INVICTA EDUCATION

MATHS BALANCE®

MATHEMATICS
UNDERSTANDING MEASURES

IP 050359

PRODUCT GUIDE

THIS PRODUCT GUIDE MAY BE PHOTOCOPIED FOR CLASS USE ONLY

CONTENTS
2 Balance Arms,
2 Compensators,
2 Number Rails,
1 Upright,
1 Base,
1 Pivot,
20 Weights (each weighing 10g, length 10cm, width 3cm),
White self adhesive labels,
1 Instruction Sheet.

When the balance is assembled the arms should be horizontal. If they are not, they can be levelled by using the compensators.

A weight placed on a peg on one side of the arm creates a moment about the pivot causing the arm to tilt. To return the arm to the horizontal it is necessary to create an equal but opposite moment.

Because of the design of the Maths Balance® a weight placed on any peg appears to assume the numerical value of that peg. For example, one weight is placed on the right-hand side of the arm on the peg numbered 6, the moment may be balanced not only by placing one weight on the peg number 6 on the left-hand side of the arm, but by placing one weight on the 5 peg and one weight on the 1 peg, or in many other ways.

The operation described would be written:

$6 \times 1 = 5 \times 1 + 1 \times 1$

or simply: $6 = 5 + 1$

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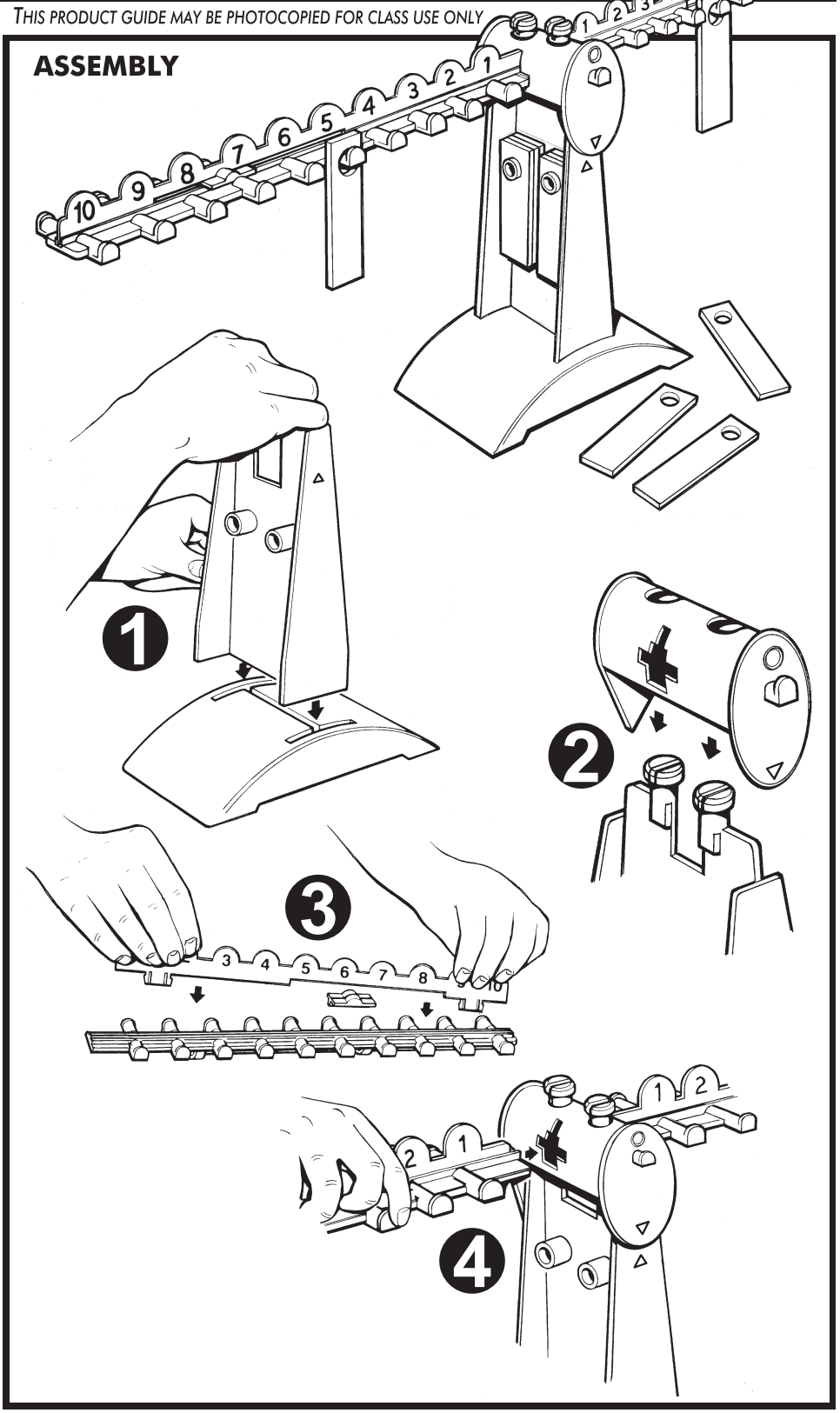
Product Guide IP 050359a (0310)

ASSEMBLY



WARNING: NOT SUITABLE FOR CHILDREN UNDER 36 MONTHS BECAUSE SMALL PARTS MAY CAUSE A CHOKING HAZARD. TO BE USED ONLY UNDER ADULT SUPERVISION. Please retain the information from this pack for future reference. We reserve the right to alter designs and specifications (including colours and materials) when such changes are unavoidable. This product conforms to the safety requirements of EN71, ASTM, 16 CFR and The Canadian Hazardous Products (Toys) Regulations. MADE IN CHINA

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ASTM INTERNATIONAL

INVICTA EDUCATION

Maths Balance®

MATHEMATICS
UNDERSTANDING MEASURES

PROJECT SHEET

IP 050359

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To children, the Maths Balance® is a means of setting up equations and checking their accuracy.

It allows them to find out things for themselves about number relationships, although general guidance is suggested by the teacher. To take one example, if a child of six or seven is asked to find out how many ways 10 may be 'balanced' by two other numbers, then they are really finding the set of ordered pairs that satisfy the equation $x + y = 10$.

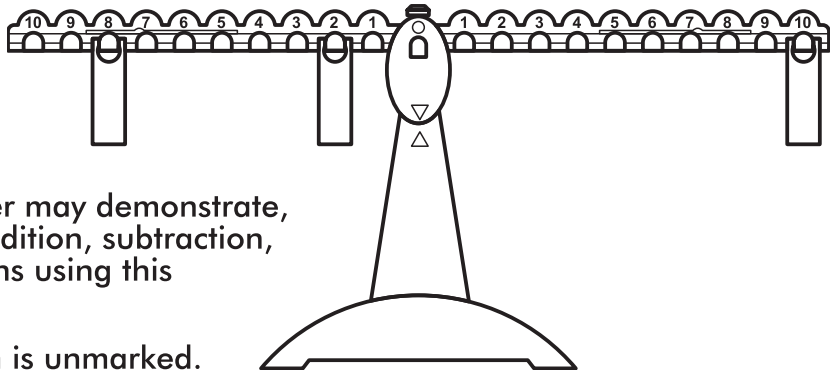
1 + 9 = 10	or (1, 9)
2 + 8 = 10	(2, 8)
3 + 7 = 10	(3, 7)
4 + 6 = 10	(4, 6)
5 + 5 = 10	(5, 5)
6 + 4 = 10	(6, 4)
7 + 3 = 10	(7, 3)
8 + 2 = 10	(8, 2)
9 + 1 = 10	(9, 1)

10

At this early stage many teachers will be content to see this experiment simply as that of finding the 'number bonds' that equate to 10, but if the child's discoveries are put in order in the form of a table, then other patterns become evident, including the commutative aspect of addition which is usually expressed as $a + b = b + a$.

i.e. for 10

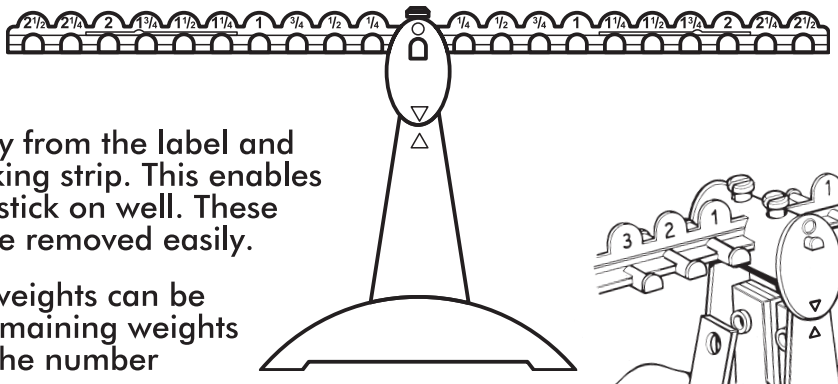
1 + 9 = 9 + 1
2 + 8 = 8 + 2
3 + 7 = 7 + 3
4 + 6 = 6 + 4



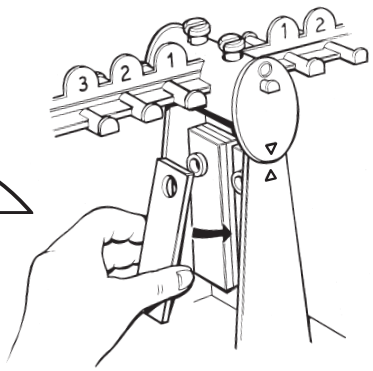
The child may solve, and the teacher may demonstrate, many mathematical examples of addition, subtraction, multiplication, division and equations using this apparatus (see right).

The reverse side of the balance arm is unmarked. Self adhesive labels are provided so that the pegs can be given any series of values, e.g. fractional values, money values, weight values, etc.

The picture (right) shows where the self adhesive labels are to be located. It is essential that the backing sheet is peeled away from the label and NOT the label from the backing strip. This enables the label to remain flat and stick on well. These are 'tacky' labels and may be removed easily.



When not in use, 12 of the weights can be stored on the upright, the remaining weights should be stored evenly on the number 1 pegs.



Other Invicta Computation Products
IP 013359 - 100 Number Board

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