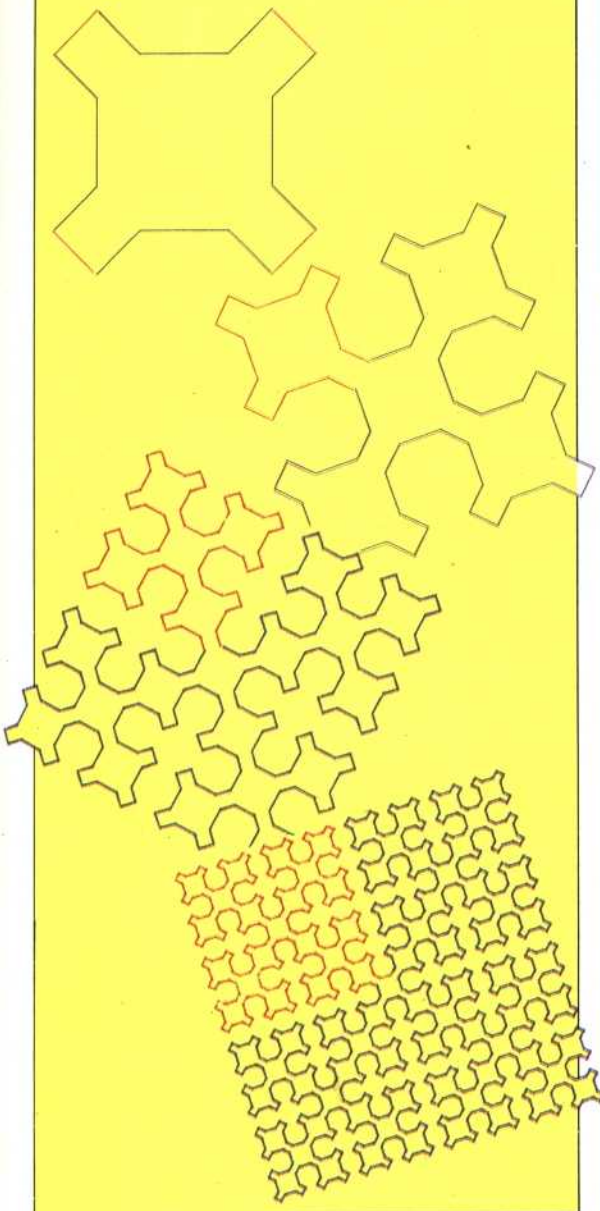




## Sierpinski's Curve



## Logo Flavours

LCSI LOGO versions use SETPOS to set the turtle's position. This requires a list as an input, so the two co-ordinates must be combined with the command LIST. For example:

```
SETPOS LIST 45 67
```

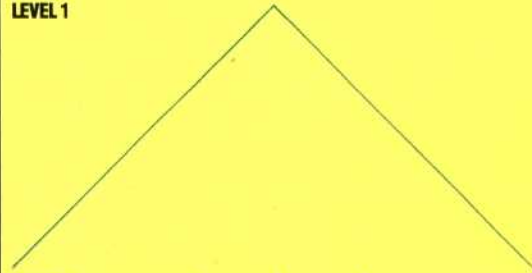
Remember also that LCSI versions use a different syntax with IF. A typical stop rule might be:

```
IF LEVEL = 0 [STOP]
```

## Procedure Problems 4

Our illustration shows a series of shapes that in their limit define a curve that has no gradient at any point. The first level consists of two lines — one going up, the other down. To proceed to the next level, we replace the ascending line by a broken line with six parts. This rises to half the height of the original line, then drops all the way down; it again rises to half the height, continues to full height, drops back to half height and finally rises to full height again. The descending line is divided into six sections in a similar way.

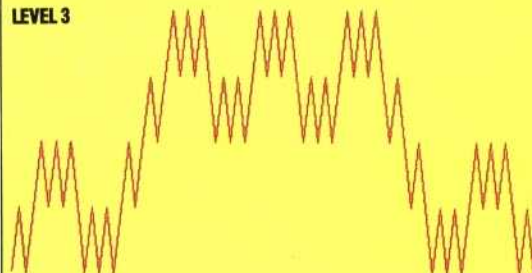
LEVEL 1



LEVEL 2



LEVEL 3



Try writing a set of procedures that will draw this series of curves. You should use SETXY instead of FD and RT. Your top-level procedure should divide the task into two parts — one concerned with going up, the other with coming down. You will then need to write two separate procedures to deal with the two parts of the top-level procedure. Remember that these procedures may call each other as well as themselves!

## Exercise Answers

A recursive procedure that draws a tower of squares:

```
TO TOWER :SIZE
  IF :SIZE < 5 THEN STOP
  SQUARE :SIZE
  MOVE :SIZE
  TOWER (:SIZE / 2)
END

TO SQUARE :SIZE
  REPEAT 4 [FD :SIZE RT 90]
END

TO MOVE :SIZE
  FD :SIZE
  RT 90
  FD (:SIZE / 4)
  LT 90
END
```

