard design for the IBM Personal Computer family. The keyboard is designed to meet the needs of the personal computer user, the office system user, and the user who communicates and interacts with larger computer systems.

Keycaps are removable. Clear keycaps with paper inserts permit customizing of the Enhanced Personal Computer Keyboard. Keyboard templates are available to provide specific operator instructions. A nine-foot cable is provided to attach the keyboard to the system unit. For ordering information, refer to the Accessories portion of the Charges section.

The Enhanced Personal Computer Keyboard can be divided into five sections:

- o Typing section
- o Numeric pad
- o Cursor/screen controls
- o Function keys

- o Indicator lights.

The keyboard arrangement is similar to the Selectric (R) keyboard layout, but with 47 graphic character keys. The tab, capslock, shift, enter and backspace keys have a larger striking area and are located in the familiar Selectric locations. Control (Ctrl) and alternate (Alt) keys are placed on each side of the space bar. The typing section and numeric pad have home row identifiers for the touch typist.

The typing section has 48 graphic character keys and a vertical enter key. An alternate graphic (AltGr) key on the right side of the space bar provides the ability to assign additional graphic characters to the keys.

The cursor and screen control keys have been separated from the numeric pad, dedicating the numeric pad to numeric input. A division sign key and an additional enter key have been added to the numeric pad. As with the current IBM Personal Computer keyboards, the numeric pad may also be used for cursor and screen control when not in numlock mode.

The cursor control keys are arranged in the inverted T arrangement. Insert, delete, home, end, page up and page down keys are separated from the numeric pad and located above the dedicated cursor control keys.

The function keys are located across the top of the keyboard in groups of four. The escape key (ESC) is isolated at the upper left of the keyboard. Two additional function keys are provided (F11 and F12). Dedicated print screen/sysrq, scroll lock and pause/break keys are provided for commonly used functions.

Three indicator lights are located at the upper right of the keyboard. These lights indicate the numlock, capslock and scroll lock status of the keyboard.

A microprocessor in the keyboard handles the system unit interface protocol, scan code generation, and command processing.

Also being announced today for the Personal Computer AT family (Models 068, 099, 239, 319 and 339):

128/640K BYTES MEMORY EXPANSION OPTION

This Memory Expansion Option provides 128K bytes of base memory, allowing users who require the support of 640K bytes base memory to

satisfy their requirements.

With the addition of the 512K bytes Memory Module Kit, this option has a maximum memory of 640K bytes.

When the Memory Expansion Option is installed fully populated (640K bytes), the user will have available 640K bytes of memory in the real address space and 512K bytes of memory in the protected address space.

512K BYTES/2MB MEMORY EXPANSION OPTION

This Memory Expansion Option comes with 512K bytes of memory. With additional 512K bytes Memory Module Kits, this option can be expanded up to 2Mb of system unit memory (the base option plus three Memory Module Kits).

A maximum of five 512K bytes/2Mb Memory Expansion Options can be installed in the system unit. A total of 10.5Mb of user memory is possible, with 512K bytes of planar memory plus 10Mb of memory options (five cards times 2Mb/card).

512K BYTES MEMORY MODULE KIT

The Memory Expansion Module Kit option provides an additional 512K bytes memory on either the 128/640K bytes or the 512K bytes/2Mb Memory Expansion Option.

PUBLICATIONS

The following publication will be included with each system unit shipped:

- o IBM Personal Computer AT Guide to Operations.

Additional publications available for purchase are:

- o Technical Reference Manual - The Technical Reference manual is for programmers, engineers and others who want to understand the IBM Personal Computer AT in greater detail. This reference manual includes functional specifications, BIOS listings, hardware specifications, and printouts for peripheral connectors.
 - Technical Reference Manual (TRM)
 - TRM Update
- o Technical Reference Options and Adapters - The Technical Reference Options and Adapters manual includes functional specifications for programmers, engineers and others who want to understand IBM Personal Computer options and adapters in greater detail.

- Technical Reference Options/Adapters (TRO/A)
- TRO/A 128/640K bytes Memory Expansion Update
- TRO/A 512K bytes/2Mb Memory Expansion Update
- Hardware Maintenance Service and Hardware Maintenance Reference

These publications for service personnel detail many aspects of maintaining the machine. They include instructions for identifying the failure of a replaceable unit, a parts catalog, and the Advanced Diagnostic Diskette.

- Hardware Maintenance Service (HMS)
- HMS Update
- Hardware Maintenance Reference (HMR)
- HMR Update

- o BASIC Reference Manual Version 3.0.

SCHEDULE

Orders for the newly announced models of the Personal Computer AT will be accepted immediately.

The new models, the 128/640K bytes Memory Expansion Option and the 512K bytes Memory Module Kit are available now.

The 512K bytes/2Mb Memory Expansion Option will be available April 15, 1986.

TECHNICAL INFORMATION

5170 SYSTEM UNIT

The 5170 System Unit contains the following major functional components:

- o Advanced high-performance Intel 80286 microprocessor at 8 MHz clock speed
- o ROM based automatic power-on self test of system components
- o BASIC language interpreter in 64K bytes ROM
 - Access Time - 150 ns
 - Cycle Time - 355 ns
- o 8086 compatible real address mode
- o Limited protected virtual address mode functions
- o 512K bytes of dynamic RAM on the system board
 - Access time - 150 ns
 - Cycle time - 275 ns
- o Fixed disk and diskette drive adapter

- o System clock/calendar/configuration w/CMOS RAM and battery backup
- o Directionally-mounted speaker
- o Security keylock/indicator assembly
- o Bi-directional keyboard interface
- o Enhanced Personal Computer Keyboard or existing AT Keyboard
- o Power-on indicator (green)
- o Eight expansion slots
- o 24-bit address
- o 16-bit data path
- o Seven Channel Direct Memory Access (DMA)
- o 16 level interrupt
- o Three programmable timers
- o 192 watt switchable worldwide power supply
- o 80287 math co-processor socket
- o Dimensions:
 - Width 540 mm (21.25 Inches)
 - Depth 439 mm (17.28 Inches)
 - Height 162 mm (6.38 Inches)
- o Weight: 19.5 Kg (43.0 lbs.)
- o Electrical:
 - 90-137V, 50-60 Hz
 - 180-259V, 50-60 Hz
- o Ambient Air Temperature:
 - System on 15.6 (degs)-32.2 (degs)C (60 (degs)-90 (degs)F)
 - System off 10 (degs)-43 (degs)C (50 (degs)-110 (degs)F)
- o Humidity
 - System on 8-80 (degs) RH
 - System off 20-80 (degs) RH
- o BTU Output: 1229 BTU/HR
- o Noise Level: Class 3 (Office Environment).

CURRENT SPECIAL FEATURES

FEATURES: The new Models 319 and 339 support most features and peripheral devices of the current IBM Personal Computer AT models. These features and peripheral devices include:

SPECIAL FEATURE	FEATURE CODE
-----------------	-----------------

Binary Synchronous Communications	
Adapter	1204
Cluster Adapter	1206
Cluster Cable Kit	1207
Color/Graphics Monitor Adapter	4910
Communications Adapter Cable	2067
Data Acquisition and Control Adapter	1502
Data Acquisition and Control Adapter	
Distribution Panel	1504
Double Sided Diskette Drive	0207
Enhanced Graphics Adapter	1200
Floor Standing Enclosure	0218
Game Control Adapter	1300
General Purpose Interface Bus Adapter	1503
General Purpose Interface Bus Adapter	
Cable	5040
Graphics Memory Expansion Card	1201
Graphics Memory Module Kit	1203
High Capacity Diskette Drive	0206
Math Co-Processor Option	0211
Monochrome Display and Printer	
Adapter	4900
PC Network Adapter	0213
PC Network Base Expander	
(installs in 5178)	0230
Professional Graphics Controller	1501
Prototype Adapter	0220
Serial Adapter Cable	0217
Serial Adapter Connector	0242
Serial/Parallel Adapter	0215
Synchronous Data Link Control	
(SDLC) Communications Adapter	1205
20Mb Fixed Disk Drive	0205
3278/79 Emulation Adapter	2507
3278/79 Emulation Adapter	
Enhanced	5050
IBM Personal Computer	

AT/370 Option Kit	6115
30Mb Fixed Disk Drive	0210
Enhanced 5250 Emulation Version 2.1	
Installation Convenience Kit	2870
Enhanced Display Station	
Emulation Adapter Kit	2871
IBM Personal Telephone Manager	
Adapter	8982
IBM Token-Ring Network	
PC Adapter	3391
PC Voice Communications Option	4771
IBM PC 1200 BPS Modem	4805

Additional features and peripheral devices of the current Personal Computer AT models are:

- o IBM Series/1 - PC Channel Attachment Feature and Cable (S/1 Feature #4000 and 4001)
- o 5364 Model 001 (Note)
- o 5364 Model 002 (Note)
- o 5364 Model 021 (Note)
- o 5364 Model 022 (Note)
- o 5201 Model 001 Quietwriter
- o 5201 Model 002 Quietwriter
- o 5216 Model 002 Wheelprinter
- o 5223 Model 001 Wheelprinter E
- o 3812 Model 001 Page Printer
- o 4201 Model 001 Proprinter
- o 3852 Model 002 Color Jetprinter
- o 5152 Personal Computer Graphics Printer (no longer available)
- o 5151 Monochrome Display
- o 5153 Color/Graphics Display
- o 5154 Enhanced Color/Graphics Display
- o 5175 Professional Color Display
- o 4865 3.5 inch External Diskette Drive
- o 5841 Model 001 1200 BPS Standalone Modem
- o 5178 Model 001 PC Network Translator Unit
- o ROLM Juniper II Personal Communications Adapter Model 46614.

NOTE: Model 339 is not supported as the system console. Also, for

SDLC communications, a patch will be available from HONE or EQUAL databases. Requires S/36 SSP Version 4.0.

COMPATIBILITY: AT Models 319 and 339 may be used in situations where the AT Models 068 and 239 are currently utilized. Most software and hardware currently supported by Models 068 and 239 will continue to be supported on Models 319 and 339.: See Attachment A for detailed list of compatible software products.

PREREQUISITES: AT Models 319 and 339 require a video display adapter and device for display output. Personal Computer DOS users require DOS 3.1 or higher. IBM Personal Computer XENIX (TM) Operating System users require XENIX Version 2.0.

XENIX is a trademark of Microsoft, Inc.

PLANNING INFORMATION

CUSTOMER RESPONSIBILITY: The customer is responsible for unpacking and installing system components and options for the Personal Computer AT Models 319 and 339, per the installation instructions provided.

INSTALLABILITY: The keyboard is plugged directly into the system unit. The display and printer are connected via adapters installed in the system expansion slots. Once turned on, the system unit automatically runs a power-on self test to verify system readiness. If a failure is found, an instruction will appear on the screen.

If the test is successfully completed, the system attempts to load an operating system (such as DOS) from the first diskette drive. Should an operating system not be found, the system attempts to load from the first fixed disk. If this operation is not completed, the BASIC interpreter is made ready, identified on the screen, and the system is available for use.

PACKAGING: The system unit and keyboard for Model 339 is packaged in two separate cartons. The keyboard package also contains the following:

- o IBM Personal Computer AT Guide to Operations
 - Exploring the IBM Personal Computer AT Diskette
 - Customer Diagnostic Diskette
 - Setup and Installation Included in Guide to Operations
- o System unit power cord
- o Welcome package

- o Keyboard template kit.

For Model 319, the system unit and keyboard are packaged in two separate cartons. A third carton contains the Guide to Operations, the system unit power cord and the welcome package.

The system unit part number for Models 319 and 339 is identical.

TECHNICAL ASSISTANCE: Eligible customers may obtain technical assistance from the IBM Personal Computer Assistance Center (PCAC). A new ASKINFO library retrieval keyword, PCFLASH, may be used to retrieve supplementary information on this product.

SECURITY, AUDITABILITY, AND CONTROL

User management is responsible for evaluation, selection, and implementation of security features, for administrative procedures, and for appropriate controls in application systems.

If sensitive data is sent over external communication facilities, user management may wish to pursue the application of cryptography.

TERMS AND CONDITIONS

PURCHASE TERMS AND CONDITIONS VPA: Volume purchasing is available under the Volume Procurement Amendment (VPA) to Agreement for Purchase of IBM Machines. The IBM 5170 models are included in Category A, Discount Group 1, of the VPA Exhibit for Workstations (32WS-1) and Category A of the VPA Exhibit for Qualified Educational Institutions/Hospitals. Features are eligible for discount on existing VPAs when shipped within the contract period.

IBM CREDIT CORPORATION FINANCING: A range of IBM Credit Corporation term leases and installment payment plans is available.

ALTERNATIVE CERTIFICATION: No

VOLUME MAINTENANCE AMENDMENT: The IBM 5170 Personal Computer AT is an eligible machine and a qualifying machine under Volume Maintenance Amendment to the IBM Maintenance Agreement.

WARRANTY PERIOD: 12 months

WARRANTY SERVICE: Customer Carry-in Repair (CCR) service is provided during the warranty period. Customer Carry-in Repair is described under the terms and conditions of the Agreement for Purchase of IBM Machines (Z120-2892).

WARRANTY OPTION: IBM On-site Repair (IOR)

IBM MAINTENANCE AGREEMENT SERVICE: Maintenance service is available under the IBM Maintenance Agreement (Z125-3275).: The following types of service are available:

- o IBM On-site Repair (IOR)
- o Customer Carry-in Repair (CCR).

HOURLY SERVICE: IBM Hourly Service may be obtained by calling the IBM Service/Exchange Communication Center's (S/ECC) toll-free number 1 800 428-2569.

PRODUCT AVAILABILITY STATUS: New product available.

CUSTOMER SETUP: The Personal Computer AT and its features are Customer Setup (CSU). Detailed setup instructions are included with each machine and feature. Setup service is available from the IBM National Service Division at IBM Hourly Rates and Minimums.

EDUCATIONAL ALLOWANCE: A 20% educational allowance is available to qualifying institutions. The educational allowance is not additive to any other discount or allowance.

MACHINE GROUP: A

IBM HOURLY SERVICE RATE CLASSIFICATION: 2

CHARGES

DESCRIPTION	MACHINE TYPE	MODEL NUMBER	PURCHASE PRICE
System Unit/Keyboard	5170	319	\$5,295.00
System Unit/Keyboard	5170	339	5,295.00
FEATURE		FEATURE CODE	PURCHASE PRICE
128/640K bytes Memory Expansion Option		3338	\$475.00
512K bytes/2Mb Memory Expansion Option		3343	475.00
512K bytes Memory Module Kit		3339	165.00
DOCUMENTATION	PART NUMBER	FEATURE CODE	COPY PRICE
Guide to Operations	6280102	3102	\$80.00
Basic Reference Manual	6280075	0075	45.00
Hardware Maintenance Service (HMS)	6280087	3087	195.00
HMS Update	6280139	3100	9.95
Hardware Maintenance Reference	6280088	3088	150.00

(HMR)

HMR Update	6280138	3110	5.95
Technical Reference Manual (TRM)	6280070	0070	105.00
TRM Update	6280099	3099	49.75
TRM Options/Adapters	6322509	2509	125.00
128/640K bytes Memory Expansion	1502544	3544	5.95
Update			
512K bytes/2Mb Memory Expansion	6183075	3075	5.95
Update			
Key6279940emplates		4.95	

ANNUAL MINIMUM MAINTENANCE CHARGES:

MACHINE	MODEL	CUSTOMER	
		IBM ON-SITE REPAIR (IOR)	CARRY-IN REPAIR (CCR)
		(#9798)	(#9821)
5170	319	\$546.00	\$375.00
5170	339	546.00	375.00

MINIMUM WARRANTY OPTION CHARGES:

MACHINE	MODEL	IBM ON-SITE REPAIR
		(#9805)
5170	319	\$218.00
5170	339	218.00

ENHANCED PERSONAL COMPUTER KEYBOARD ACCESSORIES:

	PART NUMBER	PURCHASE PRICE
Clear Keycaps (60) with paper inserts	6341707	\$50.00
Blank Light Keycaps	1351710	25.00
Blank Dark Keycaps	1351728	25.00
Paper Inserts (300)	6341704	30.00
Keycap Removal Tools (6)	1351717	11.00

Accessories can be ordered through the National Distribution Division (NDD), Dayton, NJ, using the appropriate part numbers, or by calling IBM Direct on 1 800 426-2468.

ATTACHMENT A

SOFTWARE COMPATIBILITY

The following software products have been tested for compatibility on IBM Personal Computer AT Models 319 and 339 with DOS

3.1 and 3.2, and determined to operate substantially as described in their program documentation.

	VERSION	PART NUMBER
Operating Systems:		
DOS/BASICA/BASIC	3.10	6024211
DOS/BASICA/BASIC	3.20	6280057
XENIX	2.00	59X9932
Languages:		
APL	1.00	6024077
BASIC Compiler/Runtime	1.00	6024003
BASIC Compiler/Runtime	2.00	6024216
COBOL Compiler/Runtime	1.00	6024011
FORTTRAN	1.00	6024012
FORTTRAN	2.00	6024127
Macro Assembler	1.00	6024002
Macro Assembler	2.00	6024193
PASCAL Compiler	1.00	6024010
PASCAL Compiler	2.01	6024128
Professional FORTRAN	1.00	6024200
'C" Compiler	1.00	6280072
'C" Compiler	1.00	6280072
Communications:		
3101 Emulation(1)	1.00	6024042
Asynchronous Communications(1)	2.00	6024032
Bisync 3270 Emulation(1)	1.01	6024037
PC LAN	1.10	6280083
PC Network SNA/3270 Emulation(1)	2.00	59X9951
PC Network Analysis(1)	1.00	6489762
PC 3270 Emulation PGM Entry Level	1.00	59X9904
SNA/3270 Emulation/RJE(1)	1.01	6024036
PC Displaycom BSC	1.10	6024210
Mainframe Comm Assistant(1)	1.05	6024451
Voice/Phone Assistant	1.00	6280741
Voice-activated Keyboard Utility	1.00	6280742
APPC/PC Program to Program(1)		6467038
Token-Ring Interconnect Program(1)		6467036
Token-Ring Network NETBIOS(1)		6467037

Personal Telephone Manager		6429190
ASC Comm Server/Token and PC Net(1)		1642003
Local Area Network Print Mgr(1)		6317042
VM/PC(2)	1.10	6024175
VM/PC	2.00	6467040
PC/VM Bond	2.00	5664298
Remote 5250 Emulation((2),(3))	1.00	6403685
Enhanced PC Keyboard Appendix		6386348
Enhanced 5250 Emulation	2.10	6386354
Series/1 PC Connect	1.00	5719-CN1
Telephone Access to Office System	1.10	6467039
PC Support/36	4.00	5727-WS1, WS6
PC Support/38 (4)	7.00	5714-PC1
3278 Emulation via IBM PC (5360/62)		5727-SS1
3278 Emulation via ICM PC (S/36 PC)		5727-SS6
PROFS PC Support(5)		5664-309
Business Productivity:		
EZ-VU Runtime Facility	2.00	6317025
EZ-VU Development Facility	2.00	6317026
EZ-VU (ISPF/PDF) Editor	1.10	6466974
	VERSION	PART NUMBER
Cross System Product/Application		
Execution (EZ-RUN)	1.00	6217010
Cross System Product/Application		
Generation (EZ-PREP)	1.00	6317011
Doctor's Office Manager	2.00	6467035
BMS Series	1.00	
General Ledger		6410950
Accts Receivable		6410952
Accts Payable		6410951
Inventory Acctg		6410955
Order Entry & Invoicing		6410954
Payroll		6410953
Financial Extensions		6410957
Accounting Extensions		6410958
LAN Access Edition		6410965
PDS Series	1.00	

Data Edition		6410936
Reports+ Edition		6410937
Words Edition		6410940
Plans Edition		6410939
Plans+ Edition		6410972
Business Advisor		
General Accounting Edition		6466988
Accts Payable Edition		6466989
Accts Receivable Edition		6466990
Payroll Edition		6466991
Network Extension Edition		6466992
Inventory Control Edition		6466993
Order Entry Edition		6466994
Information Management Edition		6466995
PC/Videotex	B1.00	6410985
VTX/GRAF	1.00	6317012
PC/Colorview	1.00	6410982
IBM PC Pilot(1)	1.00	6316973
PC Storyboard	1.10	6316998
RS/1	1.00	6317003
IBM Accounting Assistant	1.00	
Accounts Payable		6317050
Billing/Accounts Receivable		
General Accounting		6317049
Inventory Control/Purchasing		
Job Cost		6317054
Payroll		6317052
IBM Filing Assistant	1.00	6024145
IBM Graphing Assistant	1.01	6024147
IBM Reporting Assistant	1.00	6024146
IBM Writing Assistant	1.01	6024144
IBM Planning Assistant	1.00	6024148
IBM Drawing Assistant	1.00	6024089
Document Retrieval Assistant	1.00	6024306
IBM Accounting Solutions	1.00	6024152
IBM Executive Solutions	1.0	6024151
IBM Home Solutions	1.00	6024150

IBM Planning Solutions	1.00	6024135
PC DisplayWrite 1	1.00	6024188
PC DisplayWrite 3	1.10	6024177
Special:		
TopView (TM) (2)	1.01	6024131
TopView ToolKit (2)	1.01	6024133
TopView (1)	1.10	6024455
TopView ToolKit (1)	1.10	6024454
XENIX Software Dev System	2.00	59X9939
XENIX Text Formatting System	2.00	59X9941
XENIX Op Sys Extensions	2.00	59X9943
	VERSION	PART NUMBER
Engineering/Scientific:		
Graphics Kernal System	1.00	6024203
Graphics Plotting System	1.00	6024204
Graphics File System	1.00	6024205
IEEE 488 S-R (GPIB)	1.00	6024201
DACS S-R/Distribution	1.00	6024202
Graphics Development ToolKit	1.00	6024196
Graphics Development ToolKit	1.10	6280076
Education:		
Earth Sciences Series	1.00	
Hydrologic Cycle		6024121
Ground Water		6024122
Surface Water		6024123
Moisture in the Atmosphere		6024124
Earthquakes		6024322
Volcanos		6024323
Landslides		6024324
Biology Series	1.00	
Cell Functions-Growth+Mitosis		6024316
Chemicals of Life I		6024317
Chemicals of Life II		6024344
Chemicals of Life III		6024409
Leaf Structure & Function		6024318
Lights, Plants & Photosyn.		6024319

Passive Transport		6024320
Plant Growth		6024321
Pathology		6024343
Modern Genetics		6024345
Human Life Processes I		6024346
Human Life Processes II		6024411
Human Life Processes III		6024414
Cytology & Histology		6024407
Mendelian Genetics		6024408
Regulation & Homeostasis		6024410
The Environment I		6024412
The Environment II		6024413
Pollination and Fertilization		6024415
Taxonomy		6024416
Physics Series	1.00	
Investigating Acceleration		6024403
Investigating Grav Force		6024404
Investigating Thermal Energy		6024405
Investigating Cons. of Energy		6024406
Investigating Wave Interference		6024466
Investigating Electric Fields		6024464
Investigating Models of Light		6024465
Karel the Robot	1.00	6024066
Comma Cat	1.00	6024093
Dictionary Dog	1.00	6024067
Typing Tutor	1.00	6024013
Bumble Games	1.00	6024094
Electric Poet	1.00	6024172
LOGO	1.00	6024076
LOGO Learner	1.00	6024136
Listen to Learn	1.00	6024165
Monster Math	1.00	6024072
Private Tutor	2.00	6024113
Teacher's Quiz Designer	1.00	6024075
Turtle Power	1.00	6024109
Adventures in Math	1.00	6024112
Primary Editor	1.00	6024294

Missing Letters	1.00	6024104
I Can be Anything	1.00	6024304
Rocky's Boots	1.00	6024099
	VERSION	PART NUMBER
Private Tutor Courses	1.00	
Learning DOS		6024080
Learning to Program in BASIC		6024081
Computers and Communications		6024069
Reading Comprehension Skills		6024325
Vocabulary Building Skills		6024326
Word Knowledge Skills		6024327
Language Skills		6024084
Capitalization Skills		6024085
Spelling Skills		6024086
Punctuation Skills		6024083
Math Computation Skills		6024305
Basic Number Concepts		6024297
Solving Math Word Problems		6024308
Preparing for Geometry and Algebra		6024307
Bumble Plot	1.00	6024096
Gertrude's Secrets	1.00	6024097
Gertrude's Puzzles	1.00	6024098
Juggle's Butterfly	1.00	6024095
Bouncy Bee Learns Letters	1.00	6024137
Bouncy Bee Learns Words	1.00	6024139
Get Set for Writing to Read	1.00	6024468
Scientific Reasoning Series	1.00	
Theory Formation: Reflections and Patterns		6024471
Measurement Process: Distance and Area		6024470
Reading for Meaning: Level I	1.00	6024330
Reading for Meaning: Level II	1.00	6024336
Reading for Meaning: Level III	1.00	6024337
Reading for Meaning: LEVEL IV	1.00	6024338
Reading for Information: Level II	1.00	6024358
Reading for Information: Level III	1.00	6024359
Reading for Information: Level IV	1.00	6024360
Vocabulary: Level II	1.00	6024350

Vocabulary: Level III	1.00	6024351
Vocabulary: Level IV	1.00	6024352
Spelling: Level I	1.00	6024347
Spelling: Level II	1.00	6024348
Spelling: Level III	1.00	6024349
Parts of Speech: Level II	1.00	6024333
Parts of Speech: Level III	1.00	6024334
Touch Typing for Beginners	1.00	6024339
Math Concepts P	1.00	6024356
Math Concepts: Level I	1.00	6024355
Math Concepts: Level II	1.00	6024357
Math Concepts: Level III	1.00	6024427
Math Concepts: Level IV	1.00	6024429
Math Practice: Level I	1.00	6024353
Math Practice: Level II	1.00	6024354
Math Practice: Level III	1.00	6024431
Math Practice: Level IV	1.00	6024432
Vendor Logo Programs:		
1-2-3 (R) (Lotus)	2.00	
Symphony (R) (Lotus)	1.10	
Framework II (TM) (Ashton-Tate) (2)	1.10	
WordStar 2000+ (R) (MicroPro)	2.00	
MS Word (R) (Microsoft)	2.00	
MS Project (R) (Microsoft)	2.00	
Crosstalk XVI (TM) (Microstuf)	3.60	
R:BASE 5000 (R) (Microrim)	1.01	
CLOUT (R) (Microrim)	2.00	
(1)Not tested with DOS 3.1.		
(2)Supported on 5170 Model 319 only.		
(3)Requires patch 434CH on HONE or EQUAL Database.		
(4)Does not support Remote 5250 Emulation (6403685).		
(5)Requires PC 3270 Emulation Program Entry Level 1.0 (59X9904).		