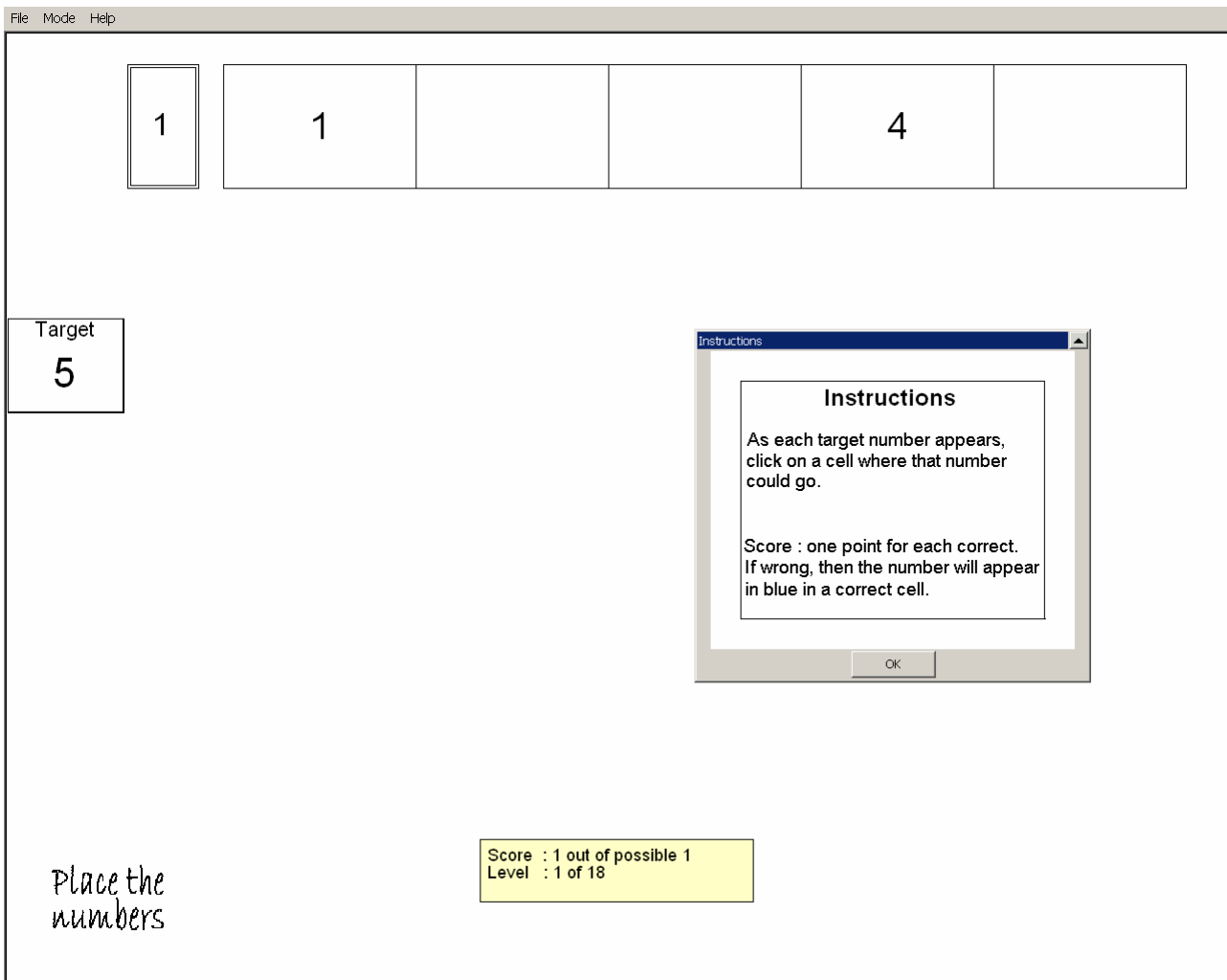


Grid Algebra an ATM Publication

Screenshots and Example Worksheets for KS2/Primary

Grid Algebra is available from ATM at: <http://www.atmbuy.net/sof071>

Screenshots



The screenshot shows a software window titled "File Mode Help". Inside the window, there is a horizontal grid of six cells. The first cell contains the number "1" and is highlighted with a double border. The second cell contains the number "1". The fifth cell contains the number "4". The other three cells are empty.

To the left of the grid, there is a box labeled "Target" containing the number "5".

An "Instructions" dialog box is open in the center-right of the window. It contains the following text:

Instructions

As each target number appears, click on a cell where that number could go.

Score : one point for each correct.
If wrong, then the number will appear in blue in a correct cell.

At the bottom of the dialog box is an "OK" button.

In the bottom-left corner of the main window, the text "Place the numbers" is written in a handwritten font.

In the bottom-center of the main window, there is a yellow box containing the text:

Score : 1 out of possible 1
Level : 1 of 18

1	2	3	4	5
2	4	6	8	10
3	6	9	12	15
4	8	12	16	20
5	10	15	20	25

1	1	2	2+1	4	5
---	---	---	-----	---	---

Tools

Menu

1..2 a..z



3x2

 123
4....

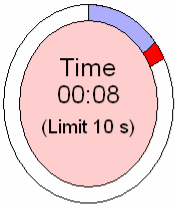
 

Magnifier

5 = 4+1
= 3+2
= 2+3
= 1+4
= 2+1+2
= 4-2+3

0 1 2 3 4 5 6

◀ ▶



- 1
- 2
- 3
- 4
- 5
- 6

$9 \times 6 - 6$

		9		
	$9 \times 6 - 6$	9×6		

Well done ✕

Correct in under 10 seconds
1 point

Instructions

Look at the expression at the side of the screen. Drag the number on the grid to create the expression within the time.

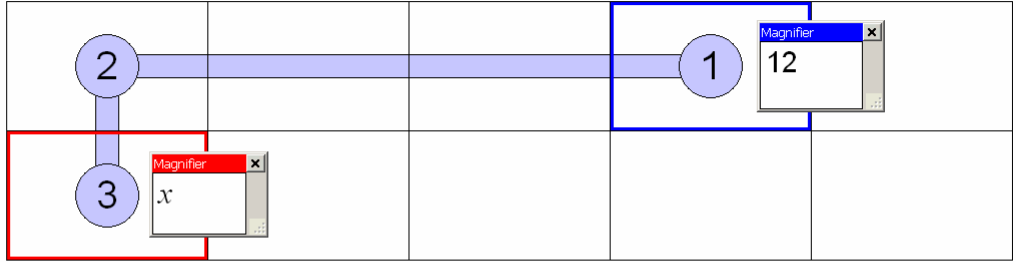
Score : one point for each correct expression made within the time.

MAKE THE
expression
(numbers)

Score : 8 out of possible 9
Puzzle : 10 of 10
Level : 1 of 10

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

1
2



Tools

Menu

1..2 a..z

3x2

123 4....

3 2

Equations on Route

① $12 = \frac{x}{2} + 3$

② $12 - 3 = \frac{x}{2}$

③ $2(12 - 3) = x$

Display As Expressions

Copy to Cells

10 11 12 13 1

v w x y z

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

Tools

Menu

1..2 a..z

3x2

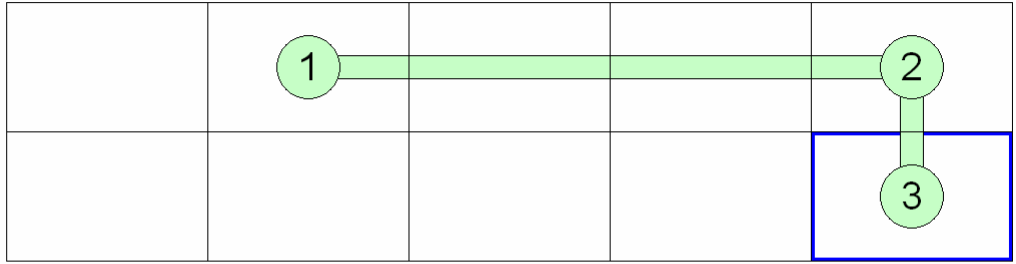
123 4...

1	1	2	3	4	5
2	2	2+2	2+2+2	2+2+2+2	2+2+2+2+2
3	3	3+3	3+3+3	3+3+3+3	3+3+3+3+3
4	4	4+4	4+4+4	4+4+4+4	4+4+4+4+4
5	5	5+5	5+5+5	5+5+5+5	5+5+5+5+5
6	6	6+6	6+6+6	6+6+6+6	6+6+6+6+6

0 1 2 3 4 5 6



- 1
- 2



Tools

Menu

1..2 a..z

3x2

123 4...

3

Expressions on Route

- ① n
- ② $n+3$
- ③ $2(n+3)$

Copy to Cells

Expression Calculator

$2(n+3)$

7 8 9 Clear Undo π

4 5 6 \times \div

1 2 3 + -

0 +/- Enter

$k l m n o p$

Worksheets suitable for Grid Algebra at KS2/Primary

Which number goes here? Two rows.

Write in the numbers which should be in the highlighted cells:

1	1				
2					

1					
2		6			

1		7			
2					

1					
2	8				

1					11
2					

1					
2			26		

1					
2	32				

1				37	
2					

1		43			
2					


1					
2				92	

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Make these! 1 row

Try to make these expressions through dragging on the grid.

For each one draw the route you took on a blank grid (be careful to right the start number in the correct cell and then draw arrows from there to show the journey).

Then Click on 'Clear' at top of screen and choose 'All cells'. All the cells will be cleared. Then press on the 'Fill grid' button  on the toolbar and go onto the next question.

Question 1:
1+3

Question 2:
5-2

Question 3:
3-2-1

Question 4:
1+3+1

Question 5:
5-3+2

Question 6:
2-1+4

Question 7:
2+2-1

Question 8:
4+1-3

Question 9:
1+1+2

Question 10:
5-1-3

Question 11:
2+3-4

Question 12:
1+2+1-3

Question 13:
5-4+3-1

Question 14:
2+2-3+4

Question 15:
1+3+1-2

Question 16:
3+2-3+1

Question 17:
1+1+1+2

Question 18:
4-2+1+2

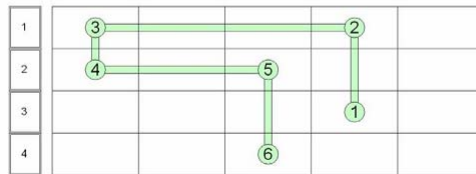
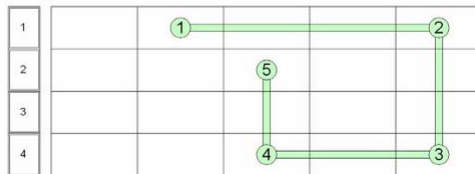
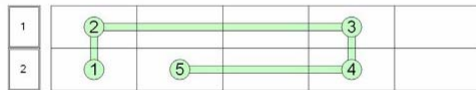
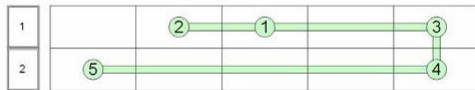
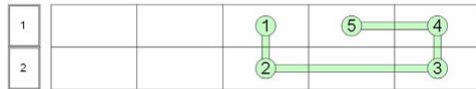
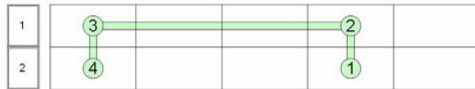
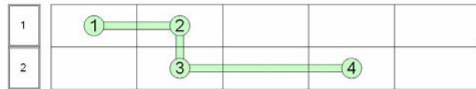
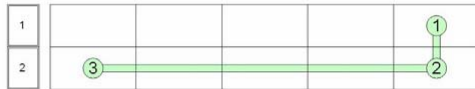
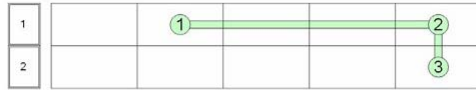
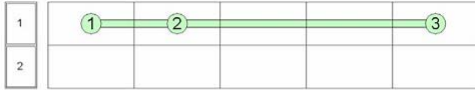
Question 19:
5-1-1-2

Question 20:
3+2-4+2+1

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Journeys - small grids

Starting with the letter n , write the expression which would result in each of the following journeys:



A lesson idea suitable for Grid Algebra at KS2/Primary

Grid Algebra: Different ways of making a number

Topics	Difficulty range
Equivalent expressions	From ★ <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
	To ★ ★ ★ ★

Preparation

Load Grid: *Different ways*
 Description of grid: 5 columns, table 1, do not allow negatives. The 'Fill grid' button is pressed to reveal numbers in the grid. The cell with the number 5 is highlighted.

Activity (assuming an interactive whiteboard or projection - adapt for a computer room)

- Ask what you can do to 3 to get 5. Then drag 3 into the 5 cell to produce $3 = 2$. Get students to drag other numbers into the 5 cell. You drag an example of a journey involving two or more stops on the way to the 5 cell. After such a journey you might click on the peeled-back corners of cells to get the original numbers appearing again in all those cells. At one point click on the 'Magnifier' button on the toolbar and put it into the 5 cell to reveal all expressions in that cell. (You can click on any expression in the magnifier to change the order of expressions in the window)
- Get the students to consider longer journeys ending up in the 5 cell. Get a student to come up and write on the board an expression which could end up in the 5 cell. Then get another student to come up and make that journey.
- After a few of these click on the 'Expression Calculator' button on the toolbar and put the expression calculator into the 5 cell. Get students to enter into the calculator other expressions which will be accepted into the 5 cell.
- Enter $3 + 102 = 100$ into the expression calculator and see whether that might spark other suggestions from students. Start a long expression yourself in the calculator which does not equal 5 yet and ask them to finish it off so that it will be accepted into the 5 cell.
- After a while click on the 'Hide grid' button on the toolbar so that just the magnified cell is seen. Put the Expression Calculator into the magnified cell to enter in new expressions, this time without the help of the grid.

Examples of screens

Extensions/Simplifications

- Encourage the students to enter into the Expression Calculator increasingly long expressions.
- Change the grid to have a larger number of tables shown and consider multiplication and division as well as addition and subtraction. Expressions can become very complex if you or the students want them to be! Get students to have to write the expressions how the computer writes them. The ideas in the handout below can be adapted to this more complex situation.
- Start with a blank grid, click on the 'Numbers' button on the toolbar and drag a different number than 1 into the top left cell to define the grid. Then click on the 'Fill grid' button.

Related Resources

- Handouts:
 - Different ways*

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but it's as well to
check it out...*



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*Now, this bit is
important - you
must read this*

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LINK: www.atm.org.uk/join/index.html