Personal Computing Today

AUGUST 1982
65p

NEW

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MAKING SENSE OF COLOUR ON THE VIC-20

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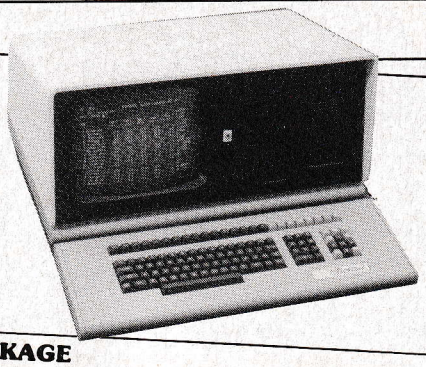
SINCLAIR ZXSPECTRUM
Over The Rainbow Or Under Par?



NEC PC8000

IBR, Unit 57, Sutton Industrial Park, London Road, Earley, Reading, Bucks.

STANDARD PACKAGE

Memory Size (RAM)	32K
Screen Size	25 lines of 80 characters
Expansion Sockets	Parallel output Bus Connector
Tape Included?	No
Display Unit Included?	No
Usable Domestic TV?	Yes
Size of BASIC	24K
Average Price	**£599**

OTHER ADD-ONS:

None Reported

MANUFACTURER'S EXPANSIONS

	DETAILS	PRICE
RAM	optional 32K RAM packs (up to 128K)	£109
Printer	Yes	
Monitor	Yes	£375-1450
Disc Drives	Yes, dual	£149-£549
Other Languages	Yes	£625
Multi-user Capabilities		£200-£500
BASIC extensions (Toolkits)	Yes No	P.O.A. —

SHARP MZ-80A

Sharp UK Ltd, Thorn Road, Newton Heath, Manchester M10 9BE
Tel: 061-205 2333.

STANDARD PACKAGE

Memory Size (RAM)	48K
Screen Size	25 lines of 40 characters
Expansion Sockets	BUS connector
Tape Included?	Yes
Display Unit Included?	Yes
Usable Domestic TV?	No
Size of BASIC	12K
Average Price	**£549**

OTHER ADD-ONS:

None Reported

MANUFACTURER'S EXPANSIONS

	DETAILS	PRICE
RAM	No	—
Printer	Yes	£450-800
Monitor	N/A	—
Disc Drives	Yes, dual	£600
Other Languages	Yes	£45
Multi-user Capabilities	No	—
BASIC extensions (Toolkits)	No	—

SHARP MZ-80B

Sharp UK Ltd, Thorn Road, Newton Heath, Manchester M10 9BE

STANDARD PACKAGE

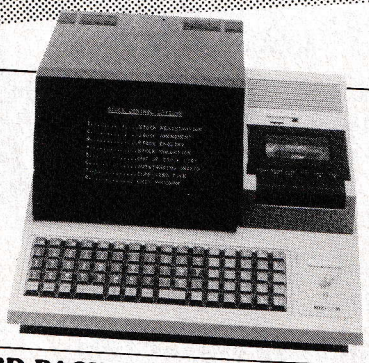
Memory Size (RAM)	64K
Screen Size	25 lines of 40 or 80 characters
Expansion Sockets	BUS connector
Tape Included?	Yes
Display Unit Included?	Yes
Usable Domestic TV?	No
Size of BASIC	16K
Average Price	**£990**

MANUFACTURER'S EXPANSIONS

	DETAILS	PRICE
RAM	Yes	£120
Printer	Yes	£450-800
Monitor	N/A	–
Disc Drives	Yes, dual	£600
Other Languages	Yes	£45
Multi-user		–
Capabilities	No	–
BASIC extensions (Toolkits)	No	

OTHER ADD-ONS:

Multi-vision and triple-vision, Datron Micro Centre, 2 Abbeydale Road, Sheffield S7 1FD, £35-79



SHARP MZ-80K

Sharp UK Ltd, Thorn Road, Newton Heath, Manchester M10 9BE

STANDARD PACKAGE

Memory Size (RAM)	48K
Screen Size	25 lines of 40 characters
Expansion Sockets	BUS connector
Tape Included?	Yes
Display Unit Included?	Yes
Usable Domestic TV?	No
Size of BASIC	12K
Average Price	**£549**

MANUFACTURER'S EXPANSIONS

	DETAILS	PRICE
RAM	No	–
Printer	Yes	£450-800
Monitor	N/A	–
Disc Drives	Yes, dual	£600
Other Languages	Yes	£45 upwards
Multi-user		
Capabilities	No	–
BASIC extensions (Toolkits)	No	–

OTHER ADD-ONS:

None Reported

SOFTWARE REVIEW

Title: Jelly Monsters
Type: Cartridge
Supplier: Commodore Dealers
Machine: VIC-20
Price: £19.95 inc. VAT

At last it's here, after being around for nearly a year in prototype form, Commodore have finally released 'Jelly Monsters' — their cartridge version of the game 'Packman'. The verdict: very good indeed.

It is a faithful reproduction of the pub game which captured the hearts and wallets of countless thousands across the country. For those of you that have been on other planets for the past year or so I will explain.

The idea behind Jelly Monsters is that you are a large yellow blob with a huge mouth (!) and a voracious appetite, whose one aim in life is to travel round a maze eating the dots that are scattered on the floor. The only thing preventing you from indulging in your passion is the fact that also inhabiting the maze are four pretty nasty 'Jelly Monsters'. They spend their time chasing you round the maze with the unfortunate habit of killing you if they catch you.

All is not lost though, because situated in the four corners of the maze are power pills which, when eaten, allow you to chase and devour the Jelly Monsters. The scoring for this game is fairly simple, 10 points per dot and 200 points for the first Jelly Monster, 400 for the second, etc.

It is refreshing to see a program which makes such good use of the VIC's facilities, the graphics are superb, the colour and sound are well implemented and the action is fast and smooth. My only criticism is that as the Jelly Monsters move around they do flicker slightly. Otherwise — superb graphics.

In conclusion, Jelly Monsters is a highly addictive game (as can be seen from the USA, where everyone above the age of 10 seems to be expert at it) and it will keep you in front of the VIC for hours on end.

Be warned . . . I speak from experience.

C.P.

Ratings Table

Program Quality	****
Value for Money	***
Presentation On-screen	****
Ease of Use	****
Crashproofing	***
Supplied Instructions	***
Overall	75%

Title: Super Glooper
Type: Tape
Supplier: Supersoft
Machine: PET
Price: £8

The inevitable PET "Packman" is here to amaze and amuse you — and drive the family mad with the weird sound effects.

By now the entire Universe must know how these games are played. If you don't then read the review of "Jelly Monsters" in this article and lose 100 points for being anti-social and no fun anymore.

In this version, the monsters are rather boring little squares which move relentlessly toward you once freed from their central reservation by you eating too many dots.

Overall the game is probably as faithful a rendition of the arcade game as is possible on the PET. Unfortunately, this inevitably means that the graphics are limited and by comparison with other machine versions, this one is somewhat dull.

I found the control keys awkward to use and remember and this made high scores difficult to achieve, at least at first. (I will *not* be beaten . . .)

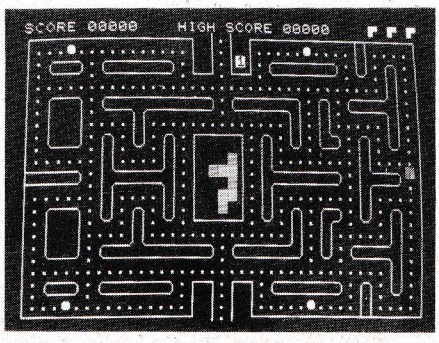
One gripe. It's boring having to go back through the long and tedious instructions when you want to play again. Pointless in a program this well written.

I think this will prove a popular PET program, if only because any serious software collector *has* to have a version of the world's most popular arcade game!

R.H.

Ratings Table

Program Quality	***
Value for Money	***
Presentation On-screen	***
Ease of Use	***
Crashproofing	****
Supplied Instructions	*
Overall	60%



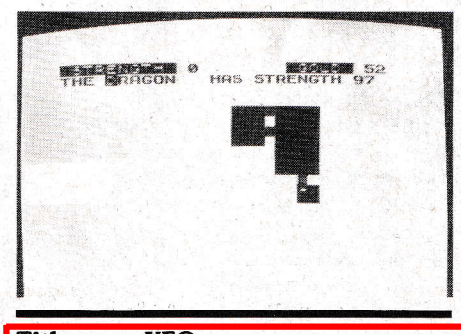
Title: Catacombs
Type: Tape
Supplier: J.K. Greye Software
Machine: Sinclair ZX81
Price: £5.95

"You are alone and lost in the catacombs, how much gold can you find, and how long can you survive?" This game doesn't come up to some of the other adventure games now available. Keys 1-8 move you in the direction indicated on the keys (1-4 diagonally as shown by the graphics character on the keys). The rooms and passages only appear as you move into them and you may find food, gold or monsters. If you beat the monsters or find food, your strength is incremented. You may try to run away from the monsters but they will follow you. Try tunnelling to escape them by shifting keys 5-8. Although acquired skill will help you, the result of a battle with a monster seems a little too random, and the novice gets killed a little too quickly to gain much skill at each attempt. This brings us to the major disturbing factor of this program; once LOADed, the game will automatically RUN and will then take roughly two minutes in FAST mode (with the screen a complete blank) to set up each level. Unfortunately, to the novice it appears that the computer is spending more time setting the stage than the player is playing! We are told that there are an infinite number of levels but also that there is an exit on each level!

P.F.

Ratings Table

Program Quality	**
Value for Money	**
Presentation On-screen	***
Ease of Use	**
Crashproofing	****
Supplied Instructions	***
Overall	53%



Title: UFO
Type: Tape
Supplier: Knights Computers
Machine: Sharp MZ-80K
Price: £8

Just about the most difficult computer game we've come across! This is so

fast — it's maddening. The supplier, Knights, realise the difficulty but refuse to slow down the thing on the grounds that it's more fun this way!

As you can see from the photo, UFO is *not* a 'Space Invaders' by some other name. A matrix of corridors is produced on the screen at the top of which ten UFOs appear, one by one — accompanied by worrying sound effects.

You control a little man, stuck at the bottom right. Once all ten baddies are present, they come after you — very, very fast. Your only defence is to missile them out before they get to you. Missiles can only be fired in the direction you're moving and you HAVE to keep moving.

It's fast; it's well-night impossible to beat; it's never boring — there isn't *time* to get bored — and it's compulsive. UFO is written in machine code for speed and is loaded from the monitor, rather than BASIC.

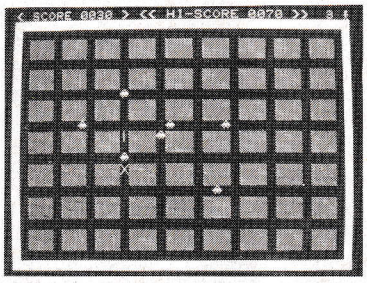
The program is so simple to use and so hard to beat it'll probably become a classic of its kind.

I hate it!

R.H.

Ratings Table

Program Quality	★★★★
Value for Money	★★★★
Presentation On-screen	★★★★
Ease of Use	★★★★
Crashproofing	★★★★
Supplied Instructions	★★
Overall	75%



Title: Centipede
Type: Tape
Supplier: OD'Tronics
Machine: Sinclair ZX81
Price: £4.95

Yet another twist to shooting down the attacking aliens. These particular creatures take the form of a segmented attack craft that moves from side to side on the screen, descending each time it hits either the frame at the sides or one of the randomly placed obstructions. You have a number of 'bases' (1-5 . . . your choice) and you lose a base if you are hit by one of the alien's bombs or if they descend to 'ground level'. You may fire your laser cannon at the attackers, and if you hit a segment it will be destroyed, but if your hit is in the middle then the alien will split into two and both halves will continue independently. As the attackers are destroyed — or destroy your bases, they will be replaced. As the game proceeds the attackers will become more numerous and will also start to drop bombs on you! You may choose the breakdown — 20 for a novice! Instructions appear on-screen at the start of the game. The top 10 scores may be recorded by name, and remain in memory until you either switch off or alter the speed or number of bases. An innovative game with enough preset variation to appeal to all. Fast and entertaining.

P.F.

Ratings Table

Program Quality	★★★★
Value for Money	★★★★
Presentation On-screen	★★★
Ease of Use	★★★
Crashproofing	★★★★
Supplied Instructions	★★★
Overall	70%

Title: ZX Galaxians
Type: Tape
Supplier: Artic Computing
Machine: Sinclair ZX81
Price: £6.50

A good version for the Sinclair of the well known arcade game. You have three spacecraft equipped with the now mandatory laser guns! In front of you are the formations of the hostile Galaxians; shoot down one fleet and another will take its place. Meanwhile some of the enemy craft will peel off from their close formation and swoop down upon you dropping bombs as they go.

You have control of your position — left and right movement — and an inexhaustible supply of laser bolts! The number of attack craft aiming for you increases but the overall speed of the game is well balanced. Slow enough for the novice to get the feel of the game, but fast enough for the experienced tactician to travel some way and score a satisfying number of hits before he gets beaten to death!

P.F.

Ratings Table

Program Quality	★★★
Value for Money	★★★★
Presentation On-screen	★★★★
Ease of Use	★★★
Crashproofing	★★
Supplied Instructions	★★★
Overall	63%

Title: The Alien
Type: Tape
Supplier: Audiogenic
Machine: VIC-20
Price: £9.95

It is always a dangerous move giving a piece of software a grandiose title, but luckily The Alien, from Audiogenic, doesn't come off too badly. It is based, as with a lot of other programs, on a maze, except that in this variation your task is not to escape, but to survive. The program is written in machine-code and requires an extra 3K of memory over and above the standard machine.

When the game starts you are placed in control of a man stranded in the middle of the maze. For company he has 5 or 6 aliens who behave in a very unfriendly manner and try to eat him. You move about the maze avoiding the aliens, by using either the keyboard or a joystick. When you are safe from immediate danger you can set about inflicting your revenge on the aliens by digging pits for them to blunder into. Once you have snared an unsuspecting alien you must then rush to the side of the pit and fill it in, but be warned, if you do not reach the pit in time, then the alien will escape, usually straight towards you.

This is not your only problem, because if one of his companions comes by he will rescue him and both will set off with a justifiable blood-lust in their eyes.

As the game progresses and you manage to clear all of the aliens you are placed in another maze with even more homicidal extraterrestrials. The game finally ends when you have lost your three lives.

This is a well written game that is a lot of fun to play but the thing which makes it an above average buy is the inclusion of a few humerous extras, such as the sight of a very rotund, grinning alien with your feet sticking out of its mouth and the transformation of yourself into an angel which wafts serenely to the top of the screen on your demise. Once again good use of the VIC's definable characters and its colour and sound should make this a welcome addition to anyone's collection.

C.P.

Ratings Table

Program Quality	★★★★
Value for Money	★★★★
Presentation On-screen	★★★★
Ease of Use	★★★
Crashproofing	★★★★
Supplied Instructions	★★★
Overall	80%

Now the bad . . . no way will your ZX81 RAM add-on fit your Spectrum! The idea of modifying the brand-new machine is also a non-starter I'm afraid. Better by far to leave it where it belongs and get the proper Spectrum expansion if you begin to feel cramped by the 16K of memory on offer.

A lot of letters have been received by all of our correspondents over the last year, asking for addresses of computer clubs in and around London. So for those who sought and have not yet found:-

North London Hobby Computing Club
Polytechnic of North London
Holloway Road
London N7 8DB
01-607 2789

West London Personal Computer Club
81 Rydal Crescent
Perivale
Middx. UB6 8DZ
01-997 8986

South East London Computer Club
61 Craigerne Road
London SE13 7PG
01-853 5829

London School Computer Club
Burlington Danes School
Dane Building
Ducane Road
Hammersmith
London W12 UTY

East London Amateur Computer Club
82, The Drive
Ilford
Essex
191 3JA
01-554 3288

Croydon Microcomputer Club
142 Windermere Road
Norbury
London SW16 5HE
01-764 4043

Harrow Computer Club
16 St. Peter's Close
Bushey Heath
Watford
Herts WD2 3

Richmond Computer Club
18A The Barons
St. Margarets
Twickenham
Middx.
01-892 1873

A reminder that all clubs should be sending us articles for 'Clubhouse' by now! Lose out on free publicity if you really want to, we can't stop you . . .

THE VALLEY

© Computing Today 1982

What are you . . Barbarian or Wizard?

Choose your character type carefully . . . Barbarians recover quickly but their magic doesn't come easily. A Wizard? Slow on the draw and slow to mature . . . but live long enough and grow wise enough and your lightning bolts are almost unstoppable . . .

The Valley is a real-time game of adventure and survival. You may choose one of five character types to be your personal 'extension of self' to battle and pit your wits against a number of monsters. Find treasure, fight a Thunder-Lizard in the arid deserts of the Valley, conquer a Kraken in the lakes surrounding the dread Temples of Y'Nagioth or cauterise a Wraith in the Black Tower. In fact live out the fantasies you've only dared dream about. BUT BEWARE . . . more die than live to tell the tale!

You've read the program (Computing Today — April '82) . . . Now buy the tape. PET and TRS-80, BBC and Sharp tapes are available at £9.95 per tape plus 50p postage and packing. 16K minimum . . . Commodore PET (New ROMs), TRS-80 Model 1, Level 2, BBC Model B and Sharp MZ-80K.

Fill in the coupon and return it to CT Software, *ASP Ltd., 15 Charing Cross Road, London WC2H 0EE* and become one of the many to play . . . The Valley . . .

Computing Today Software

82/6

Please send me . . . tape(s) of The Valley ☐ PET ☐ TRS-80 ☐ Sharp ☐ BBC at £9.95 per tape plus 50p postage and packing.

I enclose my Cheque/Postal Order/International Money Order for: (delete as necessary)
£ . . . . . (Made payable to ASP Ltd)
OR Debit my Access/Barclaycard (delete as necessary)

Please use BLOCK CAPITALS

Name (Mr/Mrs/Miss) . . . . . .

Address . . . . . .

. . . . . Postcode . . . . . .

Signature . . . . . Date . . . . . .

Now type the following lines (*do not* type NEW):-

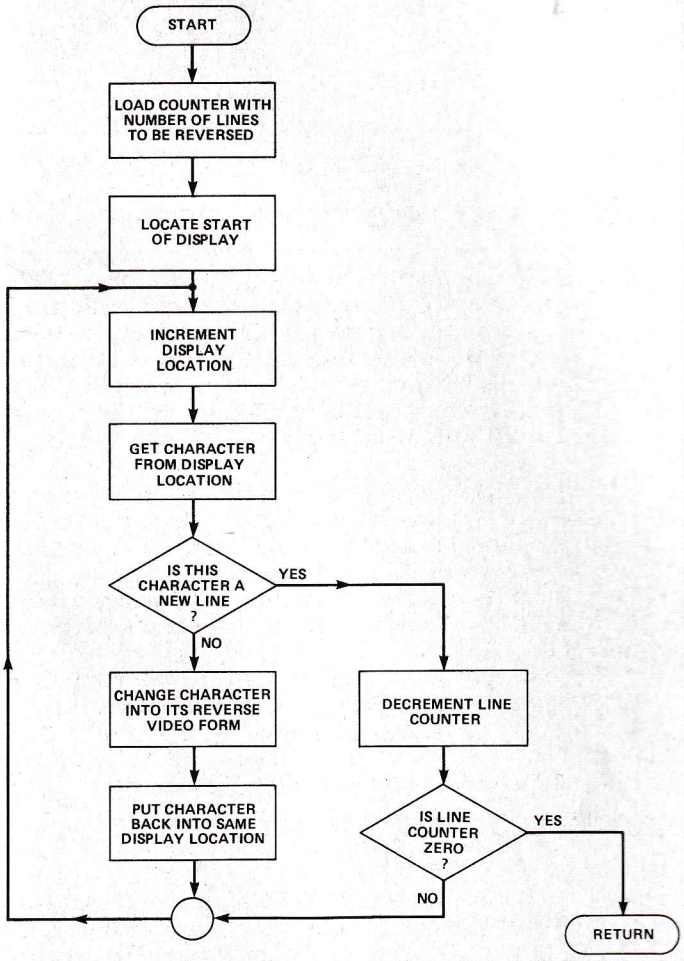
```
10  LET N = 1
20  FOR X = 17388 TO 17407 (20 FOR X  =  32748 TO 32767)
30  POKE X, Y(N)
40  LET N = N + 1
50  NEXT X
60  NEW
70  SAVE "REVERSE SCREEN"
80  GOTO 10
```

Now, set your tape recorder up and start running in Record mode.

Type GOTO 70 and press NEWLINE.

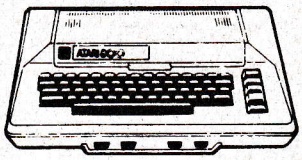
The program will save itself on tape. When it has done so it will execute itself and then 'self destruct'. You now have the machine code routine held in protected RAM. The program can be called at any time by using (for example) LET A = USR 17388 (or USR 32748 on a 16K ZX81). Only switching off the ZX81 will wipe it out (NEW does not affect it). Whenever you load the program off tape for future use, it will automatically run and 'self destruct' on completion.

Before you load the program, change RAMTOP with the two POKE commands and the NEW command as shown before the start of the BASIC program.



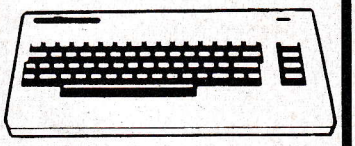
Microspots are our regular "quick-action" program hints. They are designed to be short, useful and adaptable. However, they are not necessarily aimed at the complete beginner and therefore we advise readers to read through each very thoroughly before attempting to enter and use the program.
We will pay £20 for each Microspot submitted by readers that makes it into print! Address your envelope to "Microspot, Personal Computing, 145 Charing Cross Road, London WC2H 0EE".
Keep 'em short and keep 'em coming!

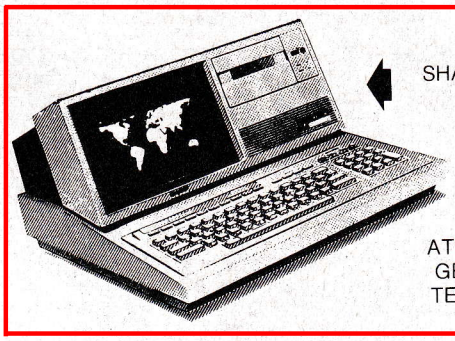
GAMER
24 Gloucester Rd
Tel. 698424
BRIGHTON



ATARI 400 £260
ATARI 800 £499

VIC 20 £152





SHARP MZ-80A £434
MZ-80B £950
MZ-80K £327

ATOM - From £150
GENIE I & II £299
TEXAS TI99 P.O.A.

+ PERIPHERALS + SOFTWARE + BOOKS
+ MAGAZINES + CHESS COMPUTERS
+ GAMES FOR ZX81 AND APPLE

FOOTBALL MANAGER
Addictive Games
for ZX81 ZX80 TRS80 VIDEO GENIE

★ AS MANY SEASONS AS YOU LIKE ★ 4 DIVISIONS ★
★ PROMOTION & RELEGATION ★
★ FULL LEAGUE TABLES ★
★ TRANSFER MARKET ★
★ INJURIES ★
★ 7 LEVELS OF PLAY ★
★ SAVE GAME FACILITY ★
★ MANAGERIAL RATING ★
★ PICK YOUR TEAM FOR EACH MATCH ★ F.A. CUP ★

JUST LOOK AT THESE FEATURES

This is NOT a mere simulation. This is an exciting and highly enjoyable game in which you play the part of a Football Manager coping with the problems and decisions involved in running your club. There are so many features it is impossible to list them here but included are form (top teams NORMALLY win), giant-killings, wage bills to pay, and you can even be sacked! It is a game requiring a great deal of skill, and people play it for literally hours on end (we have proof!).
WE GUARANTEE that this is one of the best computer games you've ever played!
BUT BEWARE, this game is extremely addictive!

FOOTBALL MANAGER - IS SUPPLIED WITH INSTRUCTIONS - OCCUPIES THE ENTIRE 16K RAM

HARDWARE REQUIRED	
ZX81/ ZX80	TRS80/ Video Genie
8K ROM 16K RAM	LEVEL II 16K RAM

To Order send Cheque/P.O. for £7.95 made payable to: ADDICTIVE GAMES at: Dept. P.C. P.O. Box 278 CONNIBURROW MILTON KEYNES MK14 7NE PLEASE STATE COMPUTER

12 OF THE BEST

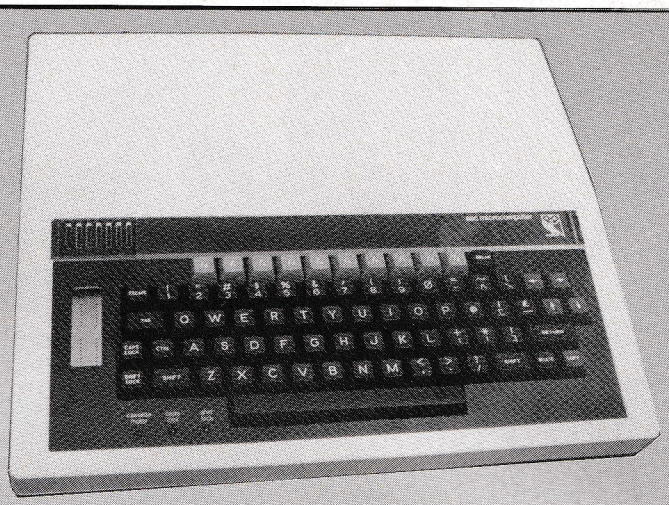
BBC Microcomputer

Launched with the greatest advance interest ever seen to help it along, the BBC Micro has, so far, been plagued by difficulties. The order book was well and truly full long before a single machine rolled off the production lines. This has inevitably led to delays in supply, which are only now clearing. The price has been raised considerably taking the machine out of the "good value for money" category.

There are two versions available, the A and the B. The former is intended as a downmarket 'first-timer's' micro, with 16K of user memory and the well thoughout BBC BASIC to offer.

The B is the 'heavy'! It will run discs and printer and has more outputs than most people would ever need. Mechanically both versions are superbly made and both offer the incredible multi-mode graphics set-up, which enables you to decide for yourself the quality and resolution of the full-colour display.

Herein, however, lies a major drawback. To use the best graphics available you have to give up 10K of your memory. The computer itself takes 3K more for its operating control system. On the Model A this leaves you with just under 3K to put your programs into!



Effectively, therefore, the 16K BBC Model A has no more usable memory than, say, a VIC-20 when using the best graphics mode.

A point to be aware of when choosing your machine is that manufacturers specify the amount of user memory available in several different ways.

Make sure you find out exactly how much RAM is able to accept user programs.

Address: BBC Microcomputer Systems, P.O. Box 7, London W3 6JX.

Price: Model A (16K) £299
Model B (32K) £399.

Machine – BBC Model A

Suitability as First Computer	– 64%
Ease of Operation	– 52%
Value for Money	– 76%
Graphics Capability	– 94%
Suitability for Games Programs	– 84%
Quality of Manuals Provided	– 48%
Suitability for Business Use	– 42%
Software 'Backup'	– 16%

Sharp MZ-80K

The Sharp has never somehow managed to achieve the notice it deserved. For anyone writing their own games or other graphics orientated programs the Sharp is wellnigh unsurpassed.

It has 25 (three-function) graphics keys on the keyboard, another 25 graphics symbols on the letter keys (as 'shift' characters) and an upper/lower case letter capability. The standard Sharp now offers 48K of memory built-in, along with the screen and tape machine, so there is nothing more to buy, or use, in order to run programs. At the moment Sharp are launching the MZ-80A, which will eventually take over from the MZ-80K.

This means that you can pick up an 80K for around £320 complete at the moment – and that makes it the bargain of the year!

Against the Sharp is the fact that the keyboard is not a standard item and so anyone who is used to typing will find it awkward to use.

There is a good selection of software on the market and an active users club.

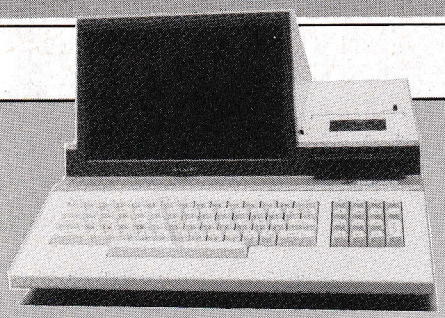
A very versatile machine and one which would normally be an expensive way to begin BASIC bashing – but at the moment a real value-for-money contender for your cash.

Address: Sharp (UK) Ltd, Thorp Road, Newton Health, Manchester, M10 9BE.

Price: Around £320. Shop around for best deal. Comes with 48K of user memory.

Machine – SHARP MZ-80K

Suitability as First Computer	– 78%
Ease of Operation	– 90%
Value for Money	– 92%
Graphics Capability	– 78%
Suitability for Games Programs	– 84%
Quality of Manuals Provided	– 50%
Suitability for Business Use	– 44%
Software 'Backup'	– 86%



MZ-80A

The latest release from Sharp, following the PC 1500 hand-held 'computer' is the long-awaited MZ-80A. This is a direct competitor with the PETs and Tandy IIIs of this world, being one of the few machines on the market to arrive at its new home with tape machine and visual display unit built-in.

A development from the MZ-80K the new model has a standard typewriter keyboard (the MZ-80K was widely criticized for its lack of one) with a full set of graphics characters 'on-key'. This remains the strong point of Sharp, in that writing programs using graphic displays is made much easier by being able to get at the symbols used more readily.

If you are producing a border around an area, for example, and wish to use a pretty pattern, then looking up the graphic in a manufacturer's table and dutifully inserting the code into your program is a lot more work than simply pushing the key with the pretty patterns marked across it!

The 80A costs somewhere around £500 and is thus a very expensive 'first-time buy'. As with the Commodore PET, however, you should consider the machine as a whole — no need to tie up the living room and TV, or to purloin the family cassette recorder.

If you are serious about computing you should take a long look at the more powerful (and expensive) option represented by the Sharp, PET and BBC Model B machines. The latter must be considered expensive for what it offers in comparison but does have the best graphics ability of the lot.

Address: Sharp (UK) Thorn Road, Newton Heath, Manchester M10 9BE.

Price: Around £540 with 48K of user memory (RAM).

Machine — Sharp MK-80A

Suitability as First Computer	— 82%
Ease of Operation	— 80%
Value for Money	— 70%
Graphics Capability	— 78%
Suitability for Games Programs	— 76%
Quality of Manuals Provided	— 48%
Suitability for Business Use	— 64%
Software 'Backup'	— (N/A)

Tandy TRS-80 Model I

In some ways now the Tandy must be considered a slightly old fashioned machine, with its relatively limited choice of graphics characters, black and white screen and 'lots of boxes' approach.

There are now four Tandy computers, including the new-ish Tandy Colour Computer, which goes a long way to answering the questions now being asked of the TRS-80 Models.

The Tandy can work with a full system of printer and discs, for those who what to make their micros work for their living. The amouont of software available is prodigious and across a very wide range, from Space Invaders to word processors.

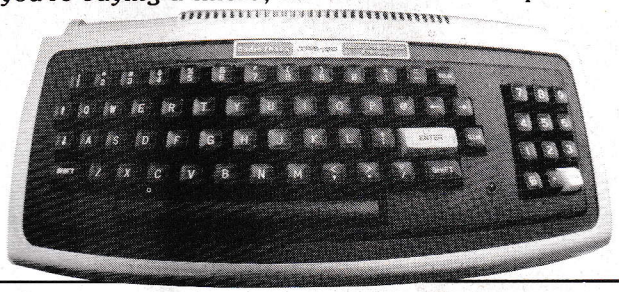
You should see the TRS-80 for yourself if you're buying a micro, as it appeals strongly to a lot of people and has that very good software back-up, along with the national dealer network of Tandy shops, who can supply expansions and programs.

Address: Tandy Corporation 12th floor, Tameway Tower, Bridge Street, Walsall.

Price: £229 (4K RAM): £339 (16K).

Machine — TRS80 I

Suitability as First Computer	— 48%
Ease of Operation	— 44%
Value for Money	— 46%
Graphics Capability	— 20%
Suitability for Games Programs	— 20%
Quality of Manuals Provided	— 88%
Suitability for Business Use	— 22%
Software 'Backup'	— 76%



VIC-20

Commodore ventured into low-cost computing with the VIC and early indications were that they had made a very shrewd move. The VIC-20 quickly established itself as an excellent first-time buy, with full-colour coming as standard.

As time has gone by, that position has been strengthened by the addition of a vast software library for VIC, making use of its colour and games capabilities.

The VIC has a slot to accept 'cartridges' as opposed to tapes (which are also catered for) which means that games, etc, which require more memory than the machine has can still be run, because the memory can be in the cartridge!

Expanding a VIC-20 is not the easiest thing in the world, because of the way its internal memory is laid out, but this is unlikely to bother a first time buyer. One advantage the VIC-20 has over some of its rivals is the BASIC it uses – a scaled-down PET language – which is flexible and easy to use.

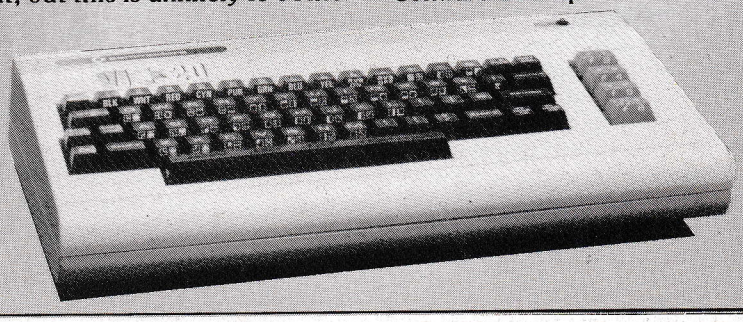
The VIC-20 represents a very attractive first-time buy and is likely to remain so for some time being both easy to operate and well supported by software companies.

Address: Commodore, Baker Street, High Wycombe, Bucks.

Price: Around £180 with 3K of user memory (RAM).

Machine — VIC-20

Suitability as First Computer	— 92%
Ease of Operation	— 92%
Value for Money	— 92%
Graphics Capability	— 82%
Suitability for Games Programs	— 90%
Quality of Manuals Provided	— 40%
Suitability for Business Use	— 22%
Software 'Backup'	— 64%



SHARP MZ-80K/MZ-80A/MZ-80B

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SOFTWARE LISTING

Savage Island II	Gm	Adventure Int.	24K	C	BC	£14.95
					AB	£16.50
Scram	Gm	Atari	16K	C	GC	POA
					AB,CH,HM	£17.50
Shooting Gallery	Gm	Analog S/W	16K	C	BC	£14.95
Six Microstories	Gm	Adventure Int.	32K	C	AB	£12.50
Sky Warrior	Gm	Adventure Int.	16K	C	AB	£16.50
Snooker and Billiards	Gm	Thorn EMI	16K	C	BC,HM	£19.95
Sound Editor	Gm	Atari	16K	C	GC	POA
					AB	£16.75
Sound Tutorial	Ed	Santa Cruz	16K	C	AB	£13.95
Space Invaders	Gm	Atari	16K	R	AB,CH,H-M,BC	£29.95
Space Tilt	Gm	Dinacomp	16K	C	AB	£9.99
Space Trap	Gm	Dinacomp	24K	C	AB	£12.99
Space Trek	Gm	Atari	24K	C	GC	POA
					AB	£13.50
Star Raiders	Gm	Atari	16K	R	HM,AC,BC CH	£29.95
Star Trek 3.5	Gm	Adventure Int.	32K	C	BC	£14.95
					AB	£16.50
Star Warrior	Gm	Epyx	32K	C	BC	£28.95
States and Capitals	Ed	Atari	16K	C	AC,BC	£8.95
					AB,HM	£9.95
Statistics I	Gm	Atari		C	AC,BC	£11.95
					AB,HM	£13.95
Stock and Bonds	Gm	Avalon Hill	32K	C	BH	£12.95
Stone of Sisythus	Gm	Adventure Int.	32K	C	AB	£24.95
Strange Odyssey	Gm	Adventure Int.	24K	C	BC	£14.95
					AB	£16.50
Stud Poker	Gm	Dinacomp	16K	C	AB	£10.99
Submarine Commander	Gm	Thorn EMI	16K	C	BC,HM	£24.50
Summer	Gm	Chrystal	16K	C	AB	£11.99
Sunday Golf	Gm	Adventure Int.	16K	C	AB	£16.50
Super Breakout	Gm	Atari	16K	C	AC,HM	£24.50
Super Breakout	Gm	Atari	16K	R	AB	£35.95
Tack Trek	Gm	Atari	24K	C	GC	POA
					AB	£13.50
Tank Trap	Gm	Quality S/W	16K	C	BC	£8.95
Tank Trap	Gm	Quality S/W	16K	D	BC	£11.95
Tanktics	Gm	Avalon Hill	32K	C	CH	£16.95
Tari Trek	Gm	Quality S/W	16K	C	BC	£8.95
Tari Trerk	Gm	Quality S/W	16K	D	BC	£11.95
Tele Link	Gm	Atari	16K	R	HM	£21.50
Tele Link	Ut	Atari	16K	R	AB	£19.95
Telelink	Ut	Data Soft	16K	R	BC	£14.95
Terrie	Gm	Atari	32K	C	GC	POA
					AB	£16.75
Text Wizard	Ut	Data Soft	16K	D	AB	£99.95
The Count	Gm	Adventure Int.	24K	C	BC	£14.95
					AB	£16.50
Threshold	Gm	On-Line	32K	C	HM	£24.95
Thunder Island	Gm	Analog S/W	16K	C	BC	£10.95
Touch Typing	Ed	Atari	16K	C	AC,BC	£14.95
					AB,HM	£15.95
Tournament Pool and 8 Ball Pool	Gm	Thorn EMI	16K	C	CH,BC,HM	£19.95
Triple Blockade	Gm	Dinacomp	16K	C	AB	£12.99
Two Heads of the Coin	Gm	Adventure Int.	32K	C	AB	£16.50
Video Easel	Gm	Atari	16K	R	GC	POA
					AB,BC,HM	£24.50
Visicalc	Bs	Personal S/W	32K	D	BC	£119.95
Voodoo Castle	Gm	Adventure Int.	24K	C	BC	£14.95
					AB	£16.50
Voyager	Gm	Avalon Hill	32K	C	CH,BH	£12.95
Waterloo	Gm	Chrystal	48K	C	CH	£32.99
Wizard and the Princess	Gm	On Line	48K	D	CH	£22.95
World War III	Gm	Chrystal	48K	C	CH,AB	£19.99

SHARP MZ-80K

Title	Program Type	Program Produced By	Memory Req'd	How Sold	Supplier Codes & Prices
3-D Basic	Gm	Kuma	6K	C AX,AO,AB	£6.32
Address Book	Gm	Highlight S/W	4K	C CC,AB	£4.60
Aladdin's Cave	Gm	Kuma		C AX,CH	£6.32
Aldebaren I	Gm	Sharpsoft	20K	C CH	£5.85
Alien Attack	Gm	J Wolsencroft	24K	C CZ	£4.60
Analysis Book	Bs	Microtek	48K	C EQ	£95.00
Animate	Gm	Kuma	48K	C AX,AB,AO	£9.20
Apollo Front Panel	Bs	Kuma	20K	C AX	£14.35
Apolloword	Bs	Kuma	48K	C AX,AC,AO	£28.70
Apolloword	Bs	Kuma	48K	D AX,AC,AO	£63.25
Ardensoft Toolkit	Ut	Kuma	20K	C AX	£40.25
Asteroids	Gm	Sharpsoft	20K	C CH	£5.85
Astro Dodge	Gm	Kuma		C AX,CH	£6.32
Auto Cross	Gm	Highlight S/W	6K	C CC,AB	£4.60
Backgammon	Gm	Highlight S/W	10K	C CC,AB	£5.75
Bank Account	Do	Highlight S/W	6K	C CC,AB	£4.60
Basic Compiler	Ut	Sharp	48K	C AB	£34.50
Basic Extensions	Ut	Kuma	20K	C AX,AO,AB	£14.95
Basic Plus	Ut	Kuma		C AX	£13.80
Bio-Rhythm	Gm	Highlight S/W	6K	C CC,AB	4.60
Block QC	Gm	Sharpsoft	20K	C AB	£3.50
Block Stop	Gm	J Wolstencroft	24K	C CZ	£4.60
Blockade	Gm	Kuma	48K	C AX,AO,AB	£6.32
Bomber	Gm	Kuma	6K	C AX,AO,AB	£6.32
Breakout	Gm	Kuma	48K	C AX,AO,AB	£6.32
Breakout	Gm	Sharpsoft	20K	C AB	£5.75
Bridge	Gm	Highlight S/W	22K	C CC	£12.95
Brownian Motion	Ed	Kuma		C AX	£12.00
CPM	Ut	Chrystal	48K	C AX,AO	£172.50
Calc II	Bs	Kuma	20K	C AX,AO,FZ	£39.65
Camelot	Gm	Kuma	48K	C AX,AC,AB AO,FZ	£6.32
Carols	Gm	Kuma	48K	C AX,AO,AB	£6.32
Cash Book	Bs	Microtek	48K	C EQ	£95.00
Casino	Gm	Kuma		C AX	£6.32
Catch 2000/Invader	Gm	Kuma	12K	C AX,AO,AB	£6.32
Cesil III	Ed	Kuma	20K	C AX	£17.20
Chase	Gm	Highlight S/W	6K	C CC,AB	£5.75
Chess	Gm	Kuma	12K	C AX,AO,FZ,CH	£12.00
Children's Maths	Ed	Kuma		C AX	£6.32
Chrystal Basic	Ut	Chrystal	48K	C AX,AO	£46.00
Colditz	Gm	Sharpsoft	20K	C CH	£8.46
Combat	Gm	Highlight S/W	6K	C CC,AB	£5.75
Combat	Gm	Kuma	12K	C AX,AO,AB	£6.32
Commands	Gm	Sharpsoft	20K	C AB	£5.85
Composer	Gm	Highlight S/W	6K	C CC,AB	£5.75
Concentration	Gm	Kuma	12K	C AX,AO,AB	£6.32
Connect 4	Gm	Highlight S/W	6K	C CC,AB	£4.60
Cosmiad	Gm	Highlight S/W	10K	C CC,AB	£5.75
Cosmiad	Gm	Kuma	12K	C AX,AC,AO,AB	£9.20
Count and Add	Ed	Highlight S/W	22K	C CC,AB	£5.75
Cribbage	Gm	Kuma	12K	C AX,AO	£12.00
Cricket	Gm	Kuma		C AX	£6.32
Cursed Chambers	Gm	J Wolstencroft	48K	C CZ	£5.75
Data Base	Bs	Kuma	48K	C AX,AO	£33.95
Data File	Gm	Gamer	48K	C CZ	£29.95
Disassembler	Ut	Kuma	20K	C AX,AO,AB	£12.00
Donky Derby	Gm	Kuma	12K	C AX,AO,AB	£6.32
Double Precision Basic	Ut	Sharp	48K	C AB	£28.75
Double Precision Basic	Ut	Sharp	48K	D AX	£46.00
Drunken Driver	Gm	Highlight S/W	6K	C CC,AB	£5.75
Dybug	Ut	Kuma		C AX	£16.65
Editor Assembler	Ut	Sharp	48K	C AB	£15.50
Editor Assembler	Ut	Sharp	48K	D AX	£51.75
Election '84	Gm	Sharpsoft	20K	C CH	£8.45
Electronic Organ	Gm	Kuma	12K	C AX	£6.32
Electrons I	Ed	Kuma		C AX	£12.00
Electrons II	Ed	Kuma		C AX	£12.00
Empire II	Gm	Sharpsoft	20K	C AB	£5.85
Enigma	Gm	Kuma	12K	C AX	£6.32
Escape Forth	Gm	J Wolstencroft	24K	C CZ	£4.60
Evasion	Gm	Kuma	6K	C AX,AO	£6.32
Executive	Gm	Kuma	6K	C AX,AB	£9.20
Exploring Africa	Gm	Kuma	6K	C AX,AB	£6.32
F DOS	Ut	Sharp	48K	C AB	£57.50
Fall Out	Gm	Kuma	6K	C AX,AO	£6.32
Fireballs	Gm	Kuma	6K	C AX,AB	£6.32
Football Manager	Gm	Highlight S/W	10K	C CC,AB	£5.75
Forth	Ut	Kuma		C AX	£40.20
Foundry Package	Bs	Microtek	48K	C EQ	POA
Four in a Row	Gm	Kuma	6K	C AX,AO,AB	£6.32
Fox and Geese	Gm	Highlight S/W	6K	C CC,AB	£4.60
Fruit Machine	Gm	Kuma	6K	C AX,AO,AB	£6.32
Full Accounting	Bs	Microtek	48K	C EQ	POA
Guess Word	Gm	Kuma	6K	C AX,AB	£6.32
Hangman	Gm	Kuma	6K	C AX,AO,AB	£6.32
Head On	Gm	Highlight S/W	10K	C CC,AB	£6.90
Head On	Gm	Kuma	6K	C AX,AO,AB	£6.32
Head On	Gm	Sharpsoft	20K	C CH	£5.85
Hissing Sid	Gm	Kuma		C AX	£6.32
Home Budget I	Do	Kuma	6K	C AX,AC,AO,AB	£6.32
Hunter Killer	Gm	Kuma	48K	C AX,AB	£6.32
I Spy	Ed	Highlight S/W	22K	C CC	£5.75
Instant Addition And The Four Rules	Ed	Kuma		C AX	£6.32
Intruder	Gm	Kuma	48K	C AX,AO,AB	£6.32
Invaders	Gm	Kuma	20K	C FZ	£6.30
J S Line 4	Gm	Kuma	48K	C AX,AB	£6.32
Junior Maths and Stepping Stones	Ed	Kuma		C AX	£6.32
Juntori	Gm	Sharpsoft	20K	C AB	£5.85
Kentucky Derby	Gm	Kuma		C AX	£6.32
Knights Commander	Ut	Knights	48K	C AX	£28.75
Knights Commander	Ut	Knights	48K	D AX	£74.75
Knights Fortran	Ut	Knights	48K	C AX	£34.50
Knights Wee Pascal	Ut	Knights	48K	C AX	£23.00
Large Display	Gm	Kuma	48K	C AX	£6.32
Las Vegas	Gm	Sharpsoft	20K	C AB	£5.85
Life	Gm	Kuma	48K	C AX,AO,AB	£9.20

Lunar	Gm	Kuma	48K	C	AX,AO,AB	£6.32
Lunar Lander	Gm	Kuma	48K	C	AX,AO,AB	£6.32
MZ Othello	Gm	Kuma	48K	C	AX	£12.00
Madness	Gm	J Wolstencroft	24K	C	CZ	£4.60
Maniac	Gm	Highlight S/W	6K	C	CC,AB	£5.75
Map of England	Gm	Kuma	48K	C	AO	£6.32
Map of Englad	Gm	Kuma	48K	D	AX	£12.00
Mastermind	Gm	Highlight S/W	6K	C	CC,AB	£4.60
Mastermind	Gm	Kuma	48K	C	AX,AO,FZ,AB	£6.32
Match the Character	Ed	Highlight S/W	22K	C	CC,AB	£4.60
Match the Word	Ed	Highlight S/W	22K	C	CC,AB	£5.75
Maths	Ed	Highlight S/W	22K	C	CC	£5.75
Melody	Gm	Kuma	48K	C	AX	£6.32
Memory Tests	Ut	Kuma	20K	C	AX,AO,AB	£6.32
Minefield	Gm	Kuma	48K	C	AX	£6.32
Miz-Maze	Gm	Kuma	48K	C	AX,AO	£6.32
Monkey Climb	Gm	Kuma	48K	C	AX,AO	£6.32
Moonlander	Gm	Highlight S/W	10K	C	CC,AB	£5.75
Mortar Attack	Gm	Kuma	48K	C	AX,AO	£6.32
Music Composer/Editor	Ed	Kuma	48K	C	AX,AC,AB	£12.00
Narpex	Ed	Kuma		C	AX	£28.70
Newton/Conservation	Ed	Kuma		C	AX	£12.00
Pac Man	Gm	Kuma		C	AX	£9.20
Pascal	Ut	Sharp	48K	C	AB	£34.50
Patience	Gm	Kuma	48K	C	AX,AO	£6.32
Payroll	Bs	Microtek	48K	C	EQ	£65.00
Picture Count	Ed	Highlight S/W	22K	C	CC,AB	£5.75
Pilot	Ut	Kuma		C	AX	£17.25
Poker	Gm	Kuma	48K	C	AX,AO,AB	£6.32
Pontoon	Gm	Kuma	48K	C	AX,AO,AB	£6.32
Poseidon	Gm	Highlight S/W	6K	C	CC, AB	£5.75
Princess & Monster Maze	Gm	Kuma	48K	C	AX,AB	£6.32
Program Filing Index	Bs	Kuma	20K	C	AX	£6.32
Quadrax	Gm	Kuma	48K	C	AX,AO,AB	£6.32
Quest	Gm	J Wolstencroft	48K	C	CZ	£4.60
Race Track	Gm	Kuma	48K	C	AX,AO,AB	£6.32
Racing	Gm	Kuma	48K	C	AX	£6.32
Raider	Gm	Kuma	48K	C	AX,AO,AB	£6.32
Reactor	Gm	Kuma	48K	C	AX,AB	£6.32
Rhymes	Gm	Kuma	48K	C	AX,AB	£6.32
Road Hunter	Gm	Kuma	48K	C	AX,AO,AB	£6.32
Rocket	Ed	Kuma		C	AX	£6.32
Semi Conductors I	Ed	Kuma		C	AX	£12.00
Semi Conductors II	Ed	Kuma		C	AX	£12.00
Shape Match	Gm	Kuma	48K	C	AX,AO	£6.32
Shapes	Ed	Highlight S/W	22K	C	CC,AB	£5.75
Sharp Demo	Gm	Kuma	48K	C	AX,AO	£6.32
Show Jumping	Gm	Kuma	48K	C	AX,FZ	£6.32
Shudo	Gm	Kuma	48K	C	AX	£6.32
Simon	Gm	Kuma	48K	C	AX	£6.32
Slave Interpreter	Ut	Kuma		C	AX	£16.65
Snakes and Ladders	Gm	Kuma	48K	C	AX,AO	£6.32
Solid State Non VAT Accounts	Ed	Kuma		C	AX	£33.90
Solid State VAT Accounts	Ed	Kuma		C	AX	£33.90
Space Battle	Gm	Kuma	48K	C	AX,AO,AB	£6.32
Space Invaders	Gm	Kuma	48K	C	AX,AO,AC,AB	£6.32
Space Pursuit	Gm	Kuma	48K	C	AX,AO,AB	£6.32
Star Trek	Gm	Kuma	10K	C	AX,AC,AO	£6.32
Stock Control/Invoicing	Bs	Microtek	48K	C	EQ	£316.00
Stomper	Gm	Kuma	10K	C	AX,FZ,AB	£6.32
Stomper/Minefields	Gm	Sharpsoft	20K	C	AB	£5.85
Submarine	Gm	Kuma	10K	C	AX,AO	£6.32
Super Simon	Gm	Kuma	48K	C	AX,AO	£6.32
Supercopy	Ut	Kuma	20K	C	AX	£12.00
Superfire	Gm	Kuma	48K	C	AX	£6.32
Supermouse	Gm	Kuma	48K	C	AX,CH	£6.32
Swordmen	Gm	Kuma	48K	C	AX,AO	£9.20
Tank Wall	Gm	Kuma	48K	C	AX,AO	£6.32
Tenpin Bowling	Gm	Kuma	48K	C	AX,AO	£6.32
Timetabling Aid	Ed	Kuma	20K	C	AX	£22.45
Towering Inferno	Gm	Sharpsoft	20K	C	CH,AB	£5.85
Towers of Hanoi	Gm	Kuma	48K	C	AX	£6.32
Track Layer	Gm	Kuma	48K	C	AX,CH	£6.32
Trader Smith	Gm	Kuma	48K	C	AB	£6.32
Tycoon	Gm	Kuma	48K	C	AX,AO	£6.32
UFO	Gm	Kuma	6K	C	AX,AC	£6.32
Waves I	Ed	Kuma		C	AX	£12.00
Waves II	Ed	Kuma		C	AX	£12.00
Wordpro	Bs	Kuma	48K	C	AX,AC	£45.45
Wordpro	Bs	Kuma	48K	C	AX,AC	£91.95
Zen Dos	Ut	Kuma	4K	C	AX	£66.16
Zen Editor Assembler	Ut	Kuma	20K	C	AX,AO,AB	£22.45
Zenmod	Ut	Kuma	4K	C	AX,AB	£12.00