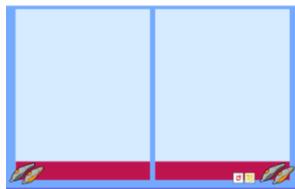


### TEMPLATES



#### **BLANK WORKING SPACE SPLIT (WITH TITLE SPACE)**

##### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. It contains **two blank workspaces** that can be the basis of many tasks.

Learners may perform identical tasks or completely different tasks in their own space.

This template is particularly useful for demonstrating that there may be alternate methods of solving a problem or approaching the same task.

The blank title space should be used to write a summary of the activity, a keyword or a prompt.

##### **Examples of individual workspace ownership**

###### Participants set the same task:

- Children work out the answer to a sum, puzzle or problem at the same time (often revealing a different method).
- Two groups record their individual thoughts and feelings on the same issue.
- Children draw pictures of a particular item, idea or event.
- The teacher takes charge of one area taking the lead/modelling an activity whilst a child uses the other space to follow.

###### Participants set different tasks:

Recapping a story. The first child uses words in one space, another child uses pictures in the other. One child draws pictures of what an item looked like in the past or present, another child imagines what it will look like in the future.

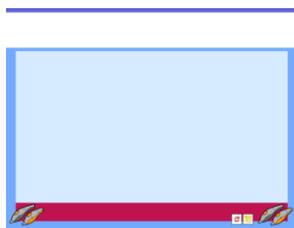
###### Role swapping:

- Children work together to complete both sides of an argument (for and against), swapping sides at some point.
- Children work together on the similarities and differences between two things, swapping sides at some point.
- Children work together to establish the traits of the hero/traits of the villain swapping sides at some point.

###### Back to back:

Children work back to back so they can't see what the other is doing:

- One may be leading the other giving them instructions to follow.
- Both children may be receiving instruction from a child away from the whiteboard.
- Both may be performing an identical maths or words challenge.



### **BLANK WORKING SPACE (WITH TITLE SPACE)**

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Distinct areas of the workspace can be owned by different learners who may perform identical tasks or completely different tasks in their own space.

Alternatively the space may be shared by learners who may collaborate on a single task together. The blank title space should be used to write a summary of the activity, a keyword or a prompt.

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##### *Participants set the same task:*

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Alternatively the space may be shared by learners who may collaborate on a single task together.

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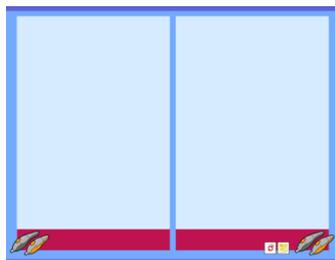
##### *Role swapping:*

- Children work together to complete both sides of an argument (for and against), swapping sides at some point.
- Children work together on the similarities and differences between two things, swapping sides at some point.
- Children work together to establish the traits of the hero/traits of the villain swapping sides at some point.

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- One may be leading the other giving them instructions to follow.
- Both children may be receiving instruction from a child away from the whiteboard.
- Both may be performing an identical maths or words challenge.



### **BLANK WORKING SPACE SPLIT**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. It contains **two blank workspaces** that can be used in various tasks.

Learners may perform identical tasks or completely different tasks in their own space.

This template is particularly useful for demonstrating that there may be alternate methods of solving a problem or approaching the same task.

#### **Examples of individual workspace ownership**

##### *Participants set the same task:*

- Children work out the answer to a sum, puzzle or problem at the same time (often revealing a different method).
- Two groups record their individual thoughts and feelings on the same issue.
- Children draw pictures of a particular item, idea or event.
- The teacher takes charge of one area taking the lead/modelling an activity whilst a child uses the other space to follow.

##### *Participants set different tasks:*

Recapping a story. The first child uses words in one space, another child uses pictures in the other. One child draws pictures of what an item looked like in the past or present, another child imagines what it will look like in the future.

##### *Role swapping:*

- Children work together to complete both sides of an argument (for and against), swapping sides at some point.
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Children work back to back so they can't see what the other is doing:

- One may be leading the other giving them instructions to follow.
- Both children may be receiving instruction from a child away from the whiteboard.
- Both may be performing an identical maths or words challenge.



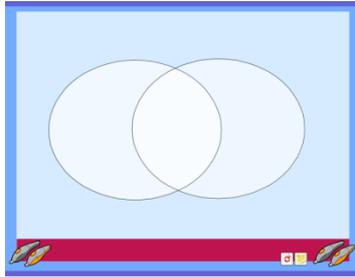
### **TIMELINE CREATOR**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. Identical sets of **short and long markers** are available to the left and to the right side of the timeline so that learners can contribute equally and at the same time.

Click and drag a marker to position it on the timeline. Use the **pen tool** to label the markers when they are in position.

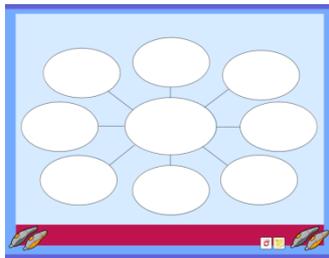
Learners should be encouraged to reach agreement through discussion and debate before positioning markers on the timeline.



### **VENN DIAGRAM**

#### **About this template**

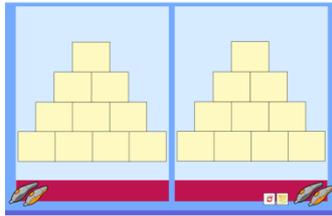
This template can be used by two learners at the same time, or by a teacher and a learner. Name the sets and sort items according to their characteristics. This will help learners understand the relationship between two sets or compare their characteristics.



### **STAR DIAGRAM**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. A topic word or image can be placed in the centre of the star diagram and learners can place ideas or attributes associated with the topic in each of the remaining spaces. This will help to evaluate what students already know and make it easier for them to focus and organize their ideas.



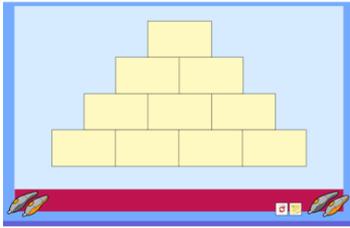
### **NUMBER PYRAMID (dual)**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. This will help learners improve mental addition and subtraction skills and evaluate how different numbers relate to each other. Different learners or teams and learners can each take ownership of a different pyramid - either working with the same or different combinations of numbers to complete the tasks.

#### **Activities**

- Look for patterns and rules in a number pyramid - describe in words.
- Given a selection of the numbers, complete the Number Pyramid.
- Given clues determine the composition of Number Pyramid n.
- Test out your observations using  $x$  as a starting number.
- What number comes next in the sequence?



### **NUMBER PYRAMID**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. It will help learners improve mental addition and subtraction skills and evaluate how different numbers relate to each other. Learners should collaborate and discuss thoughts and decisions in order to complete number pyramid tasks.

#### **Activities**

- Look for patterns and rules in a number pyramid - describe in words.
- Given a selection of the numbers, complete the number pyramid.
- Given clues, determine the composition of number pyramid 'n'.
- Test out your observations using 'n' as a starting number.
- What number comes next in the sequence?



### **CUSTOMISABLE CARROLL DIAGRAM**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. Both participants may be able to contribute to the activity in different ways by taking on different areas of responsibility. However, learners should be encouraged to communicate, share their ideas and build a unified picture.

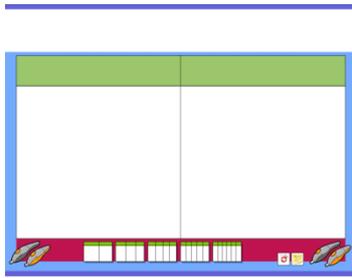
Learners need not be confined to just one area of the diagram. They may swap roles part way through the activity so they get an equal opportunity to express their ideas in each of the areas.

The blank title space should be used to write a summary of the activity, a keyword or a prompt.

By using the 4 buttons along the bottom of the page, it's possible to switch between different Carroll Diagram layouts:

- 2 rows x 2 columns
- 2 rows x 3 columns
- 3 rows x 2 columns
- 3 rows x 3 columns

Use the pen or text tool to create your own headings for each of the rows and columns.



### **CUSTOMISABLE T-CHART (CHANGE NUMBER OF COLUMNS)**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. Both participants may be able to contribute to the activity in different ways by taking on different areas of responsibility. However, learners should be encouraged to communicate, share their ideas and build a unified picture.

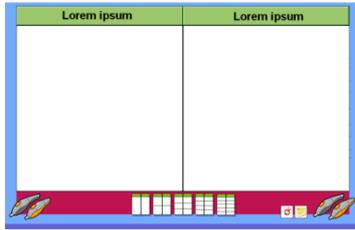
Learners need not be confined to just one area of the diagram. They may swap roles part way through the activity so they get an equal opportunity to express their ideas in each of the areas.

The blank title space should be used to write a summary of the activity, a keyword or a prompt.

By using the 5 buttons along the bottom of the page, it's possible to switch between different t-chart layouts:

- 2 columns
- 3 columns
- 4 columns
- 5 columns
- 6 columns

Use the pen or text tool to create your own headings for each of the columns.



### **CUSTOMISABLE 2 COLUMN T-CHART**

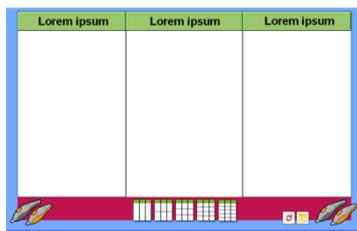
#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. Both participants may be able to contribute to the activity in different ways by taking on different areas of responsibility. However, learners should be encouraged to communicate, share their ideas and build a unified picture.

Learners need not be confined to just one area of the diagram. They may swap roles part way through the activity so they get an equal opportunity to express their ideas in each of the areas. The blank title space should be used to write a summary of the activity, a keyword or a prompt. By using the 5 buttons along the bottom of the page, it's possible to switch between different 2 column t-chart layouts:

- 2 columns x 1 row
- 2 columns x 2 rows
- 2 columns x 3 rows
- 2 columns x 4 rows
- 2 columns x 5 rows

These layout options enable you to determine how many points are expected in each column and may also help to make the entries easier to read and evaluate.



### **CUSTOMIZABLE 3 COLUMN T-CHART**

#### **About this template**

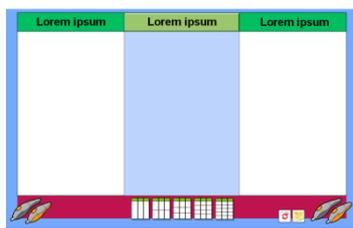
This template can be used by two learners at the same time, or by a teacher and a learner. Both participants may be able to contribute to the activity in different ways by taking on different areas of responsibility. However, learners should be encouraged to communicate, share their ideas and build a unified picture.

Learners need not be confined to just one column of the chart. They may swap roles part way through the activity so they get an equal opportunity to express their ideas in each of the areas.

The blank title space should be used to write a summary of the activity, a keyword or a prompt. By using the 5 buttons along the bottom of the page, it's possible to switch between different 3 column t-chart layouts:

- 3 columns x 1 row
- 3 columns x 2 rows
- 3 columns x 3 rows
- 3 columns x 4 rows
- 3 columns x 5 rows

These layout options enable you to determine how many points are expected in each column and may also help to make the entries easier to read and evaluate.



### **CUSTOMISABLE COMPARISON CHART**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. Both participants may be able to contribute to the activity in different ways by taking on different areas of responsibility. However, learners should be encouraged to communicate, share their ideas and build a unified picture.

Learners need not be confined to just one column of the chart. They may swap roles part way through the activity so they get an equal opportunity to express their ideas in each of the areas.

The blank title space should be used to write a summary of the activity, a keyword or a prompt. By using the 5 buttons along the bottom of the page, it's possible to switch between different comparison chart layouts:

- 3 columns x 1 row
- 3 columns x 2 rows
- 3 columns x 3 rows
- 3 columns x 4 rows
- 3 columns x 5 rows

These layout options enable you to determine how many points are expected in each column and may also help to make the entries easier to read and evaluate.



### **CUSTOMISABLE COMPARISON CHART**

#### **About this template**

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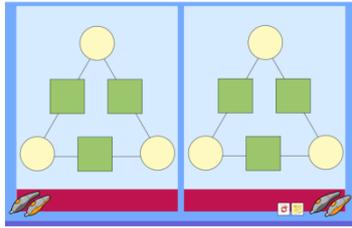
Learners need not be confined to just one column of the chart. They may swap roles part way through the activity so they get an equal opportunity to express their ideas in each of the areas.

The blank title space should be used to write a summary of the activity, a keyword or a prompt.

By using the 5 buttons along the bottom of the page, it's possible to switch between different comparison chart layouts:

- **3 columns x 1 row**
- **3 columns x 2 rows**
- **3 columns x 3 rows**
- **3 columns x 4 rows**
- **3 columns x 5 rows**

These layout options enable you to determine how many points are expected in each column and may also help to make the entries easier to read and evaluate.



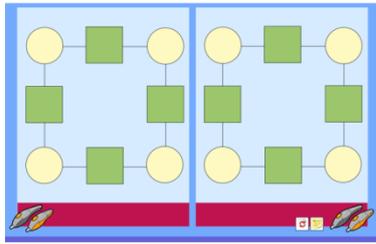
### **ARITHMAGION TRIANGLES**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. This will help learners explore the patterns, rules and relationships between circle numbers and box numbers.

#### **Activities**

- Generating a pattern from a rule
- Devise rules based on numerical patterns to solve triangular arithmagons
- Form and use linear equations to solve triangular arithmagons
- Develop proofs of rules and conditions for solving arithmagons



### **ARITHMAGION SQUARES**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. This will help learners explore the patterns and relationships between circle numbers and box numbers.

#### **Activities**

- Generating a pattern from a rule
- Explain the conditions for the solution of any square arithmagon
- Develop proofs of rules and conditions for solving arithmagons

### ACTIVITIES



### **BASIC NUMBER GRID (0-99)**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. Click on a **coloured counter** to make a copy that can be dragged onto the grid to highlight a number. Identical sets of coloured counter are available at either side of the workspace so learners can contribute equally and at the same time.

#### **Activities**

- Explore numbers and patterns.
- Different learners use different coloured tiles to highlight odd and even numbers.
- Learners work together to colour squares containing prime numbers.
- Learners work together to colour squares containing square numbers.
- Skip counting. Learners colour all squares that are multiples of two the same colour. Repeat with fives and tens. Count on or back in steps of different sizes.
- Describe number patterns in meaningful mathematic language.
- Find and extend number sequences. One learner (or teacher) starts a number pattern on the row (or two rows), for example 1, 3, 5, 7. Other learners continue the sequence or predict the next number. Select a random row further down the table - learners colour all the numbers on this row that belong in the sequence. Choose a random number on grid, for example 88. Will this number be coloured if the pattern is extended? How do learners know?
- Multiple shading. One learner colours multiples of 3 and one learner the multiples of 4. Where there is an overlap, choose a different colour counter. What do learners notice?



### **NUMBER GRID (0-99)**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. Click on a **coloured tile** to make a copy that can be dragged onto the grid to highlight a number. Identical sets of coloured tiles are available at either side of the workspace so learners can contribute equally and at the same time.

Click on the **hide numbers button** to hide all the numbers on the grid.

Click the **show numbers button** to reveal all the numbers on the grid.

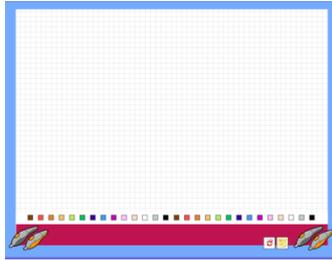
Click on the **mask grid button** to hide the grid and all the numbers.

Click on the **show grid button** to reveal the grid and all the numbers.

Click and drag an **'invisible tile'** (this is this tile with the pink frame) over the top of the grid mask (when this option is selected) to reveal a number/position through the grid mask.

#### **Activities**

- Explore numbers and patterns.
- Different learners use different coloured tiles to highlight odd and even numbers.
- Learners work together to colour squares containing prime numbers.
- Learners work together to colour squares containing square numbers.
- Skip counting. Learners colour all squares that are multiples of two the same colour. Repeat with fives and tens. Count on or back in steps of different sizes.
- Describe number patterns in meaningful mathematic language.
- Find and extend number sequences. One learner (or teacher) starts a number pattern on the row (or two rows), for example 1, 3, 5, 7. Other learners continue the sequence or predict the next number. Select a random row further down the table - learners colour all the numbers on this row that belong in the sequence. Choose a random number on grid, for example 88. Will this number be coloured if the pattern is extended? How do learners know?
- Use black tiles to conceal random numbers on the grid. Learners work out what the hidden numbers are.
- Conceal entire rows and columns on the table by placing a black tile and dragging/stretching it in a horizontal or vertical direction. Cover one entire row and one entire column. Learners work out what number is at the intersection.
- Multiple shading. One learner colours multiples of 3 and one learner the multiples of 4. Where there is an overlap, choose a different colour square. What do learners notice?



### **COLOUR TILES (DESIGN)**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. It can be used in art and design activities such as scene design, character design or typography/font design. Click on a **colour tile** to make a copy that can be dragged into the workspace.

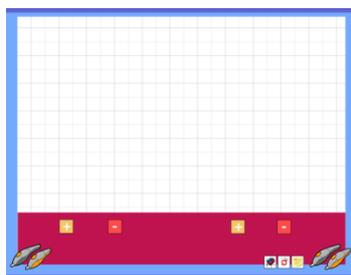
Learners can create a shape(s) by duplicating the colour tiles and dragging them into the workspace. Learners can work together on the same design task or own their individual working space to create designs of their own.

#### **Activities**

- Replicating images/artwork
- Pixel art
- Character design
- Typography design

#### **Suggestions for differentiation**

This template can also be used to explore spacial visualisation, colour, shape, pattern, counting, number concepts, equality, inequality, measurement, surface area, symmetry, ratio, proportion, percentages, place value and sequencing.



### ALGEBRA TILES (ADDING AND SUBTRACTING INTEGERS)

#### About this template

This template can be used by two learners at the same time, or by a teacher and a learner. Identical sets of **positive and negative tiles** are available to the left and to the right side of the workspace so that learners can contribute equally and at the same time. Click on a tile to make a copy that can be dragged into the workspace.

**Yellow tile = 1**

**Red tile = -1**

**Note:** Create a 'zero pair' by matching a yellow tile with a red tile. The negative (red) tile cancels out the positive (yellow) tile  $+1 + (-1) = 0$ .

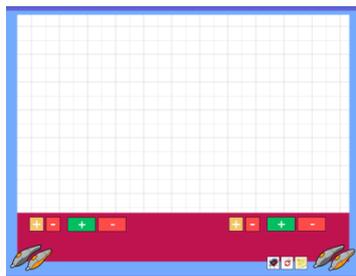
#### Activities

##### **Adding integers**

- Demonstrate **addition of two positive numbers**, for example  $5 + 4$ . One learner should model the group of 5 tiles and another learner the group of 4. To represent the addition of these two numbers, select the groups and move them together. Write the sum next to the group of tiles:  $5 + 4 = 9$ .
- Demonstrate **addition of a positive number and a negative number**, for example  $3 + (-8)$ . One learner should model the positive number and one learner the negative. Select the group of 3 positive (yellow) tiles and the group of 8 negative (red) tiles and move them together. Create and remove all the 'zero pairs' as their value is zero. The remaining tiles represent the answer. 5 negative (red) tiles = -5.

##### **Subtracting integers**

- Demonstrate the **subtraction of two negative numbers**, for example  $-8 - (-3)$ . One learner should model the group of 8 negative (red) tiles and another learner the group of 3 negative (red) tiles. Move the two groups of tiles together. To subtract the -3, remove 3 negative tiles. The remaining tiles represent the answer. 5 negative (red) tiles = -5.
- Demonstrate the **subtraction of a larger number from a smaller number**, for example  $5 - 8$ . Each learner should model a group of 5 positive (yellow) tiles. Between them, they should then add 'zero pairs' until there are 8 positive (yellow) tiles in total (so count up until 3 'zero pairs' have been added). The 8 can then be subtracted from the group so remove 8 positive (yellow tiles). The remaining tiles represent the answer. 3 negative (red) tiles = -3.
- As subtracting is the same as **adding the opposite**, another way of modelling this is as  $5 + (-8)$ . One learner models a group of 5 positive (yellow) tiles and another models a group of 8 negative (red) tiles. The groups are moved together and the learners create and remove all the 'zero pairs'. represent the answer. 3 negative (red) tiles = -3.



### ALGEBRA TILES (REPRESENT AND SIMPLIFY EXPRESSIONS AND SOLVING LINEAR EQUATIONS)

#### About this template

This template can be used by two learners at the same time, or by a teacher and a learner. Identical sets of **positive and negative tiles** are available to the left and to the right side of the workspace so that learners can contribute equally and at the same time. Click on a tile to make a copy that can be dragged into the workspace.

**Yellow tile small = 1**

**Red tile small = -1**

**Green tile long = x**

**Red tile long = -x**

**Note:** Create a 'zero pair' by matching a yellow tile with the equivalent red tile. The negative (red) tile cancels out the positive (yellow) tile  $x + (-x) = 0$ .

#### Activities:

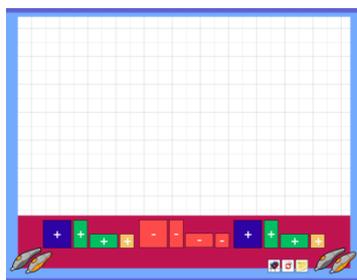
- Simplifying Algebraic Expressions
- Solving Linear Equations

#### **Adding integers**

- Demonstrate **addition of two positive numbers**, for example  $5 + 4$ . One learner should model the group of 5 tiles and another learner the group of 4. To represent the addition of these two numbers, select the groups and move them together. Write the sum which describes what this model:  $5 + 4 = 9$ .
- Demonstrate **addition of a positive number and a negative number**, for example  $3 + (-8)$ . One learner should model the positive number and one learner the negative. Select the group of 3 positive tiles and the group of 8 negative tiles and move them together. Create and remove all the 'zero pairs' as their value is zero. The remaining tiles represent the answer. 5 negative (red) tiles = -5.

#### **Subtracting integers**

- Demonstrate the **subtraction of two negative numbers**, for example  $-8 - (-3)$ . One learner should model the group of 8 negative tiles and another learner the group of 3 negative tiles. Move the two groups of tiles together. To subtract the -3, remove 3 negative tiles. The remaining tiles represent the answer. 5 negative (red) tiles = -5.
- Demonstrate the **subtraction of a larger number from a smaller number**, for example  $5 - 8$ . Each learner should model a group of 5 positive tiles. Between them, they should then add 'zero pairs' until there are 8 positive tiles in total (so count up until 3 'zero pairs' have been added). The 8 can then be subtracted from the group so remove 8 positive (yellow tiles). The remaining tiles represent the answer. 3 negative (red) tiles = -3.
- As subtracting is the same as **adding the opposite**, another way of modelling this is as  $5 + (-8)$ . One learner models a group of 5 positive (yellow) tiles and another models a group of 8 negative (red) tiles. The groups are moved together and the learners create and remove all the 'zero pairs'. represent the answer. 3 negative (red) tiles = -3.



### ALGEBRA TILES (BINOMIALS AND POLYNOMIALS)

#### About this template

This template can be used by two learners at the same time, or by a teacher and a learner. Identical sets of **positive tiles** are available to the left and to the right side of the workspace so that learners can contribute equally and at the same time. A set of **negative tiles** is available in the middle for learners to share.

Click on a tile to make a copy that can be dragged into the workspace.

**Yellow tile small = 1**

**Red tile small = -1**

**Green tile long = x**

**Red tile long = -x**

**Blue tile large =  $x^2$**

**Red tile large =  $-x^2$**

**Note:** Create a 'zero pair' by matching a yellow tile with the equivalent red tile. The negative (red) tile cancels out the positive tile  $x^2 + (-x^2) = 0$

*This template can be used to demonstrate:*

- Modelling Polynomials
- Adding Polynomials
- Subtracting Polynomials
- Multiplying Polynomials
- Factoring Polynomials
- Simplifying Algebraic Expressions
- Solving Linear Equations

#### **Adding integers**

- Demonstrate **addition of two positive numbers**, for example  $5 + 4$ . One learner should model the group of 5 tiles and another learner the group of 4. To represent the addition of these two numbers, select the groups and move them together. Write the sum which describes what this model:  $5 + 4 = 9$ .
- Demonstrate **addition of a positive number and a negative number**, for example  $3 + (-8)$ . One learner should model the positive number and one learner the negative. Select the group of 3 positive tiles and the group of 8 negative tiles and move them together. Create and remove all the 'zero pairs' as their value is zero. The remaining tiles represent the answer. 5 negative (red) tiles = -5.

#### **Subtracting integers**

- Demonstrate the **subtraction of two negative numbers**, for example  $-8 - (-3)$ . One learner should model the group of 8 negative tiles and another learner the group of 3 negative tiles. Move the two groups of tiles together. To subtract the -3, remove 3 negative tiles. The remaining tiles represent the answer. 5 negative (red) tiles = -5.
- Demonstrate the **subtraction of a larger number from a smaller number**, for example  $5 - 8$ . Each learner should model a group of 5 positive tiles. Between them, they should then add 'zero pairs' until there are 8 positive tiles in total (so count up until 3 'zero pairs' have been

- added). The 8 can then be subtracted from the group so remove 8 positive (yellow tiles). The remaining tiles represent the answer. 3 negative (red) tiles = -3.
- As subtracting is the same as **adding the opposite**, another way of modelling this is as  $5 + (-8)$ . One learner models a group of 5 positive (yellow) tiles and another models a group of 8 negative (red) tiles. The groups are moved together and the learners create and remove all the 'zero pairs'. represent the answer. 3 negative (red) tiles = -3.



### **COLOURED COUNTERS**

#### **About this template**

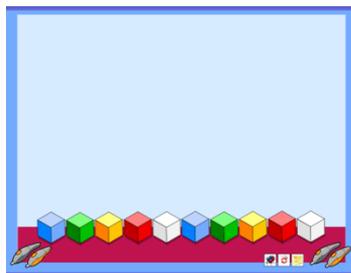
This template can be used by two learners at the same time, or by a teacher and a learner. Click on any of the **coloured counters** to make a copy that can be dragged into the workspace. Identical sets of coloured counters are available at either side of the workspace so learners can contribute equally and at the same time.

#### **Activities**

- **Pattern prediction and continuation** Solve patterns by using all or a limited selection of the coloured counters.
- **Describing patterns and sequences** Begin at the top left of the workspace and describe the pattern using meaningful vocabulary.

#### **Suggestions for differentiation**

This template can also be used to explore colour, symmetry, place value, comparing, sorting and counting activities.



### UNIT BLOCKS MEASUREMENT (LARGE)

#### About this template

This template can be used by two learners at the same time, or by a teacher and a learner. Click on a **unit blocks** to make a copy that can be dragged into the workspace. Identical sets of unit blocks are available to the left and to the right side of the workspace so that learners can contribute equally and at the same time. Click **Ruler on** to reveal a ruler - two **Ruler** buttons are available (at either side of the workspace) so that both participants have access to a ruler. Teacher or learners may create a shape(s) by duplicating the unit blocks and then dragging them into the workspace. Learners may collaborate on the same task or own their individual working space to create their own shapes. **Note:** one ruler is a horizontal ruler and the other is vertical enabling collaborative measurement of the same shape.

#### Activities

**Making and predicting patterns/sequences** Recognizing, copying, creating and comparing repetitions of unit blocks (including units of units) and describing other learners' patterns using meaningful mathematical vocabulary.

**Equality** Using different coloured unit blocks, to discover various addition combinations for different sums. One learner models  $2 + 8 = 10$ . Using different colours, another learner (or teacher) models  $3 + 7$  next to the first stack. Explain that the stacks are equal and ask learners to model further combinations for the sum of 10.

**Perfect squares** Learners or teacher may use unit blocks to model the concept of a perfect square eg.  $3 \times 3 \times 3$ , or  $4 \times 4 \times 4$ .

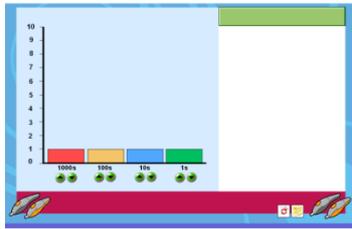
**Fractions/equivalent fractions** Exploring the concept of numerator and denominator using different coloured unit blocks.

**Counting groups** How numbers can be counted and created using groups as opposed to ones. Finding numbers *without* remainders e.g., how many numbers can you make using groups of 3, 4, 5, 6 or 7 with no unit blocks left over. Finding numbers *with* remainders e.g., how many numbers can you make using groups of 3, 4, 5, 6, or 7 with 1, 2 or 3 unit blocks left over.

**Constructing figures with a given surface area/square units**  
**Constructing figures with maximum possible surface area/square units**  
**Constructing figures with a given volume/cubic units**

#### Suggestions for differentiation

This template may be used for grouping, sorting, number sense, addition, subtraction, counting, multiplication, division, base ten and measurement activities.



### **PLACE VALUE/THTU**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. It enables a THTU number to be represented as a number and on the graph as thousands, hundreds, tens and units.

The value displayed on the graph can be altered by clicking the **up and down arrows** underneath each of the bars.



### **JUNGLE SLIDING PUZZLE**

#### **About this template**

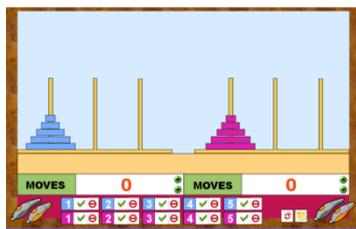
This template can be used by two learners at the same time, or by a teacher and a learner. Unlike traditional sliding puzzles, the Jungle puzzle has two blank spaces instead of one. This enables two pieces of the puzzle to be moved simultaneously by two different learners. Puzzle pieces above or adjacent to a blank space can be moved into that space by clicking and dragging the puzzle piece.



### **OUTERSPACE SLIDING PUZZLE**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. Unlike traditional sliding puzzles, the Outerspace puzzle has two blank spaces instead of one. This enables two pieces of the puzzle to be moved simultaneously by two different learners. Puzzle pieces above or adjacent to a blank space can be moved into that space by clicking and dragging the puzzle piece.



### **TOWERS OF HANOI 5 DISCS (DOUBLE)**

#### **About this template**

This template can be used by two learners at the same time, or by a teacher and a learner. It can be used in to explore the Towers of Hanoi.

Click and drag a **coloured disc** to move it from one peg to another.

Move a stack of discs from one peg to another in the minimum number of moves.

Each participant may only move **one disc at a time**.

Larger discs may not be stacked on top of smaller discs and must only be placed on top of a smaller disc or on an empty peg.

Use the **counter(s)** to keep a record of how many moves have been made.

Through discussion and collaboration, participants may work out the minimum number of moves needed to move one stack of pegs to another.

The blank title space should be used to write a summary of the activity, a keyword or a prompt.

**Note about Towers of Hanoi:** *The minimum number of moves required to move  $n$  discs from one peg to another is one less than 2 raised to the power of  $n$ .*

- 2 discs min moves = 4
- 3 discs min moves = 8
- 4 discs min moves = 15
- 5 discs min moves = 31