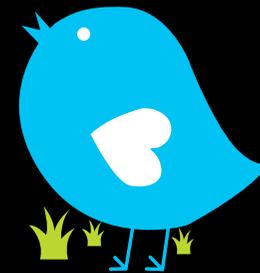
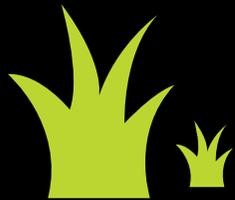
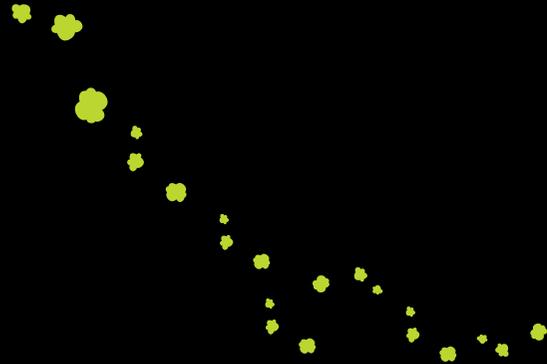
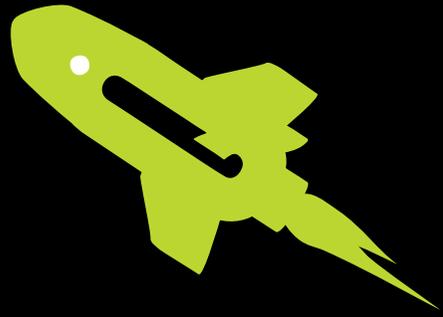


# CROSSING THE CURRICULUM WITH BALTIC=MATHS



# Before you begin

This resource provides a range of suggestions and examples which encourage learners to apply mathematics within the stimulating environment of a contemporary art gallery.

It is designed to be used in conjunction with Crossing the Curriculum with BALTIC, a resource which provides an introduction to cross curricular work at BALTIC. Crossing the Curriculum with BALTIC provides an introduction to contemporary art, and can be used to prepare learners for a visit to BALTIC.

This maths resource is in presentation style, for use with Power Point. The resource includes a series of A4 sheets which can be printed out and duplicated for use with a group of learners during a visit to BALTIC. It consists of:

## Part One Pre-visit preparation

- What is contemporary art?
- What is contemporary art?  
- text for learners
- What is BALTIC?
- What is BALTIC? –  
text for learners

## Part Two Suggestions...

- Using and applying maths
- Counting and understanding number
- Knowing and using number facts
- Calculating
- Understanding shape
- Measuring
- Handling data

## Part Three Ready mades

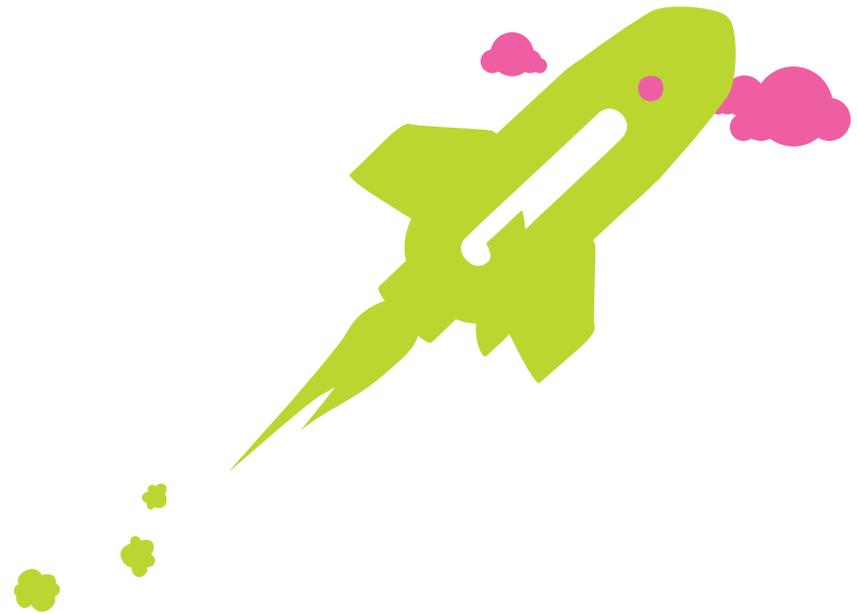
- Ready made gallery activities:  
6 printable A4 sheets to use in the gallery.

## Part Four Reflect, Reward, Research

- Post visit activities
- Further research

# PART ONE

## PRE VISIT PREPARATION

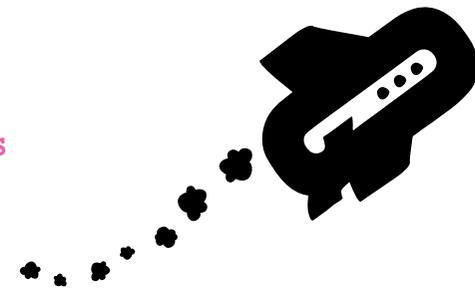
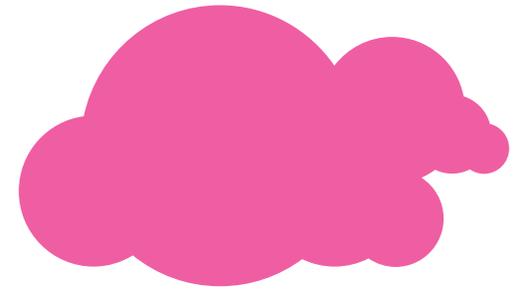


# WHAT IS CONTEMPORARY ART?

Contemporary Art is the term used to describe art of the present time, created by artists who are living and working today. Contemporary art is often about ideas and concepts, as well as the practical use of materials and techniques, or the visual appearance of the work.

Artists often work with ideas that reflect their observations, feelings and opinions about their surroundings and the wider world. Therefore, the subject of an art work can be just about anything!

Contemporary artists represent their ideas in many different ways, which include drawing, painting, sculpture, installation, photography, video, new media, performance and sound.



# WHAT IS CONTEMPORARY ART?

Contemporary art is made by artists who are alive today. An artist makes choices about every work of art they create.

They decide which colours, shapes and materials to use. Some artists look carefully at their subject matter, and try to show exactly what they can see.

Other artists think about the subject matter and try to show their feelings and ideas about it.

Artists make many different types of art. Some artists make drawings and paintings. They might also take photographs or record a film. Some artists make sculptures, or they might give a performance or use sound. Contemporary art includes all of these things.

**For little learners...**



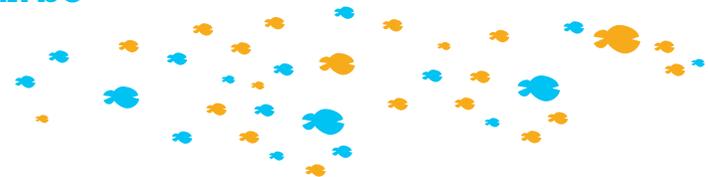
BAL TIC FLOUR MILLS

**WHAT IS  
BALTIC?**

# WHAT IS BALTIC?

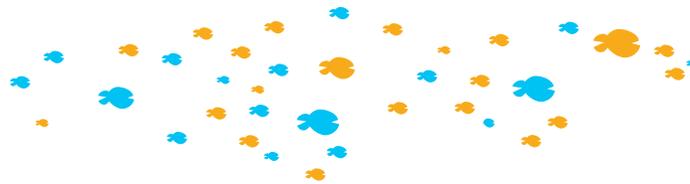
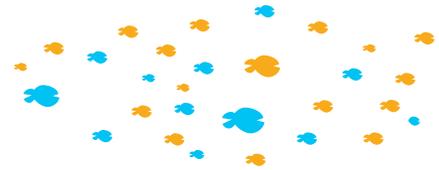
BALTIC is a centre for contemporary art. Art is displayed in the gallery spaces. It is also displayed in other areas such as the staircase, the lifts, the entrance area, outside the building in Baltic Square, and even on the building itself.

Unlike many art galleries, BALTIC does not have a collection of art which belongs to it. BALTIC shows a programme of contemporary art exhibitions which change every few months. Often, artists come to work in the space at BALTIC, to create art for their exhibition. Details of current and forthcoming exhibitions can be seen at [www.balticmill.com](http://www.balticmill.com)



# WHAT IS BALTIC?

An art gallery is a building in which you can see works of art. At BALTIC, there are a series of large, empty rooms where different types of art work are shown. Visitors to the gallery walk around the different spaces, to look at the art.



For little  
learners...

# MATHS AT BALTIC

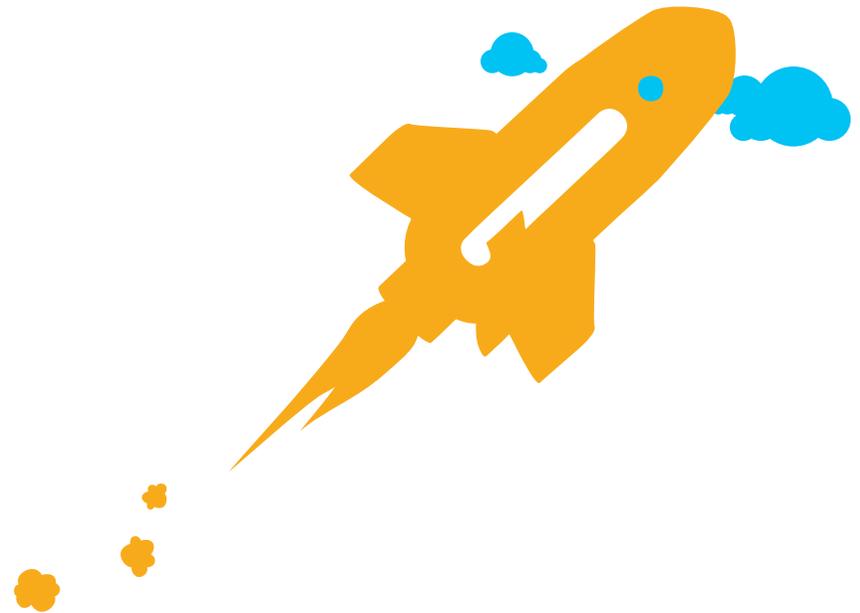
Part two of this resource shows examples of how you could use contemporary art works exhibited at BALTIC to contribute to teaching and learning mathematics. BALTIC has no permanent collection of art works and exhibitions change regularly, so there are likely to be fresh art works each time you visit.

The questions and activities suggested in this resource are designed to be used in a flexible way. They can be used when looking at other art works in future exhibitions at BALTIC. The examples are organised according to the strands defined in the Primary Framework for Mathematics. For more information about the framework visit [www.standards.dfes.gov.uk/primaryframeworks](http://www.standards.dfes.gov.uk/primaryframeworks)

Part three of the resource is a selection of activities which can be printed out and completed during a visit to BALTIC. They can be used alongside any of BALTIC's exhibitions which you think are appropriate. Details of current and forthcoming exhibitions can be seen at [www.balticmill.com](http://www.balticmill.com)

# PART TWO

## SUGGESTIONS



# SUGGESTIONS FOR... USING AND APPLYING MATHEMATICS



Look closely at this art work by Barry McGee.  
Draw the different 2D shapes you can see.



How many circles can you find in this  
exhibition of art work by Erwin Wurm?  
Record your answers in a tally chart.



Is this statement TRUE or FALSE:  
The pattern in this art work is made  
entirely from circles.

## IN THE GALLERY

During your visit to BALTIC, walk around the gallery space and look carefully at the art work. Can you see any shapes? Use a tally chart to record the number of rectangles, circles, squares and triangles you can find. How many shapes did you find in TOTAL?

# SUGGESTIONS FOR... COUNTING AND UNDERSTANDING NUMBER



How many fridges has the artist used to make this art work?

If the art work was 10 times bigger how many fridges would there be?

If the art work was 100 times bigger how many fridges would there be?



How many squares can you see in this art work?

Is the number of squares you can see odd or even?



How many circular images can you see in this gallery space?

If there were half as many circular images in the space, how many would there be?

## IN THE GALLERY

During your visit to BALTIC, choose one of the gallery spaces, and look carefully at the art work. Think of your own question which involves counting, similar to the examples above. Swap your question with a partner and see if you can find the answer to each others question.

# SUGGESTIONS FOR...

# KNOWING AND USING NUMBER FACTS



The title of this art work by Graham Dolphin is '*8 Public Enemy Songs*'. How many more songs would you need to make 10?

If you doubled the number of songs how many would there be?

If you halved the number of songs how many would there be?



In this art work by Jaume Plensa, a circle has been cut into 12 segments. Complete the following sums:

The number of segments  $\times 2 =$

The number of segments  $\times 5 =$

The number of segments  $\times 10 =$



286 local people took part in the creation of Domain Field, an art work by Antony Gormley.

If 5 more people took part, how many people would have taken part altogether?

How many more people would need to take part to make a total of 300?

## IN THE GALLERY

During your visit to BALTIC, choose one of the gallery spaces, and count the number of art works you can see. Now try to complete the following sentences:

If there were two less art works in the space there would be \_\_\_\_\_ art works.

If I doubled the number of art works I can see there would be \_\_\_\_\_ art works.

If there were ten times as many art works in the space there would be \_\_\_\_\_ art works.

# SUGGESTIONS FOR... CALCULATING



3 pictures + 1 picture = how many pictures?



Find the missing value in this sum:  
 $37 \text{ pictures} + ? = 53 \text{ objects}$



16 squares divided by 2 = how many squares?

## IN THE GALLERY

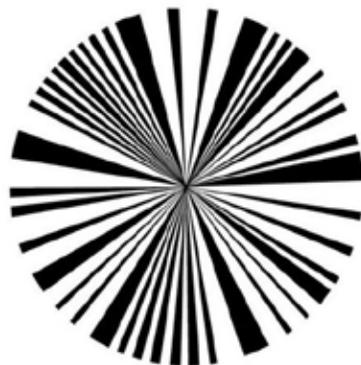
During your visit to BALTIC, choose one of the gallery spaces, and look carefully at the art work. Try to write your own mathematical sum, similar to the examples above. Swap your sum with a partner and see if you can work out the answers.

# SUGGESTIONS FOR...

# UNDERSTANDING SHAPE



This artwork is made up of many different shapes. How many can you name?



What shape is this artwork?  
Is the pattern you can see symmetrical?



Look carefully at this art work. Can you see any horizontal or vertical lines?

## IN THE GALLERY

During your visit to BALTIC look carefully at the art work in the gallery space. Can you see a two-dimensional shape that you can name? Can you see a three-dimensional solid that you can name, for example, a cube or a cylinder?

# SUGGESTIONS FOR... MEASURING



This art work by Subodh Gupta is made from many piles of metal food containers. Which pile is the highest and which is the shortest?



This art work measures 121.9cm high and 96.5cm wide. Which side of the art work is the longest?



This art work by Carlos Capelán is made from lots of chairs. If one of the chairs is 80cm high, estimate the height of the whole art work.

## IN THE GALLERY

During your visit to BALTIC, find an art work which is standing on the floor of the gallery space and choose one person to stand next to it. Compare the height of the art work to the height of the person. Is it taller or shorter? Estimate how many times taller or shorter the art work is than the person.

# SUGGESTIONS FOR... HANDLING DATA



How many doors and how many windows can you find in these sculptures of houses? Make a chart using pictures to show your answers.



Look at the different art works in the gallery space and sort them into three groups:

- 1 art works on the wall
- 2 art works on the floor
- 3 art works on the wall and the floor



How many of the shapes in this art work are red, white or blue? Make a bar chart to show your answers.

## IN THE GALLERY

Choose three art works in the gallery space and see if you can find the year when the artist made each work. Put the works in order from the oldest to the newest.

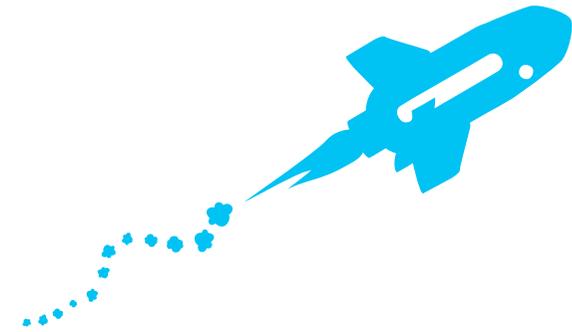
# PART THREE

## READY MADES



# WORD PLAY

Look carefully at the art works in the space. Write down any mathematical words that could be used to describe the art works.



- |          |             |            |        |              |                   |
|----------|-------------|------------|--------|--------------|-------------------|
| flat     | square      | wide       | narrow | light        | vertical          |
| curved   | rectangle   | narrow     | tall   | old          | diagonal          |
| straight | rectangular | tall       | thick  | new          | regular           |
| round    | symmetrical | thick      | thin   | similar      | irregular         |
| hollow   | patterned   | thin       | full   | different    | repeated          |
| solid    | equal       | full       | empty  | right-angled | spherical         |
| circle   | long        | empty      | far    | line         | cylindrical       |
| circular | short       | far        | close  | linear       | two-dimensional   |
| triangle | close       | triangular | heavy  | horizontal   | three-dimensional |

# MATHEMATICAL ART

Choose one art work in the space  
which you think looks mathematical.

Use writing or drawing to show why  
you think the art work you have  
chosen looks mathematical.



A large, empty rectangular box with a thin black border, intended for students to draw or write their responses. In the bottom right corner of this box, there is a small, stylized illustration of a hot air balloon. The balloon is a light blue color and is shaped like the letter 'Q'. It has a white basket hanging from it, and several thin lines representing ropes connect the basket to the balloon. The hot air balloon is positioned in the lower right quadrant of the page, within the large empty box.

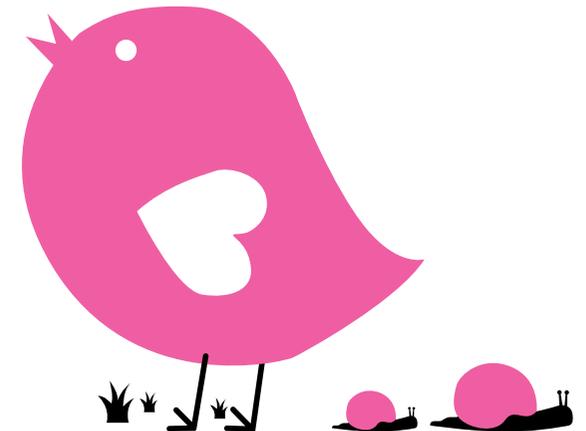
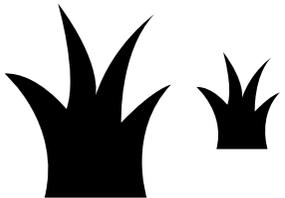
# GAME PLAY

Where is it best to stand when you are looking at an art work? You can walk around the gallery space and look at an art work from close up or far away. Try playing this game which is all about estimating the distance between a person and an art work.

This activity works best in a gallery space with lots of art works in it. Remember to be careful not to touch any of the art works.

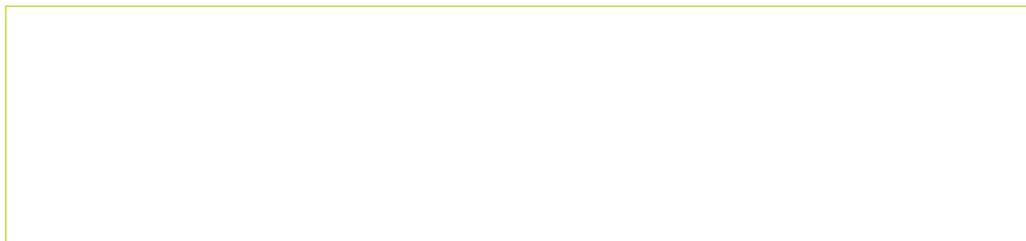
- Choose two people in your class and name them person A and person B
- Ask person A to stand as near as they can to the centre of the gallery space.
- Choose one art work in the room and ask the rest of your class to estimate the number of foot paces between person A and the art work.
- Now ask person B to pace out the distance between person A and the art work.
- Did anybody estimate the distance correctly? What was the closest estimate?
- Choose a second art work in the room. Estimate the distance between person A and the second art work. Is it closer or further away from person A than the first art work?
- Ask person B to pace out the distance and see if your estimates are accurate.

When you've tried this with two people, why not try it with three or four? Why not try centering yourself on more objects?



# DIAGRAMS

Look around one of the gallery spaces and choose a wall which has several art works on it. Draw a diagram of the wall in this space, using simple shapes to represent the art works.



The art works on the wall could be moved around and displayed in a different way. Use the spaces below to draw all the different ways you can think of to arrange the art works.



How many different ways have you found to display the art works? Write your answer in the space below.





# GAME PLAY

Contemporary artists make their art work in lots of different ways. Some artists use the human body and movement in their work. Try playing this game, to make a pattern using your own bodies.

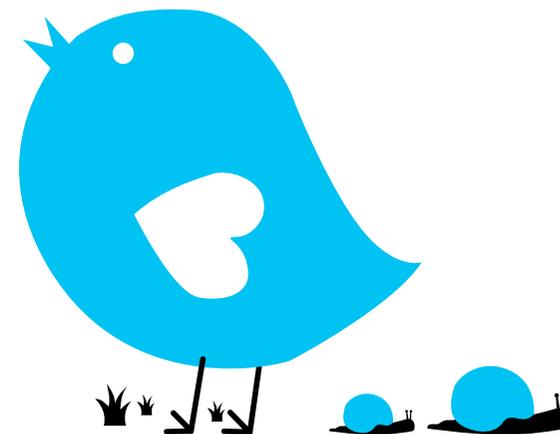
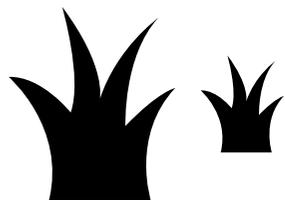
Get in to groups of four people, and give each person a number from 1 to 4. Ask each person in the group to follow the rule which relates to their number.

- 1 Stand like a soldier
- 2 Stand like a star
- 3 Put your right arm out straight in front of you
- 4 Put your left arm out straight in front of you

Ask the people in your group to stand together to create a human repeating pattern. Now try moving around to create a different pattern. Ask somebody to take a photograph of the different patterns you make.

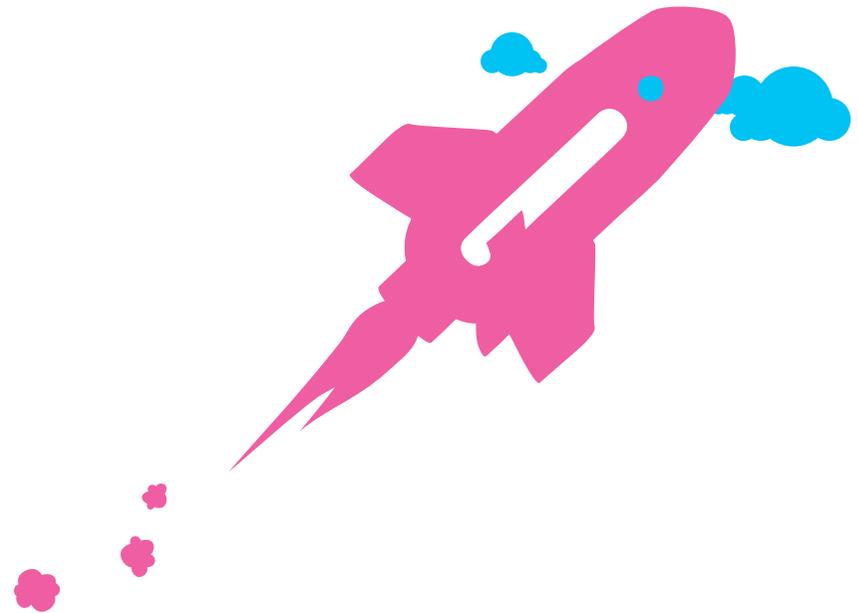
Look at the photographs and choose your favourite human pattern. Try drawing the pattern using pictures or write it down using symbols.

Now play the game again and make up your own rules for the numbers 1 to 4.



# PART FOUR

## REFLECT, REWARD, RESEARCH





# IMPROVING YOUR OWN LEARNING PERFORMANCE

This sheet encourages learners to reflect on what they have learnt and to identify ways in which their experience of visiting BALTIC could be developed.

From the following suggestions, select three sentence starters and add them to the template provided, for learners to complete.

I can...

I can use...

I can tell someone about...

I can identify...

I can work out...

I can explain...

I know...

I know how to...

I look carefully at...

I ask...

I give my own ideas  
about...

I question...

I use words like...

I describe...

I write about...

I communicate...

I record...

I suggest...

I compare...

I decide...

I take part in...

I work with a partner to...

I tell others about...

I understand....

I listen...

I explore...

I investigate...

I discuss...

I learn about...

I make...

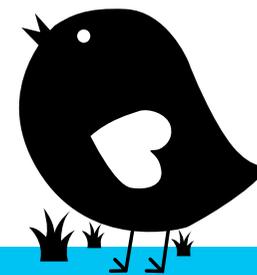
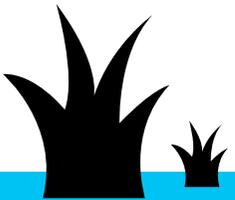
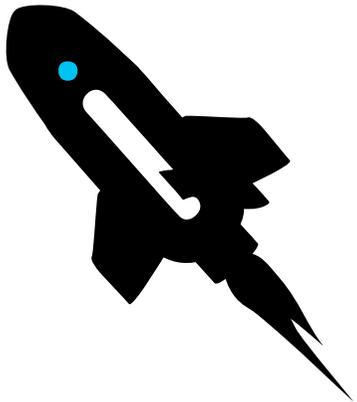
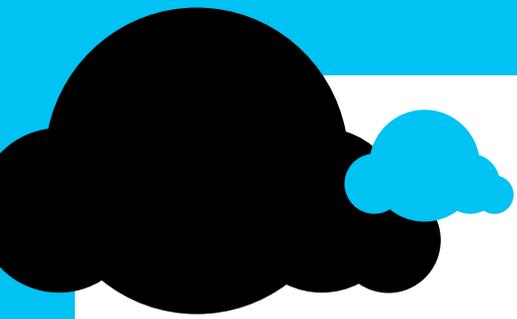
I draw...

# WELL DONE!

This certificate is presented to

---

For successfully completing their trip to BALTIC



# WHAT HAVE I LEARNED?



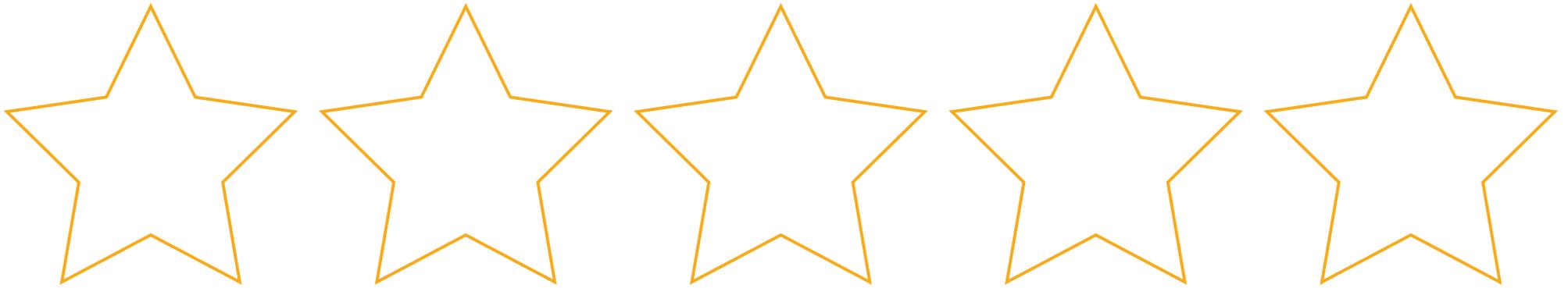
BALTIC would love to know what you learned on your visit and how many stars you gave us! If you leave these sheets at the information desk with your school address, we will return them to you with a special reward!

Next time I visit BALTIC I would like to...

# WHAT HAVE I LEARNED?



Following your visit, you can reward BALTIC with stars by filling between 1 and 5 of them in with patterns or shading.



# LINKS TO FURTHER RESOURCES

## BALTIC

[www.balticmill.com](http://www.balticmill.com)

## QUAY

[www.balticmill.com/quay](http://www.balticmill.com/quay)

## Library & Archive

<http://archive.balticmill.com>

'In my opinion' toolkit to help pupils approach artwork,  
formulate questions and contribute opinions

<http://www.balticmill.com/learning/Downloads.php>

Blank presentation template: pupils can use this  
to present their own research and ideas

<http://www.balticmill.com/learning/Downloads.php>

BALTIC Secondary Resources Bank: pupils can  
use this to search for and download images and  
other information

<http://www.balticmill.com/learning/Downloads.php>



# ARTISTS AND PHOTOGRAPHY CREDITS

## **Spank the Monkey**

Level 4 Barry McGee (internal)  
Level 4 space showing inside the truck by Barry McGee  
Copyright: The artist  
Credit: Colin Davison

## **Erwin Wurm: *New Sculptures Level 2 Installation shot (01) Truck, 2005 Mixed media***

Courtesy: Galerie Krinzinger and Galerie Xavier Hufkens

## ***The artist who swallowed the world***

2006 Mixed media  
Courtesy: Galerie Krinzinger

## ***The artist who swallowed the world when it was still a disc***

2006 Mixed media  
Courtesy: Galerie Krinzinger  
Copyright: The artist  
Credit: Colin Davison

## **Bharti Kher: *somatic cell nuclear transfer (detail)***

2008 Bindis on painted board  
Courtesy: The artist and Arario Gallery

## **Kader Attia: *Square Dreams***

Exhibition Image (01)  
Copyright: The artist  
Credit: Colin Davison

## **Spank the Monkey:**

Level 5 Invader: Internal image (01)  
Level 5 viewing space showing *Invader*  
Copyright: The artist  
Credit: Colin Davison

## **Mariko Mori: *Exhibition Shot (06)***

Copyright: The artist  
Credit: Colin Davison

## **Graham Dolphin: *8 Public Enemy songs 28mm circular***

Copyright: The artist  
Credit: Colin Davison

## **Jaume Plensa: *Blake in Gateshead* Antony Gormley: *Domain Field***

Copyright: Antony Gormley  
Credit: Colin Davison

## **Graham Dolphin: *8 Public Enemy songs***

28mm circular  
Copyright: The artist  
Credit: Colin Davison

## **Barry McGee: *They Don't Make This Anymore Exhibition shot***

Copyright: The artist  
Credit: Colin Davison

## **Paul Moss: *Drawing for 'Mobile Dancefloor'***

Copyright: Paul Moss  
Credit: Colin Davison

## **Paul Moss: *Push Me Pull Me***

Copyright: Paul Moss  
Credit: Colin Davison

## **James Hutchinson: *Freezer***

Image used in publicity material and the BALTIC brochure for the James Hutchinson exhibition '*Drawn*' at BALTIC  
Copyright: James Hutchinson  
Credit: Colin Davison

## **Yoshitomo Nara + graf: *A-Z Project***

Exhibition Image (12) Japanese artist Yoshitomo Nara, in collaboration with design unit graf  
Copyright: The artists  
Credit: Colin Davison

## **Subodh Gupta: *Silk Route***

Installation shot (07)  
Copyright The artist  
Credit Colin Davison

## **Sam Taylor-Wood: *Bram Stoker's Chair II***

C-print Image size: 48 x 38 in. (121.9 x 96.5 cm)  
Copyright: The artist  
Credit: Courtesy Jay Jopling/White Cube (London)

## **Carlos Capelán: *onlyyou***

Exhibition Images  
Copyright: Carlos Capelán  
Credit: Colin Davison

## **Yoshitomo Nara + graf: *A-Z Project***

Exhibition Image (12) Japanese artist Yoshitomo Nara, in collaboration with design unit graf  
Copyright: The artists  
Credit: Colin Davison

## **British Art Show 6**

Installation Shots (02)  
Copyright: The artists  
Credit: Courtesy Jay Jopling/White Cube (London)

## **Dzine: *Just Kidding: Time is the Enemy***

Installation shot (05) Bespoke murals created in the BALTIC foyer  
Copyright: The artist  
Credit: Colin Davison

