

# Reviving the Roundhouse Activity Pack

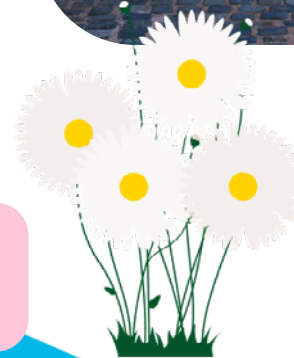


Dating back to 1874, the Roundhouse was originally stables for 50 horses and a store for the Birmingham Corporation. Designed by local architect W.H. Ward, the iconic horseshoe-shaped structure is a landmark in the city.

This amazing building, located right next to the canal, has recently been revived through a 3-million-pound restoration project featuring a visitor centre, café, and exhibition space. It allows visitors to explore Birmingham's heritage and its famous canals.

In this pack you will find maths-based challenges, all focused on the restoration of this historical site.

Place each fact sheet at a different station in the classroom and provide each student with a Reviving the Roundhouse Activity Answer Sheet.



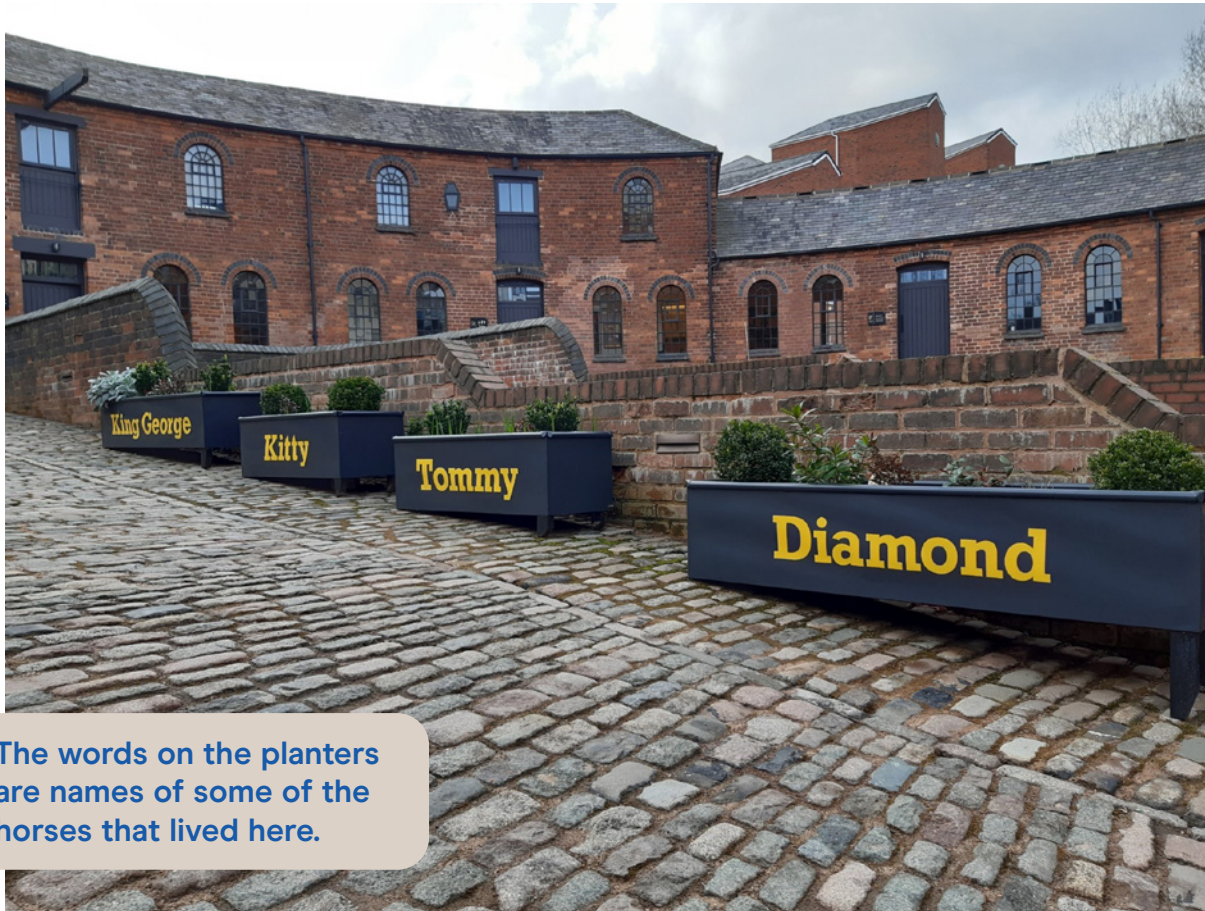
Please note that the figures and costs in these activities are a guide for educational purposes. They are not an accurate reflection of the true costs of the project.

[canalrivertrust.org.uk/stem](http://canalrivertrust.org.uk/stem)

Canal & River Trust charity number: 1146792

# Fact Sheet 1

## Courtyard Creations



The words on the planters are names of some of the horses that lived here.

The planters in the Roundhouse courtyard have been **up-cycled** from old water troughs. They have been decorated and filled with compost and plants. **There are 10 troughs in total. Each trough contains 5 plants.**

- If each trough measures: 1m x 0.5m x 0.5m
- Compost is usually measured in litres ( $1\text{m}^3 = 1000$  litres,  $0.5\text{m}^3 = 500$  litres,  $0.25\text{m}^3 = 250$  litres)
- Compost comes in bulk bags of 250 litres at £120 each
- Decoration for each trough costs £25
- **And....**
- Plants cost £4 each

Q

**What is the total cost of the project?** Include compost, decoration and plants for all 10 troughs.



**Extra challenge:** A new compost supplier has been found offering compost in bags of 50 litres at £22 each. How much money will this save?



# Fact Sheet 2

## Window Workout



Windows were replaced to make the building look much smarter.

At the beginning of the Roundhouse renovation project the windows were in need of repair. **40 needed replacing!** Special frames were made, and new glass was ordered. Specialist window fitters were contracted to install them.

- If the glass for each window cost £200
- The frames for each window cost £550
- The window fitters cost £300 per day

**And...**

- The window fitters were able to install 2 windows per day

Q

What is the **total** cost to replace the windows?

**Extra challenge:** We found out that the price for the window frames has suddenly gone up by 20% what is the new price for the project?

# Fact Sheet 3

## Office Space Income



In order to make the Roundhouse more financially sustainable for the future, parts of the building are being rented out as offices.

- There are 3 offices in total
- Office space 1 has a rental income of £610 per month
- Office space 2 has a rental income of £880 per month

**And....**

- Office space 3 has a rental income of £950 per month

Q

What is the total income for 1 year if all 3 offices are rented out in full?

**Extra challenge:** In the 1st year, the tenants for **office 2** only rented it for **6 months** and it was left vacant for the rest of the year. What is new total income for all 3 offices for the 1st year?



# Fact Sheet 4

## Wonderful Wall Art



An artist was contracted to create a wonderful work of art for the one of the walls at the Roundhouse. Can you tell what it is?

- The artist charged £60 per square meter plus materials
- The wall size is approximately 4m x 1.5m
- The wall had to be prepared using 1 tin of priming paint costing £46
- The artist used 14 cans of spray paint costing £12 each
- The wall was finished off with 1 tin of anti-graffiti paint costing £68

Q

What is the total cost of the wall mural?

**Extra challenge:** The artist said that if we had a another 4m x 1.5m wall painted in a similar way we would get a total of 10% knocked of the whole price of the 2 artworks. How much would it cost?



# Fact Sheet 5

## Brick Challenge



Many of the bricks at the Roundhouse were in poor condition and needed to be replaced. Because the Roundhouse is a Grade 2 listed building, we needed help from a special restoration team who were experienced in historic brickwork.

- The brickwork repair company charged £420 per day, plus the cost of the bricks
- 132 bricks needed to be replaced
- The replacement bricks cost £4 each
- 12 bricks could be replaced per day by the team

Q

What is the total cost for the brickwork repair?

**Extra challenge:** We needed to ask the brickwork repair company to come back a few months later to replace a further 12 bricks but their daily rate had gone up by 10%. How much did this extra bit of work cost?

# Reviving the Roundhouse

## Activity Answer Sheet

Use the fact sheets to answer the following questions:

### Courtyard Creations (Fact sheet 1)



Q What is the total cost of the planter project?

Top tip: Start by working out the volume of a trough (L x W x H), this will tell you how much compost you will need in m<sup>3</sup>.

Extra challenge:

### Window Workout (Fact sheet 2)



Q What is the total cost to replace the windows?

Extra challenge:

### Office Space Income (Fact sheet 3)



Q What would be the total income for 1 year?

Extra challenge:

### Wonderful Wall Art (Fact sheet 4)



Q What is the total cost of the wall mural?

Extra challenge:

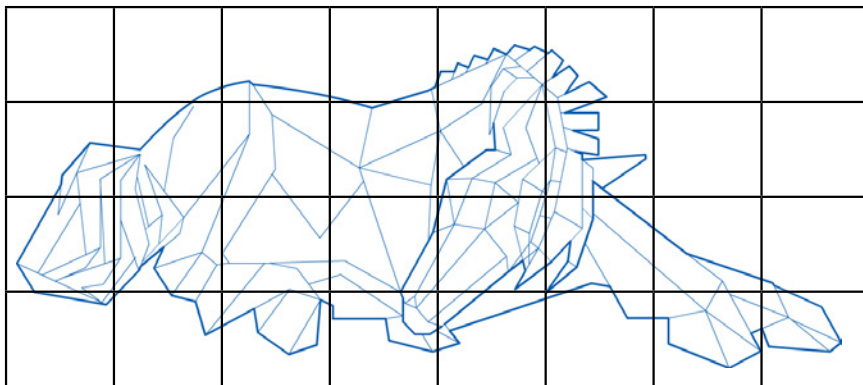
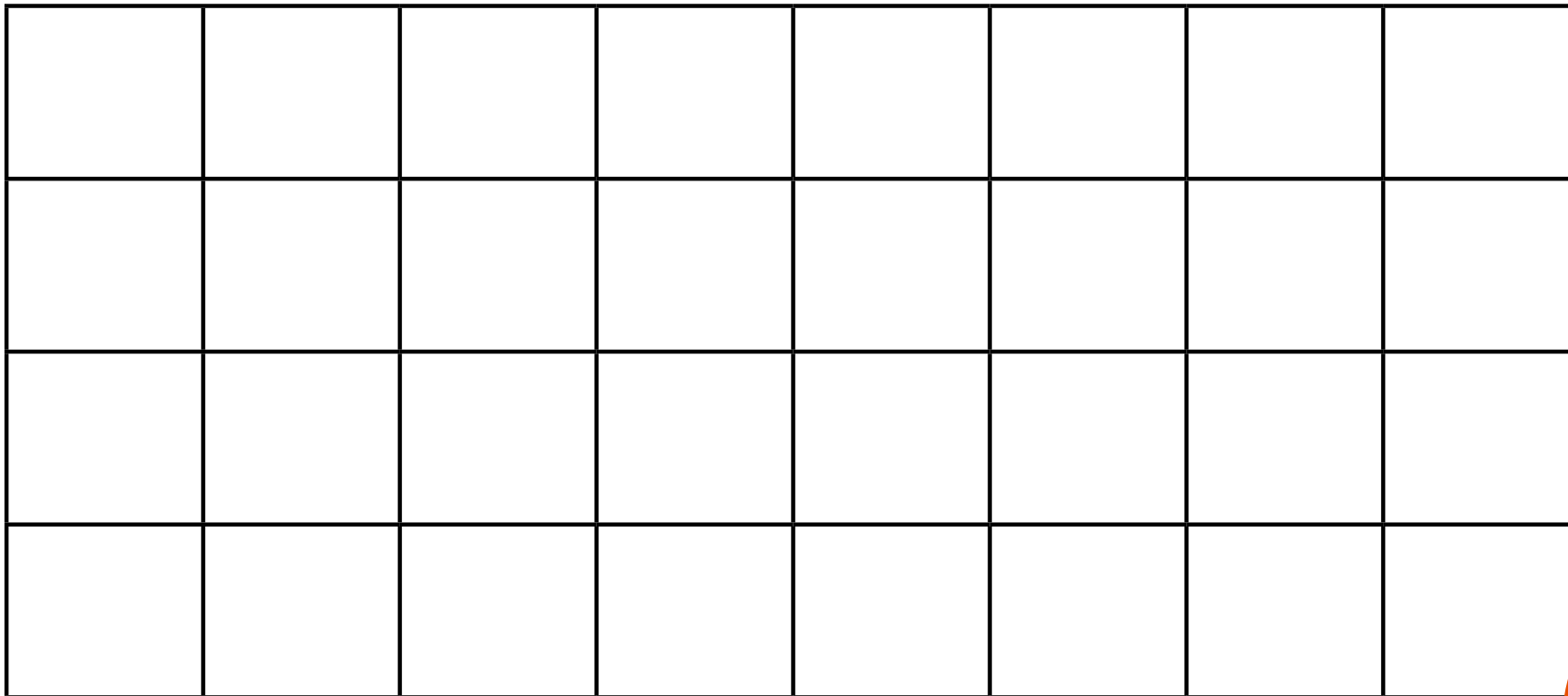
### Brick Challenge (Fact sheet 5)



Q What is the total cost for the brickwork repair?

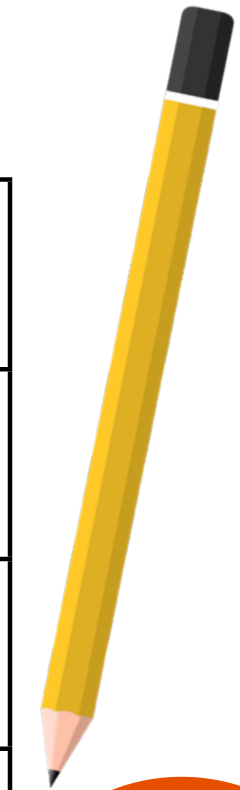
Extra challenge:

# Scaling-up Wall Art – Activity Sheet



**Your Task:** Use the grid drawing method to scale up the horse wall mural by 200%.

This technique was used by the artist to plan her mural and to transfer her design from her sketchbook onto the wall.



Later, why not create your own design for a wall mural – then use the grid method to create it on a **bigger** scale!