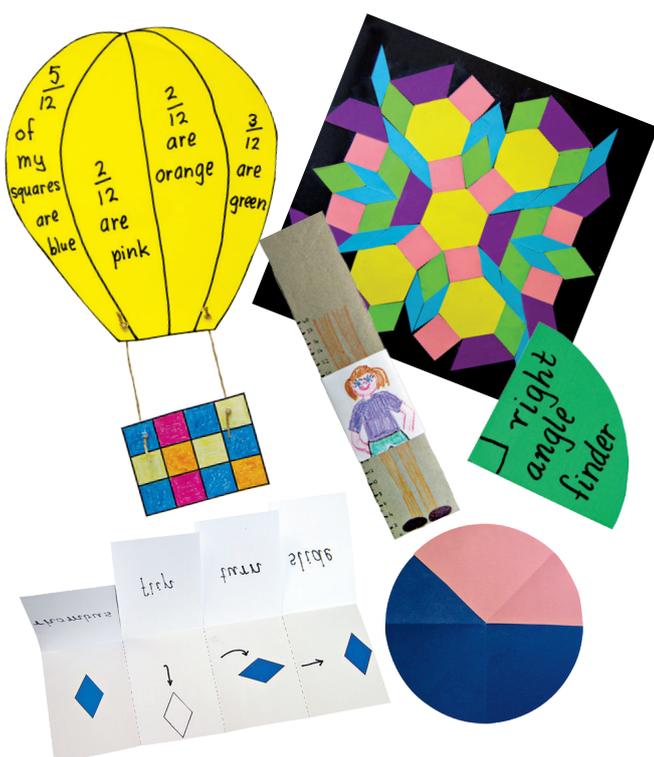


# Linking visual arts and maths

How much more relevant (and fun) is teaching mathematics concepts when the Arts are used? Hands-on activities like the following make understanding concepts much easier!



## Measurement/Addition/Statistics and probability game

**PROVIDE:** long cardboard roll (flattened), sheet of paper or light cardboard wide enough to fit around the cardboard roll (about 8 cm wide), rulers, pencils, coloured markers, glue, tape, dice

**MAKING:** On the sheet of paper or light cardboard, students draw their upper body to the top of their legs. For best results, this should be done in the centre of the length of paper across the width.

On the flattened cardboard roll, students draw legs, leaving a distance about the same height as the drawing of themselves at the top.

Along one side of the flattened roll, students mark 1 cm increments using their ruler, with the base of the roll zero. Starting at the bottom, they label the increments by twos (so the mark at 1 cm will be 2, the mark at 2 cm will be 4 and so on). This allows more time to reach a target and more play in the game. If desired, teachers may stop at 30 or a given number.

Students wrap the drawing of themselves around the flattened roll and tape or glue it at the back. It should be loose enough to move up and down the roll. The drawing of themselves should be in the centre of the roll.

**RESPONDING:** Play the game with a partner. Start the 'person' at zero. The first player to throw a six starts the game. With each consecutive throw, students add to the length of their legs and move up that many marks. The first person to reach the top and become the tallest person wins.

Students discuss the usefulness and accuracy of the game. They may also rate their enjoyment of the game

### AUSTRALIAN CURRICULUM MATHEMATICS LINKS

#### Year 3 Measurement and Geometry

Measure, order and compare objects using familiar metric units of length, mass and capacity (ACMMG061) <sup>AC</sup>

#### Year 3 Number and Algebra

Recall addition facts for single-digit numbers and related subtraction facts to develop increasingly efficient mental strategies for computation (ACMNA055) <sup>AC</sup>

#### Year 3 Statistics and Probability

Conduct chance experiments, identify and describe possible outcomes and recognise variation in results (ACMSP067) <sup>AC</sup>

### AUSTRALIAN CURRICULUM THE ARTS LINKS

#### Years 3 and 4 Visual Arts

Explore ideas and artworks from different cultures and times, including artwork by Aboriginal and Torres Strait Islander artists, to use as inspiration for their own representations (ACAVAM110) <sup>AC</sup>

Use materials, techniques and processes to explore visual conventions when making artworks (ACAVAM111) <sup>AC</sup>

Identify intended purposes and meanings of artworks using visual arts terminology to compare artworks, starting with visual artworks in Australia including visual artworks of Aboriginal and Torres Strait Islander Peoples (ACAVAR113) <sup>AC</sup>



## Tessellations

**PROVIDE:** pattern block shapes, coloured paper (one colour for each different shape), scissors, pencils, black cardboard squares or rectangles for background, glue

**MAKING:** Students cut out and glue the shapes onto the black background, leaving no gaps between the shapes.

Continue until a desired design, pattern or shape is completed.

**RESPONDING:** When discussing the artworks, make reference to 'slides' or 'turns' (locomotion and transformation) required to move shapes into place.

Students may be asked to write a sentence or two about their design, shape or pattern.

### AUSTRALIAN CURRICULUM MATHEMATICS LINK

#### Year 2 Number and Algebra

Investigate the effect of one-step slides and flips with and without digital technologies (ACMMG045)

### AUSTRALIAN CURRICULUM THE ARTS LINKS

#### Foundation to Year 2 Visual Arts

Use and experiment with different materials, techniques, technologies and processes to make artworks (ACAVAM107)

Create and display artworks to communicate ideas to an audience (ACAVAM108)



Respond to visual artworks and consider where and why people make visual artworks, starting with visual artworks from Australia, including visual artworks of Aboriginal and Torres Strait Islander Peoples (ACAVAR109)

## Fraction hot air balloon

(Use 4 squares for the basket when doing quarters, eight when doing eighths and so on.) The example shown is for twelfths.

**PROVIDE:** squares of white cardboard divided into twelfths; coloured oil pastels or crayons (limit the number of colours—no more than four); pencils or markers; white hot air balloon shape (a ready-made blackline like the one on page 35 may be used or students may draw their own); wool, string or twine

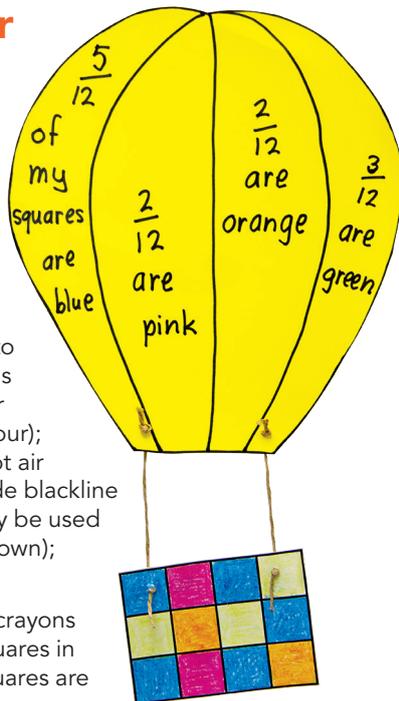
**MAKING:** Students select crayons to colour any number of squares in the grid. Repeat until all squares are coloured.

Students count how many of each colour are completed out of twelve. This gives a fraction. For example, 5 of 12 are blue ( $\frac{5}{12}$ ), 3 of 12 are green ( $\frac{3}{12}$ ) and so on.

**RESPONDING:** Students write a sentence on the hot air balloon shape about the fractions coloured. For example, 'I coloured  $\frac{5}{12}$  of my basket blue'.

Attach the hot air balloon to the basket using string, wool or twine.

Students comment on their own and others' hot air balloons. If students have coloured their basket in a pattern, make reference to these.



### AUSTRALIAN CURRICULUM MATHEMATICS LINKS

#### Year 2 Number and Algebra

Recognise and interpret common uses of halves, quarters and eighths of shapes and collections (ACMNA033)

#### Year 3 Number and Algebra

Model and represent unit fractions including  $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{3}$ ,  $\frac{1}{5}$  and their multiples to a complete whole (ACMNA058)

### AUSTRALIAN CURRICULUM THE ARTS LINKS

#### Foundation to Year 2 Visual Arts

Use and experiment with different materials, techniques, technologies and processes to make artworks (ACAVAM107)

Create and display artworks to communicate ideas to an audience (ACAVAM108)

Respond to visual artworks and consider where and why people make visual artworks, starting with visual artworks from Australia, including visual artworks of Aboriginal and Torres Strait Islander Peoples (ACAVAR109)

#### Years 3 and 4 Visual Arts

Explore ideas and artworks from different cultures and times, including artwork by Aboriginal and Torres Strait Islander artists, to use as inspiration for their own representations (ACAVAM110)

Use materials, techniques and processes to explore visual conventions when making artworks (ACAVAM111)

Present artworks and describe how they have used visual conventions to represent their ideas (ACAVAM112)

Identify intended purposes and meanings of artworks using visual arts terminology to compare artworks, starting with visual artworks in Australia including visual artworks of Aboriginal and Torres Strait Islander Peoples (ACAVAR113)

## Addition chains

(representing number combinations to 10 or 20)

**PROVIDE:** strips of coloured paper approximately 3 cm wide and 20 cm long (no more than 10 of each colour strip), glue or tape, markers, white cardboard strip for label

**MAKING:** Each student must use both sets of coloured strips to make 10, 20 or a total chosen by the teacher.

Student selects one colour strip to begin a chain by gluing the ends together, then slipping another strip through it. Students stop when they have the number of desired strips. (It's easier to count the number of each colour if links of the same colour are together.)

Students then swap colours to add the final chains until they reach the count needed.

**RESPONDING:** To complete the activity, students count how many of each colour link there are. They use the marker to write an addition sum for 10, 20 or the number chosen by the teacher.

Make comparisons between chains. For example, 'Jane's uses more yellow'; 'Justin's is longer than Mary's' etc.

### AUSTRALIAN CURRICULUM MATHEMATICS LINKS

#### Foundation Number and Algebra

Represent practical situations to model addition and sharing (ACMNA004) 

#### Year 1 Number and Algebra

Represent and solve simple addition and subtraction problems using a range of strategies including counting on, partitioning and rearranging parts (ACMNA015) 

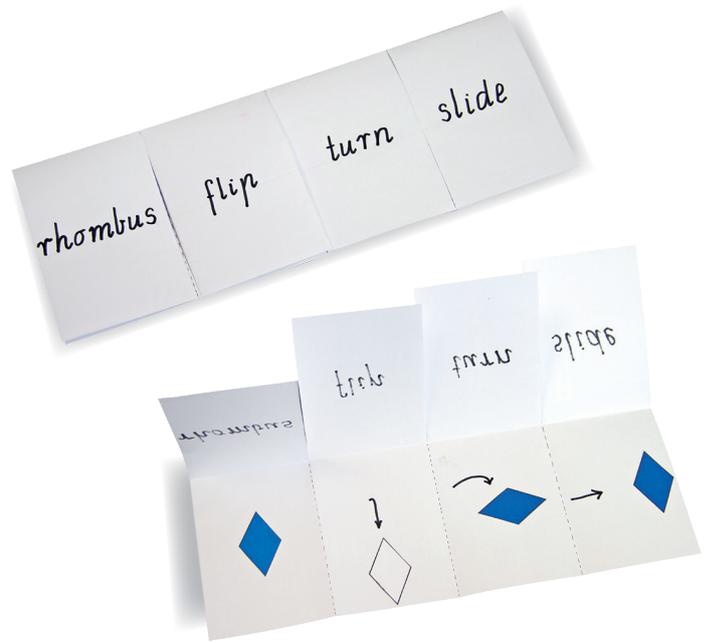
### AUSTRALIAN CURRICULUM THE ARTS LINKS

#### Foundation to Year 2 Visual Arts

Use and experiment with different materials, techniques, technologies and processes to make artworks (ACAVAM107) 

Create and display artworks to communicate ideas to an audience (ACAVAM108) 

Respond to visual artworks and consider where and why people make visual artworks, starting with visual artworks from Australia, including visual artworks of Aboriginal and Torres Strait Islander Peoples (ACAVAR109) 



## Flip, slide, turn book

(See <[http://www.youtube.com/watch?v=DxE4S\\_KDORw](http://www.youtube.com/watch?v=DxE4S_KDORw)>)

**PROVIDE:** coloured paper (white on one side); any small 2-D shapes (except a circle or square); pencils; scissors; white A4 paper; markers

**MAKING:** Make a long flip book by folding the A4 white paper in half lengthwise then in quarters. Students will have a long book divided into four sections.

With the book in landscape position, cut the top layer of the book from the bottom to the long fold at the top along each of the four fold lines. This will create four sections (or pages) to flip up and a base that is divided into four sections. Label the flip pages using the marker from left to right—name of shape, 'flip', 'turn' and 'slide'.

Trace around and cut out four of the shapes exactly the same size.

**RESPONDING:** Glue one shape in the first section under the first flip page (coloured side up). This will be the starting position from which all transformations occur. Next 'flip' a second shape and glue in the second section. (The white side of the paper will be uppermost.) Draw an arrow to show the direction of the transformation. Repeat with the remaining shapes, and 'turn' and 'slide'. Discuss.

### AUSTRALIAN CURRICULUM MATHEMATICS LINKS

#### Year 2 Measurement and Geometry

Investigate the effect of one-step slides and flips with and without digital technologies (ACMMG045) 

#### Year 3 Measurement and Geometry

Identify angles as measures of turn and compare angle sizes in everyday situations (ACMMG064) 

### AUSTRALIAN CURRICULUM THE ARTS LINKS

#### Foundation to Year 2 Visual Arts

Use and experiment with different materials, techniques, technologies and processes to make artworks (ACAVAM107) 

Respond to visual artworks and consider where and why people make visual artworks, starting with visual artworks from Australia, including visual artworks of Aboriginal and Torres Strait Islander Peoples (ACAVAR109) 

## Right-angle finder

(This very simple activity also relates to 2-D shapes and quarters.)

**PROVIDE:** a sheet of coloured paper in the shape of a triangle, circle, rectangle or square (one for each student); markers

**MAKING:** Each student folds the shape into halves, then quarters.

Use the marker to identify the right angle. Label if desired.

**RESPONDING:** Ask students to use the right angle (corner) to find right angles on tables, cupboards, books and so on, by placing it on each object.

Discuss other ways to make an angle finder, such as joining two craft sticks together on top of each other with a split pin.

### AUSTRALIAN CURRICULUM MATHEMATICS LINK

#### Year 3 Measurement and Geometry

Identify angles as measures of turn and compare angle sizes in everyday situations (ACMMG064) 

### AUSTRALIAN CURRICULUM THE ARTS LINKS

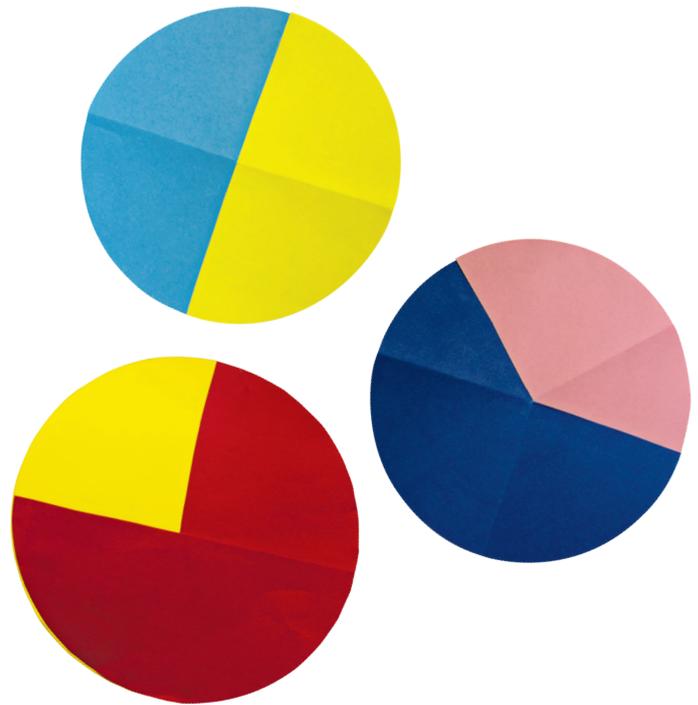
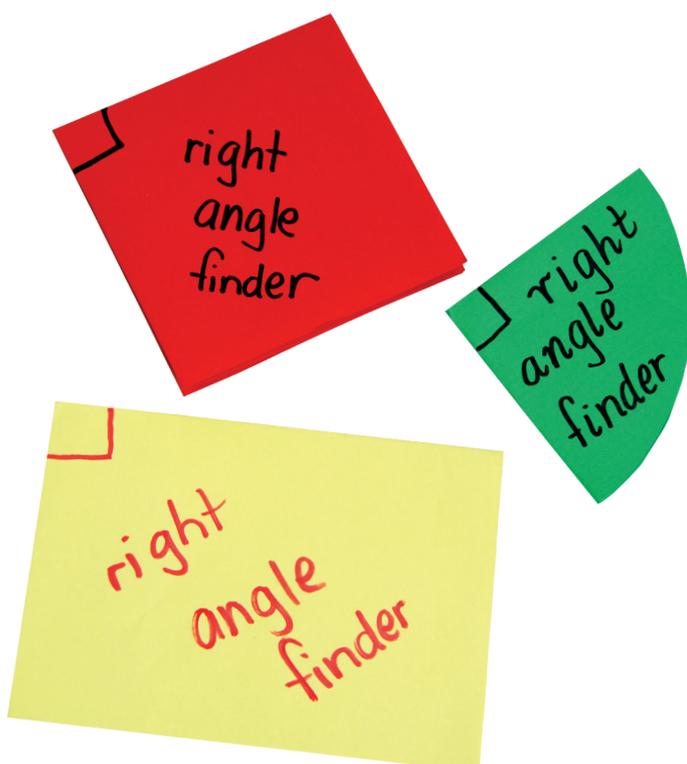
#### Years 3 and 4 Visual Arts

Explore ideas and artworks from different cultures and times, including artwork by Aboriginal and Torres Strait Islander artists, to use as inspiration for their own representations (ACAVAM110) 

Use materials, techniques and processes to explore visual conventions when making artworks (ACAVAM111) 

Identify intended purposes and meanings of artworks using visual arts terminology to compare artworks, starting with visual artworks in Australia including visual artworks of Aboriginal and Torres Strait Islander Peoples (ACAVAR113) 

**SUGGESTIONS:** Make a more interesting right-angle finder using a paper plate, paint and scrap paper. The right-angle finder will look a little like Pacman™. An example of a ready-made right-angle finder is shown on page 34.



## Angle maker

(This activity introduces the students to angles and their types.)

**PROVIDE:** two circles the same size, each a different colour per student; scissors

**MAKING:** Students fold each circle into quarters then cut a slit from the outer edge to the centre along the ONE folded line on each circle.

Slip the circles inside each other to the centre using the cut lines.

**RESPONDING:** Turn one circle to create an angle with the other circle. Vary the turns to create right, straight, acute and obtuse angles. Discuss the effectiveness of the angle maker and/or ways to create a better one.

### AUSTRALIAN CURRICULUM MATHEMATICS LINK

#### Year 3 Measurement and Geometry

Identify angles as measures of turn and compare angle sizes in everyday situations (ACMMG064) 

### AUSTRALIAN CURRICULUM THE ARTS LINKS

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*Has your class created art or craft work of which they are especially proud? Email Class ideas K-3 editor at <K3@ricgroup.com.au> to find out how to have your beautiful creations published in Class ideas K-3.*