

# WHAT HAPPENS TO NOTTINGHAM'S RECYCLING?



Nottingham  
City Council



 Nottingham recycles

  
Carbon Neutral Nottingham 2028



Nottingham  
City Council

# LEARNING OBJECTIVE

**To know how materials are sorted using their properties in a Materials Recovery Facility and how these properties influence their recyclability.**

1. I can sort items that belong in the grey-lidded recycling bin.
2. I can explain what happens to recycling after it is collected.
3. I can describe how the MRF sorts different materials using their properties.





# KEY VOCABULARY

**sustainable**



Using Earth's resources responsibly so they last for the future.

**contamination**



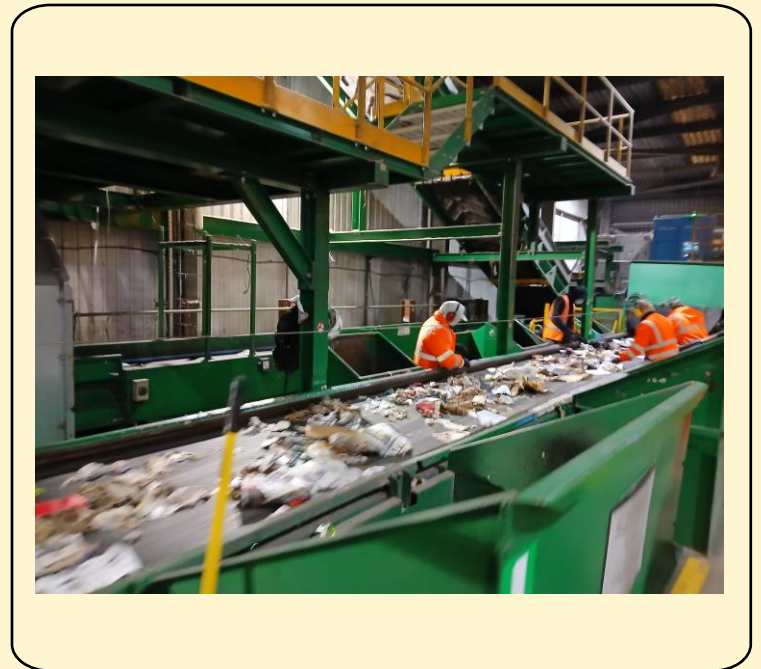
Dirty items that spoil recyclable materials.

**downcycling**

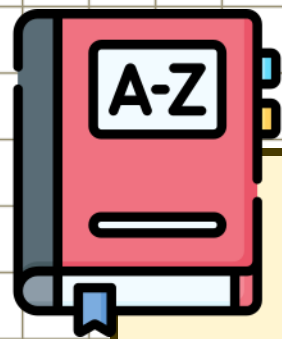


Recycling into a lower-quality, less useful material.

**Materials Recovery Facility (MRF)**



Where recycling gets sorted.



# CORRECT THE MISTAKES



**contamination**



**sustainable**

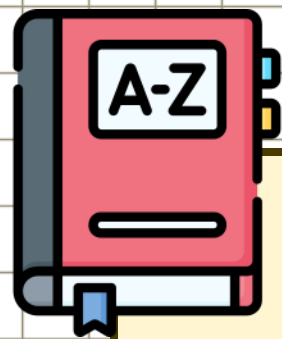


**Materials  
Recovery  
Facility**



**downcycling**





# CORRECT THE MISTAKES



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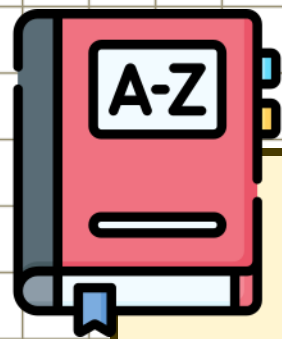
**sustainable**



**Materials  
Recovery  
Facility**



**downcycling**



# ANSWERS



**downcycling**



**sustainable**



**contamination**



**Materials  
Recovery  
Facility**





**Talk to your partner.**

**WHAT DO WE  
USE THE GREY-  
LIDDED BIN FOR?**



**The grey-lidded bin is where we put all our waste that can be recycled, including:**







Explain which items can be recycled in the grey-lidded bin.

Find the one item Bill is talking about.



The \_\_\_\_\_ should go in the grey-lidded bin because...



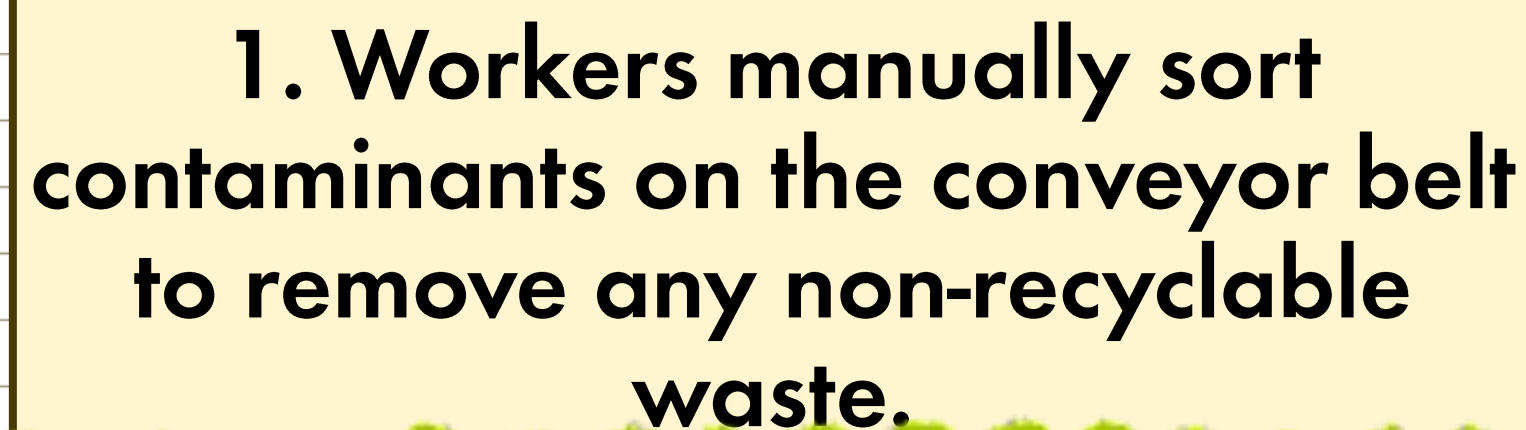
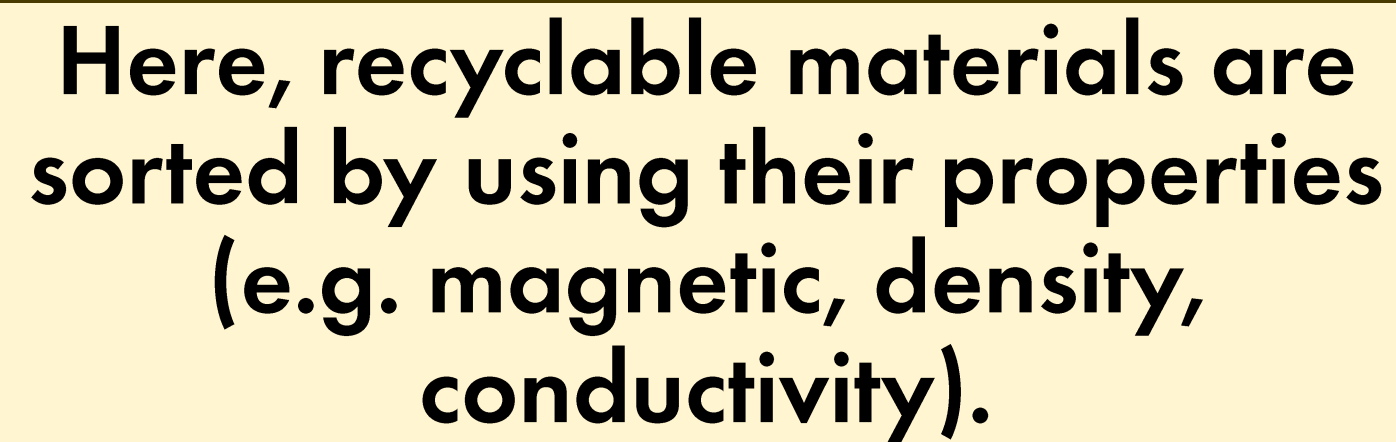


# WHERE DOES RECYCLABLE WASTE GO?



First, the bin lorry empties the grey-lidded bin and takes the recycling to the  
**Materials Recovery Facility.**









## 2. THE TROMMEL



Next, the materials are sorted in a large, rotating drum with holes – like a sieve. Smaller items fall through and continue on the conveyor belt, while larger items are removed.



Explain which material you think is sorted in the trommel.

Large cardboard items are sorted in the trommel.







### 3. THE BALLISTIC SEPARATOR



After, the materials are shaken on a tilted rack with ridges – a bit like a cheese grater. 3D items stay low and continue on the conveyor belt, while flat, 2D items move up and are removed.



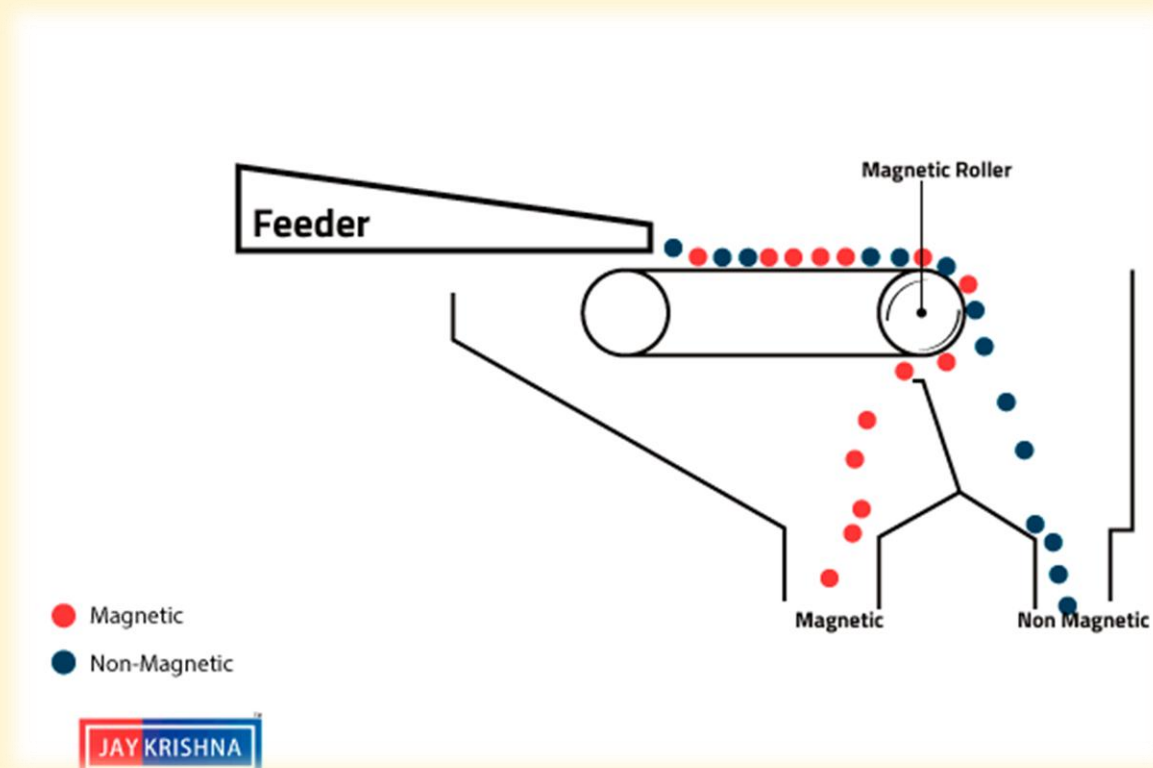
Explain which material you think is sorted in the ballistic separator.

Flat paper items are sorted in the ballistic separator.

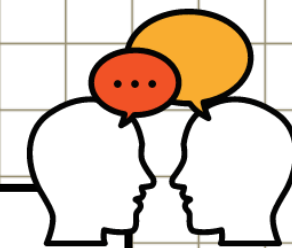




## 4. THE MAGNETIC SEPARATOR



Then, the conveyor belt passes a strong magnet. Non-magnetic materials continue on the conveyor belt, while magnetic materials are removed.



Explain which material you think is sorted at the magnetic separator.

**Magnetic metals containing iron are sorted at the magnetic separator.**







## 5. THE EDDY CURRENT



Next, the conveyor belt passes through an electric current. Materials that insulate against electricity continue along the conveyor belt, while electrical conductors are removed.



Explain which materials you think are sorted in the eddy current.

Aluminium items are sorted in the eddy current.

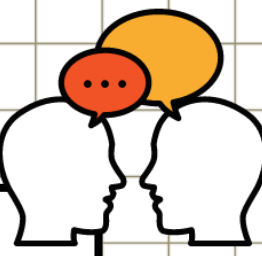




## 6. THE AIR CLASSIFIER



Afterwards, the conveyor belt passes through jets of air. The air pushes lighter materials onto the next conveyor belt, while heavier materials are removed.



Explain which material you think is sorted in the air classifier.

Glass items are sorted in the air classifier.







## 7. THE OPTICAL SORTER



Finally, the materials are scanned by an infrared laser to identify which type of plastic they are. Each of the seven types are then hit by a different jet of air to sort it into the correct chute.

**#6 - Polystyrene**

**#1 - PET**

**#2 - HDPE**







# AFTER THE CONVEYOR BELT...

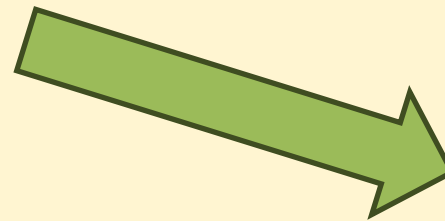
plastic



paper



The materials are stored separately in different holding bays.



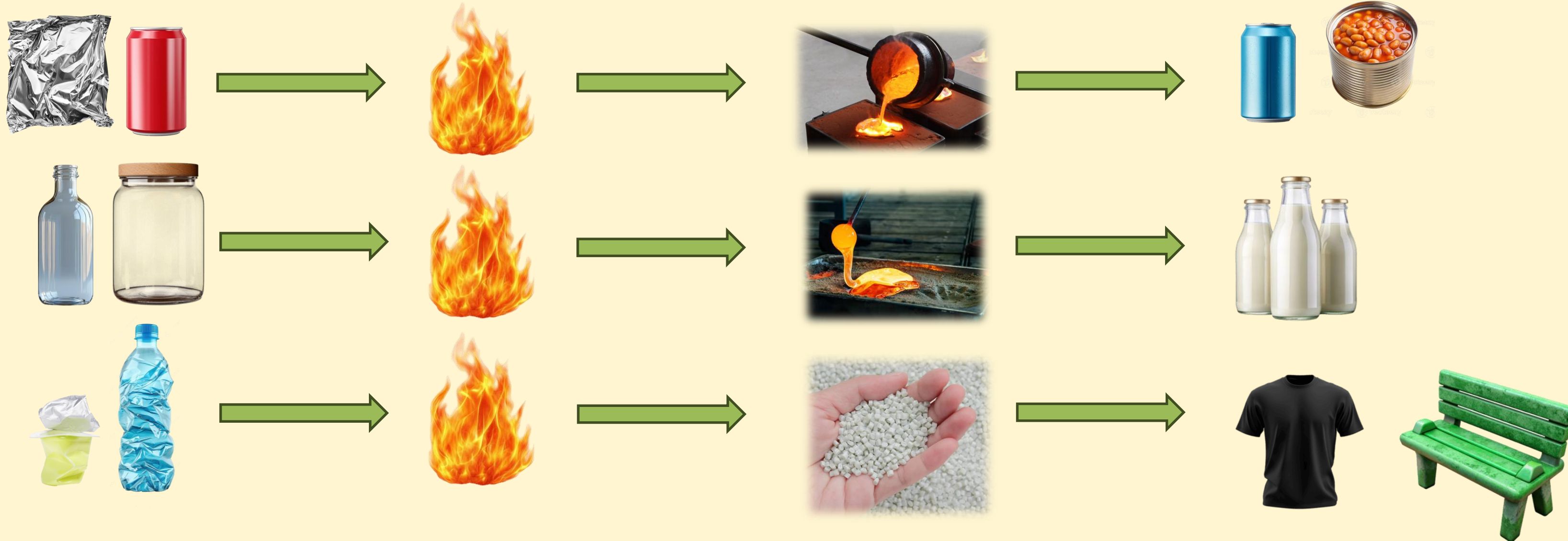
Finally, the materials are squashed into cubes, called bales.







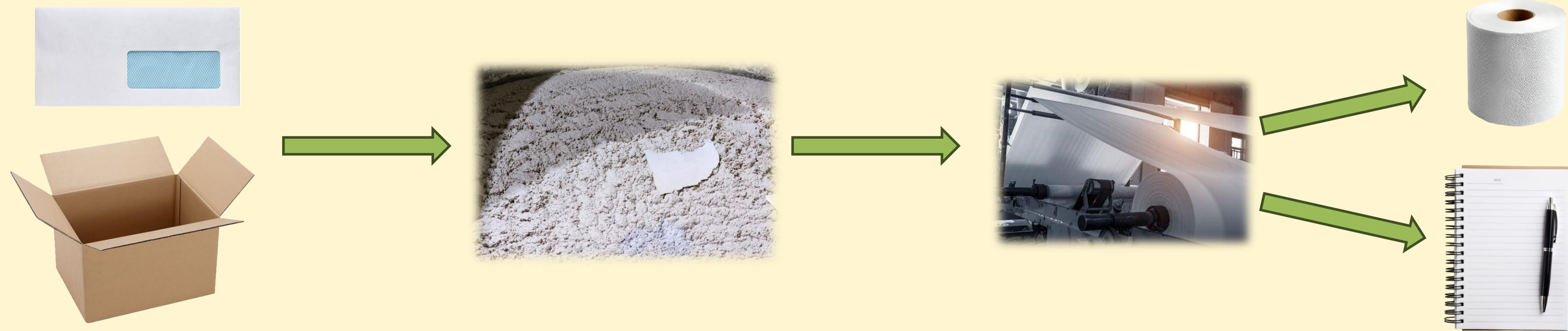
# WHERE DOES RECYCLABLE WASTE GO?



Metal, plastic and glass are melted and recycled into new products, saving energy and resources by reusing the resources we have already.

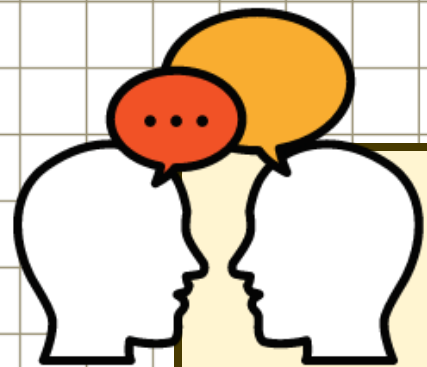


# WHERE DOES RECYCLABLE WASTE GO?

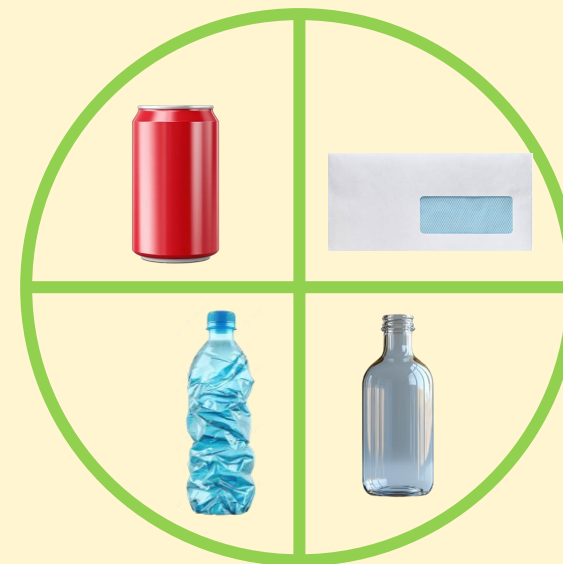


Paper and card is mixed with water and chemicals to make pulp, then dried into rolls of new paper.



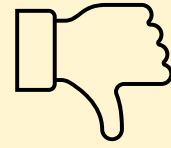


# EXPLAIN HOW NOTTINGHAM RECYCLES MATERIALS



Use these words in your explanation – how many points can you score?

1 point	2 points	3 points
grey-lidded bin recycle sort paper, glass, plastic, metal	MRF contamination material properties magnet	optical sorter air jets conveyor belt bale pulp

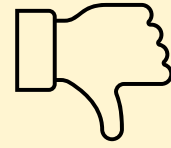


**TRUE, FALSE OR IT DEPENDS?**

**Yoghurt pouches are made of metal and plastic, so they can be recycled in the grey-lidded bin.**



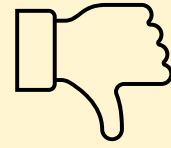




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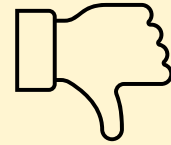


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**A pizza box can be  
recycled in the grey-  
lidded bin.**



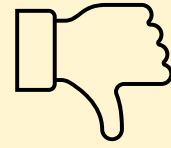




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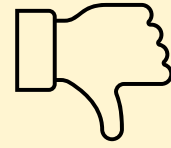


**TRUE, FALSE OR IT DEPENDS?**

**Glass and aluminium  
are infinitely recyclable.**



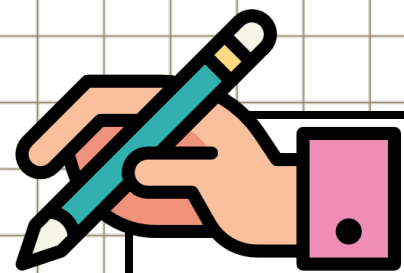












**TRUE, FALSE OR IT DEPENDS?**

**Glass and aluminium  
are infinitely recyclable.**





### RECYCLABLE MATERIALS

1. 	2. 
<hr/> <hr/>	<hr/> <hr/>
3. 	4. 
<hr/> <hr/>	<hr/> <hr/>
5. 	6. 
<hr/> <hr/>	<hr/> <hr/>
7. 	8. 
<hr/> <hr/>	<hr/> <hr/>

## ACTIVITY – CHOCOLATE BAR

Write down one item or material that can go in the grey-lidded bin on bin no.1. Swap your ideas with your classmates – who can fill all eight bins first?

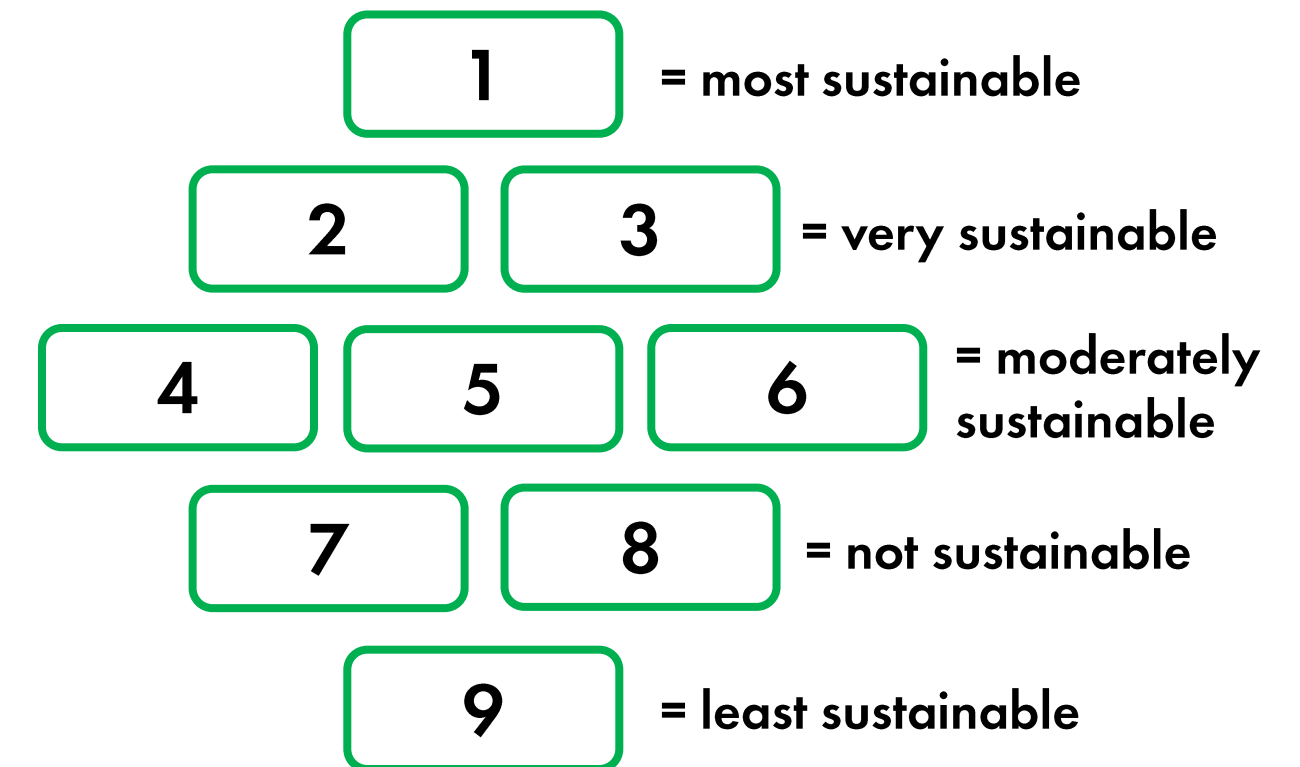


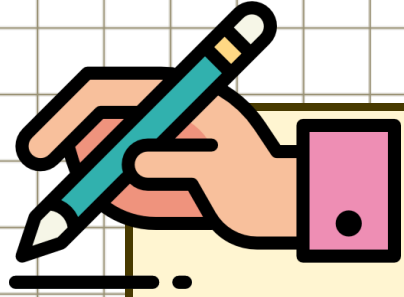


# DIAMOND 9

Read the material cards carefully to learn more about their sustainability.

Then, work in groups to rank the sustainability of the nine materials in a diamond pattern, from most to least sustainable.





# ACTIVITY – MRF STORYBOARD

Use the storyboard to track the journey of recyclable materials through the MRF. Write a caption to describe what happens.

**1**

**2**

**3**

**4**

**5**

**6**

recycling

contamination

MRF

conveyor belt

sort

properties

size

2D and 3D

magnetic

conductor

aluminium

plastic

infrared laser





# ACTIVITY – INVESTIGATE

Check the recycling bins in your school to see if the right materials are in there.



- ☐ paper and card
- ☐ plastic bottles
- ☐ cardboard
- ☐ clean foil
- ☐ crisp packets and sweet wrappers



- ☐ used tissues
- ☐ dirty items
- ☐ pencil shavings
- ☐ drink and yoghurt pouches

