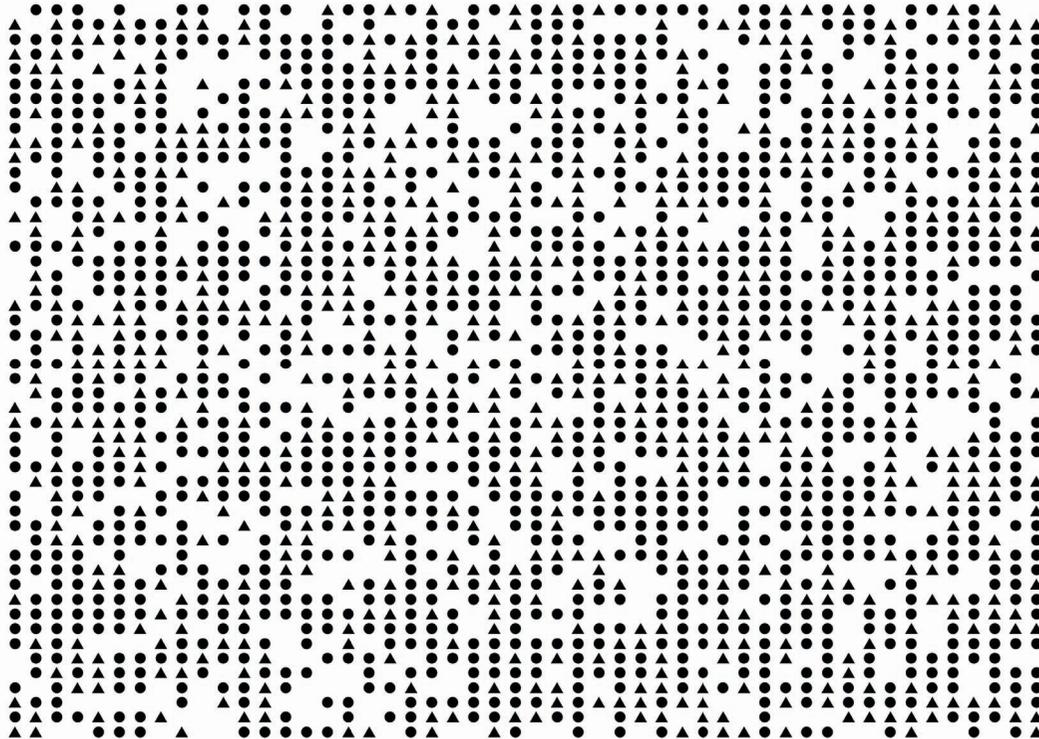


Counting trees



- The circles show old trees
- ▲ The diamonds show young trees

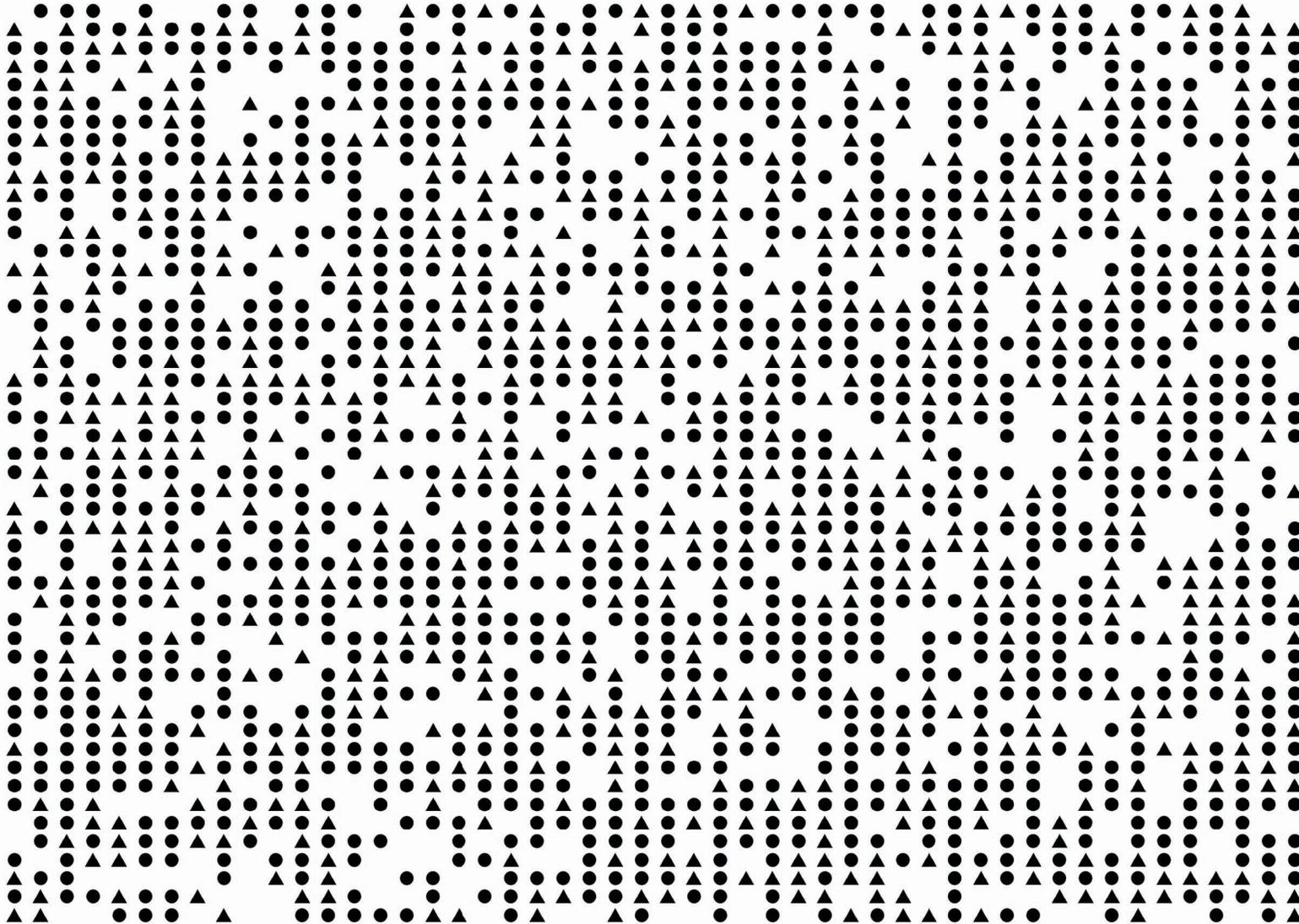
This diagram shows trees in a plantation.
The circles show old trees and the diamonds show young trees.

Counting trees

The National Trust asks Tom to estimate how many trees there are of each type, but it would take too long for him to count them all, one-by-one.

- 1. Think of a method Tom could use to estimate the number of trees of each type. Explain the method fully**
- 2. Use your method to estimate the number of:**
 - (a) Old trees**
 - (b) Young trees**

Counting trees



Counting trees

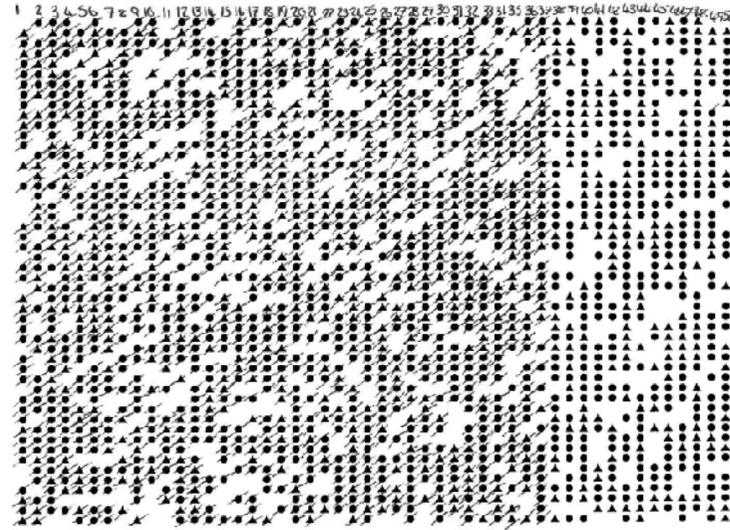
Follow-up task for students

Look carefully at the following extracts of work from other students. Imagine you are their teacher. Go through each piece of work and write comments on each one.

- Have they chosen a sensible method?
- Are the calculations correct?
- Are the conclusions sensible?
- Is the work easy to understand?

Counting trees

Sample response: Sarah



1- ▲ = 11 ● = 27	2- ▲ = 13 ● = 25	3- ▲ = 13 ● = 31
4- ▲ = 14 ● = 26	5- ▲ = 16 ● = 23	6- ▲ = 12 ● = 30
7- ▲ = 14 ● = 27	8- ▲ = 12 ● = 26	9- ▲ = 14 ● = 21
10- ▲ = 12 ● = 22	11- ▲ = 9 ● = 24	12- ▲ = 13 ● = 26
13- ▲ = 7 ● = 30	14- ▲ = 11 ● = 28	15- ▲ = 13 ● = 24
16- ▲ = 7 ● = 30	17- ▲ = 17 ● = 22	18- ▲ = 16 ● = 25
19- ▲ = 19 ● = 19	20- ▲ = 12 ● = 30	21- ▲ = 15 ● = 24
22- ▲ = 13 ● = 21	23- ▲ = 9 ● = 25	24- ▲ = 19 ● = 22
25- ▲ = 15 ● = 25	26- ▲ = 15 ● = 25	27- ▲ = 15 ● = 23
28- ▲ = 15 ● = 30	29- ▲ = 10 ● = 26	30- ▲ = 12 ● = 29
31- ▲ = 13 ● = 26	32- ▲ = 14 ● = 27	33- ▲ = 17 ● = 25
34- ▲ = 10 ● = 31	35- ▲ = 17 ● = 17	36- ▲ = 13 ● = 25
37- ▲ = 12 ● = 29	38- ▲ = ● =	39- ▲ = ● =
40- ▲ = ● =	41- ▲ = ● =	42- ▲ = ● =
43- ▲ = ● =	44- ▲ = ● =	45- ▲ = ● =
46- ▲ = ● =	47- ▲ = ● =	48- ▲ = ● =
49- ▲ = ● =	50- ▲ = ● =	

estimate - ▲ = 670 ● = 1320

$$\begin{aligned} \triangle &= 11 + 13 + 13 + 14 + 16 \times 10 \\ \bullet &= 27 + 25 + 31 + 26 + 23 \times 10 \end{aligned}$$

Counting trees

Sample response: Laura

① You could multiply the number of trees in the length by the number of trees in the width and then of half your answer.

② a. Old trees - 644
Young trees - 644

width - 33
length - 39.

$$33 \times 39 = 1287$$

$$1287 \div 2 = 643.5 = 644$$

Counting trees

Sample response: Jenny

1. there are 38 trees in each column
there are around 11 young trees
and around 27 old ones
33 trees in each row so

$$11 \times 33 = 363$$

$$27 \times 33 = \begin{array}{r} 891 \\ \hline 1254 \end{array}.$$

2.

a.

$$11 \times 33 = 363 = \text{new trees.}$$

b. $27 \times 33 = 891 = \text{old trees.}$

Counting trees

Sample response: Woody

2 columns has 21 young trees
55 old trees

50 columns is approx

$$50 \div 2 = 25$$

$$25 \times 21 = \text{amount of young trees} = 525$$

$$25 \times 55 = \text{amount of old trees} = 1,375$$

rounded up

young 530
old 1,380

Counting trees

Sample response: Amber

Counting trees

1. If Tom draws a 10x10 square round some trees and counts how many old and new there are. There are 50 rows and 50 columns altogether so he must multiply by 25. He could do this a few times to check and then take the average.

2.

$$\begin{array}{r} 53 \text{ old} \\ 28 \text{ new} \\ \underline{19 \text{ spaces}} \\ 100 \end{array} \quad \begin{array}{r} \times 25 \\ \times 25 \\ \times 25 \\ = \\ = \\ = \end{array} \quad \begin{array}{r} 1325 \text{ old} \\ 700 \text{ new} \\ \underline{475 \text{ spaces}} \\ 2500 \end{array}$$

$$\begin{array}{l} 1325 + 1200 \div 2 = 1262.5 \\ 700 + 875 \div 2 = 787.5 \end{array}$$

check

$$\begin{array}{r} 48 \text{ old} \\ 35 \text{ new} \\ \underline{17 \text{ spaces}} \\ 100 \end{array} \quad \begin{array}{r} \times 25 \\ \times 25 \\ \times 25 \\ = \\ = \\ = \end{array} \quad \begin{array}{r} 1200 \text{ old} \\ 875 \text{ new} \\ \underline{425 \text{ spaces}} \\ 2500 \end{array}$$

So about 1263 old trees
and 788 new trees
