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Logo LinX

Dot-to-Dot LinX

Judi Harris and Sue Eskridge

Some children's games stand the test of time. Jump rope, football, and tic-tac-toe, for example, were as popular in our grandparents' childhoods as they are in our own times. Dot-to-dot puzzles are examples of such classic activities that can be adapted for instructive use. Dot puzzles are often given to preschool and kindergarten children for recreation and number sequence review. Versions with numbers reaching close to 100 can be used for similar purposes with older children (i.e., Pomaska, 1983). Others appropriate for students in early elementary grades label successive dots with addition, subtraction, multiplication, or division facts.

Descartes' Dots

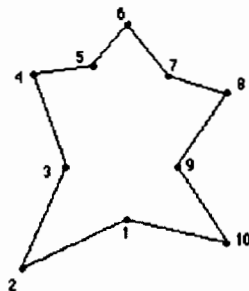
Constructing dot-to-dot puzzles with Logo is an interesting programming challenge for students who are familiarizing themselves with the Cartesian coordinate system. Using the procedure DOT, students can place points that form a picture on the computer screen, label the points with number, letter, or arithmetic fact sequences, and save the puzzles on a class diskette. Their classmates can later retrieve the puzzles and use the turtle to connect the points in order to form a picture. This would give the "puzzle-solver" good turtle-based practice with estimating distance and angle size.

```
TO DOT :ACROSS :DOWN
  PU
  SETPOS LIST :ACROSS :DOWN
  PD
  REPEAT 4 [FORWARD 2 RIGHT 90]
  END
```



(This procedure can be named BIG.DOT in versions of Logo that already have a DOT primitive).

```
TO PUZZLE
  DOT 0 -40
  DOT -60 -70
  DOT -35 -10
  DOT -55 45
  DOT -20 50
  DOT 0 75
  DOT 25 45
  DOT 60 35
  DOT 30 -10
  DOT 60 -55
  END
```



Dot labels are most easily done by hand in LogoWriter, moving the turtle with the arrow keys and using the LABEL primitive from the Command Center, but a pre-labelled PUZZLE procedure can also be constructed, which uses the subprocedure OVER.

```
TO LABELLED.PUZZLE
  DOT 0 -40
  OVER -3
  LABEL "1
  DOT -60 -70
  OVER -3
  LABEL "2
  DOT -35 -10
  OVER -3
  LABEL "3
  DOT -55 45
  OVER -3
  LABEL "4
  DOT -20 50
  OVER -3
  LABEL "5
  DOT 0 75
  OVER -3
  LABEL "6
  DOT 25 45
  OVER -3
  LABEL "7
  DOT 60 35
  OVER -3
  LABEL "8
  DOT 30 -10
  OVER -3
  LABEL "9
  DOT 60 -55
  OVER -3
  LABEL "10
  END
```

```
TO OVER :AMOUNT
  PU
  RIGHT 90
  FORWARD :AMOUNT
  PD
  END
```

These puzzles can, of course, be formed in the immediate mode by children not yet familiar with procedure writing. Earliest beginners can make dot puzzles on the computer screen by moving the turtle with the arrow keys and STAMPING it in places where the dots should be, labelling the turtle-

shaped dots as they are STAMPed, then saving the puzzles as pages without procedures on the flip sides.

But Dots Not All!

A different type of dot-to-dot Logo puzzle that incorporates practice in sequencing or arithmetic can be made by xeroxing pre- drawn dot-to-dot puzzles (such as those offered here), and running them through a Thermofax machine with a heat-sensitive transparency master, so that the dot-to-dot puzzles are transferred to overhead transparencies. Then a transparency can be taped over a computer screen with Logo loaded into memory, so that users can (seem to) connect the dots by moving the turtle. Although the turtle is really underneath the transparency, it appears as if it is travelling from point to point on top. Be warned, though: these puzzles are more difficult to solve than they appear to be!

References

Pomaska, A. (1983). *Follow the dots coloring book*. New York: Dover Publications, Inc.

Dot Puzzle Resources

For transparency puzzles:

Big Dots to Draw and Color (c) 1964
Resource Publishers, Inc.
1329 Arlington Street
Cincinnati, Ohio 45225

Higher-level dot puzzles to solve by hand:

Follow the Dots Coloring Book ISBN #0-486-24543-8
Dover Publications, Inc.
180 Varick Street
New York, NY 10014

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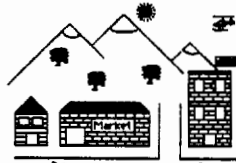
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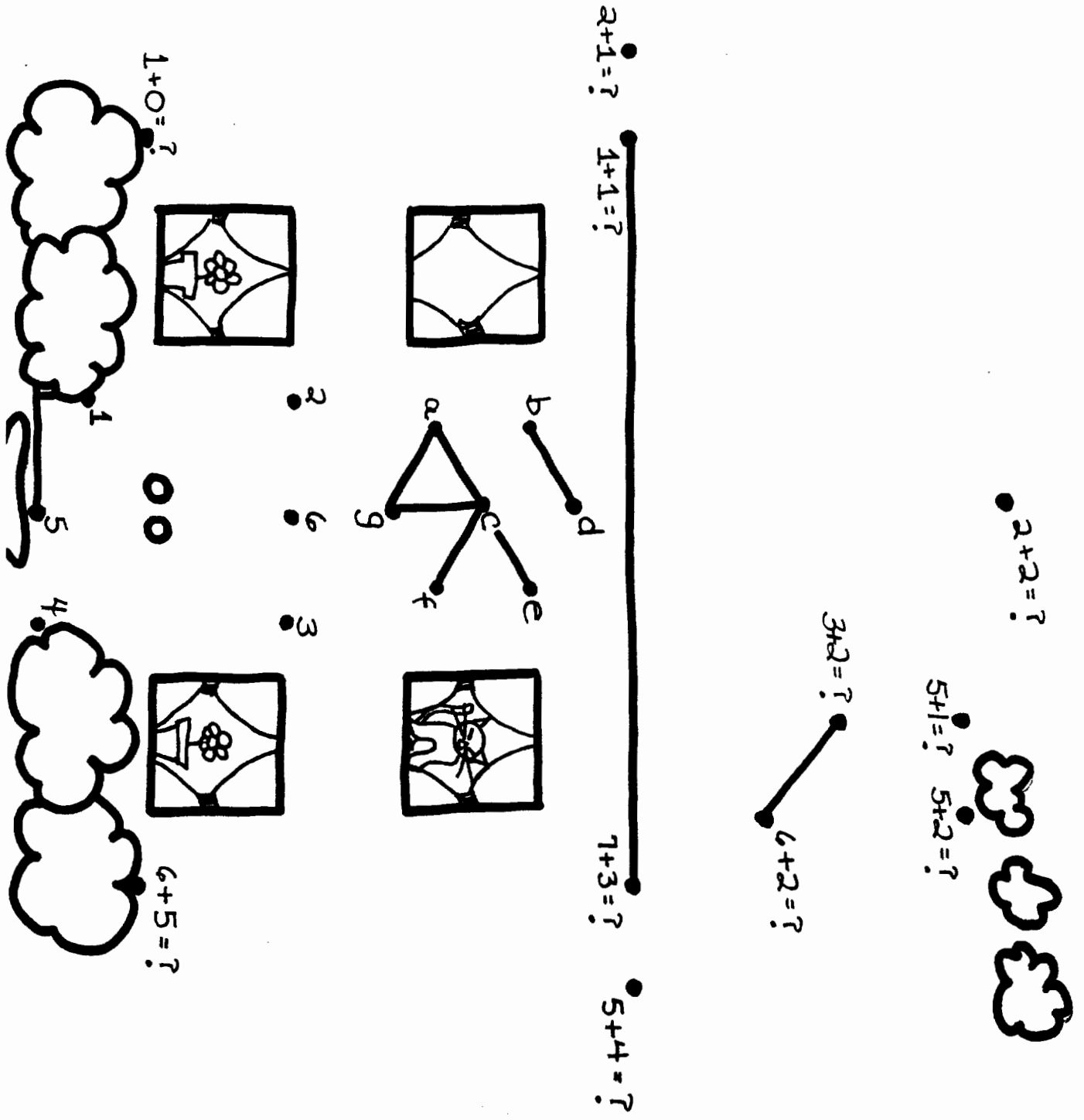


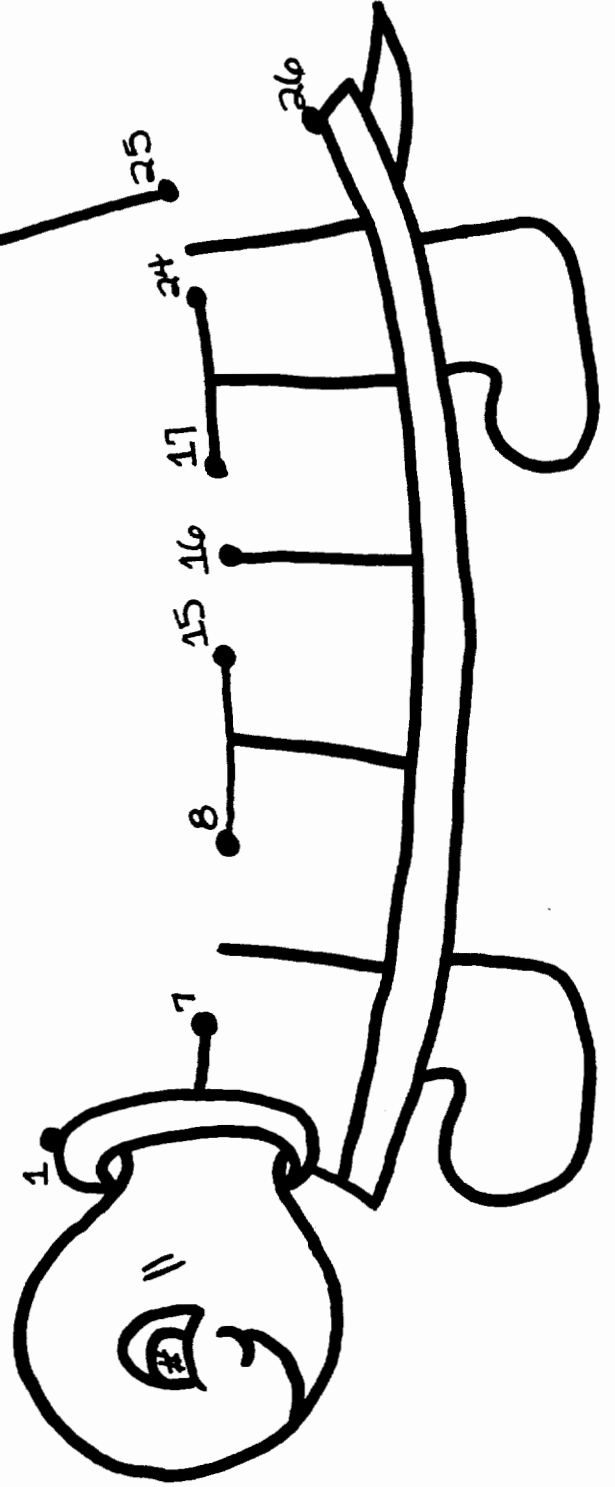
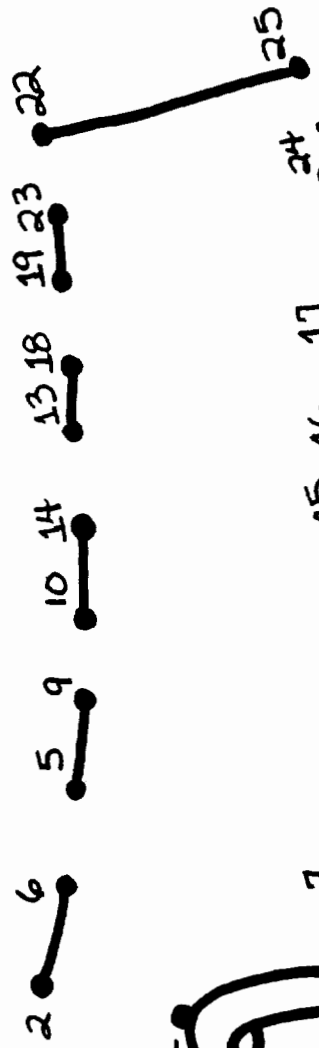
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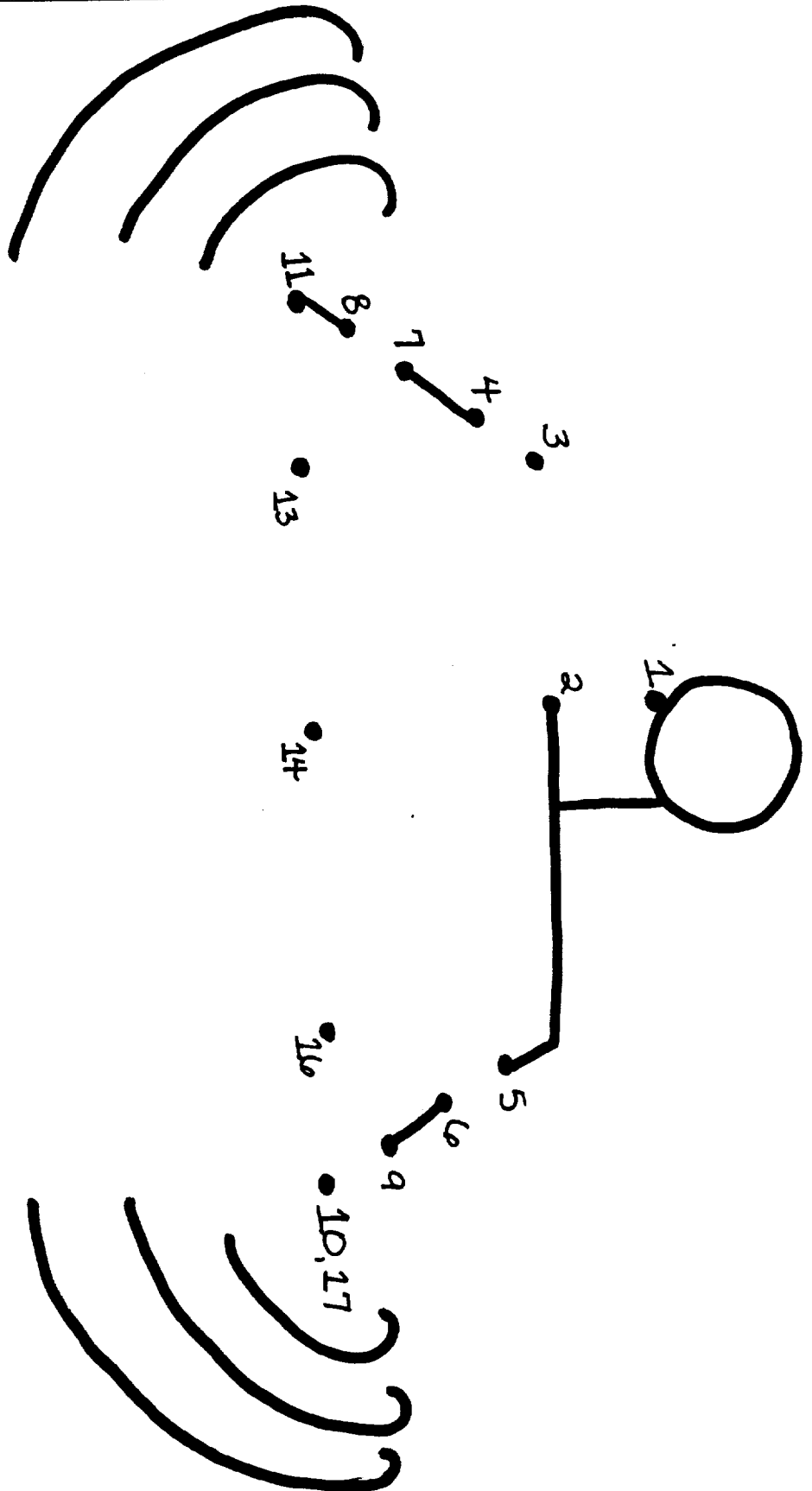
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