

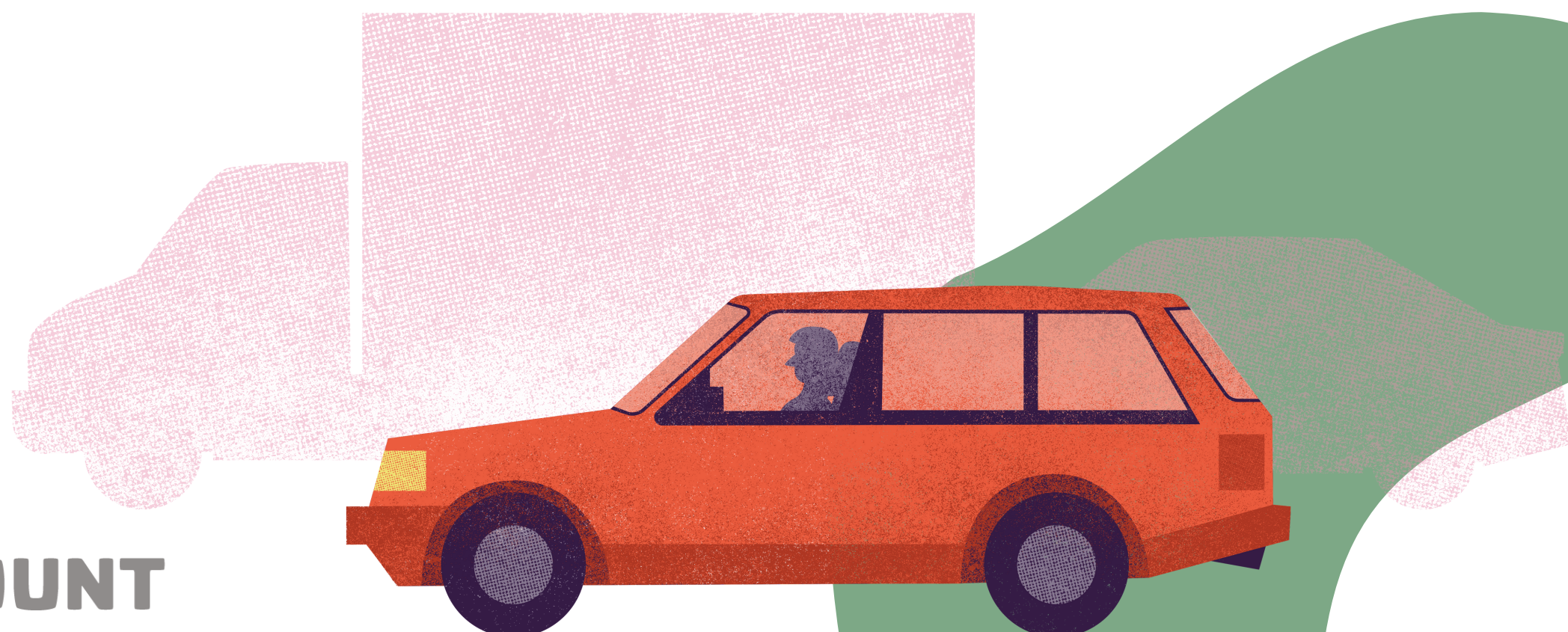
WeCount



Citizen science for sustainability

KS2 Worksheets

This pack is part of DETI's future cities series. All resources available at www.curiosityconnections.net



Pack overview

This pack includes 13 curriculum-linked **Geography, Art, Science, English** and **Design and Technology** activities, suitable for classroom delivery or home schooling. There is also a bonus worksheet, suitable for any students who completes their work before the end of the class.

Geography and Art

1. Mobility and me: a mapping task for pupils to document how they feel on their route to school (using a map and key)

2. How does your street move?: a drawing exercise to depict how our streets look like today and envision how we would like them to look in the future

Science

3. Data explorers: a data interpretation and graph making activity to understand street-level traffic data in a given street

4. Counting traffic: an exercise to count transport outside school gate (+ optional additional activities to measure **(4b)** noise, **(4c)** speed, **(4d)** smells and **(4e)** document obstructions if preferable and you have the resources)

English

5. My journey matters to me: a comprehension and critical thinking task to compare different opinions on local traffic issues

6. A postcard for our future: a persuasive writing challenge to tell the authorities about things they should do to make pupil's vision for the future a reality

7. Clean air top trumps: a debating card game to assess which transport mode is best, according to several factors, and why

8. I love to travel by...: a writing exercise for pupils to express their interests and explain why

Design and Technology

9. Design a bike for the future: a creative task for pupils to modify a bike to suit their needs

Note

Each activity is expected to last 20 minutes. All activities list what resources are required, so you can prepare all you need in advance. You may wish to modify some of the activities to better suit the abilities of your pupils, or to make relevant for your location. These activities can be delivered independently, combined for delivery in one or several lessons, or used alongside the accompanying WeCount School Assembly PPT. A WeCount Activity PPT has also been provided to support classroom delivery. Both PowerPoints can be modified to suit your needs.



Curriculum links

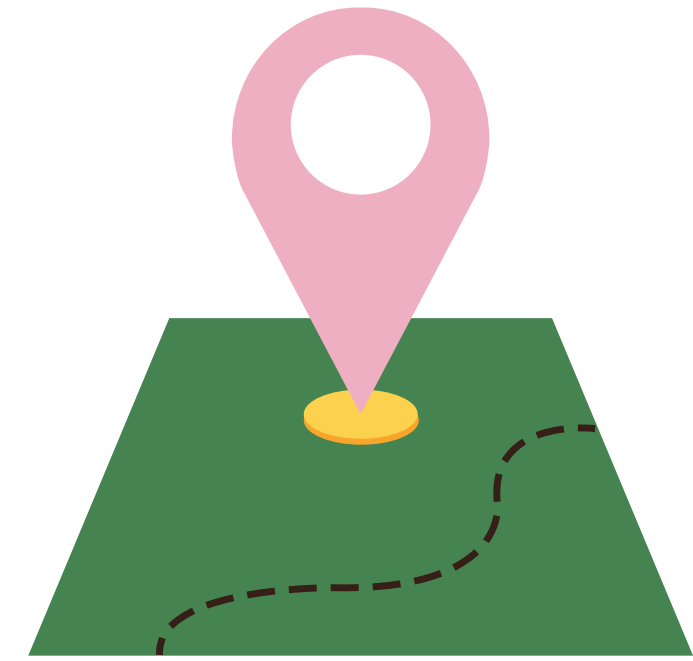
ACTIVITY	SUBJECT	CURRICULUM LINK	PAGE
1. Mobility and me	Geography and Art	Name and locate counties and cities of the United Kingdom, geographical regions and their identifying human and physical characteristics, key topographical features (including hills, mountains, coasts and rivers), and land-use patterns; and understand how some of these aspects have changed over time.	3
2. How does your street move?		Use maps, atlases, globes and digital/computer mapping to locate countries and describe features studied. Use fieldwork to observe, measure record and present the human and physical features in the local area using a range of methods, including sketch maps, plans and graphs, and digital technologies.	4
3. Data explorers	Science	Working scientifically Asking relevant questions and using different types of scientific enquiries to answer them Setting up simple practical enquiries, comparative and fair tests Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables Reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions Identifying differences, similarities or changes related to simple scientific ideas and processes Using straightforward scientific evidence to answer questions or to support their findings.	5
4a. Counting traffic		7-11	
b. Measuring noise			
c. Measuring speed			
d. Counting obstructions			
e. Smelly maps			
5. My journey matters to me	English	Reading comprehension Checking that the text makes sense to them, discussing their understanding and explaining the meaning of words in context Asking questions to improve their understanding of a text Drawing inferences such as inferring characters' feelings, thoughts and motives from their actions, and justifying inferences with evidence Predicting what might happen from details stated and implied Identifying main ideas drawn from more than one paragraph and summarising these	12
6. A postcard for our future		Persuasive writing Discussing words and phrases that capture the reader's interest and imagination. Write from memory simple sentences, dictated by the teacher, that include words and punctuation taught so far. Checking that the text makes sense to them, discussing their understanding and explaining the meaning of words in context. Asking questions to improve their understanding of a text.	15
7. Clean Air Top Trumps		Learning grammar. Using present, past and future tense.	16
8. I love to travel by...		Critical thinking	18
9. Design a bike for the future	Design and Technology	- Use research and develop design criteria to inform the design of innovative, functional, appealing products that are fit for purpose, aimed at particular individuals or groups - Generate, develop, model and communicate their ideas through discussion, annotated sketches, cross-sectional and exploded diagrams, prototypes, pattern pieces and computer-aided design	19

Worksheet one

Mobility and me

You will need:

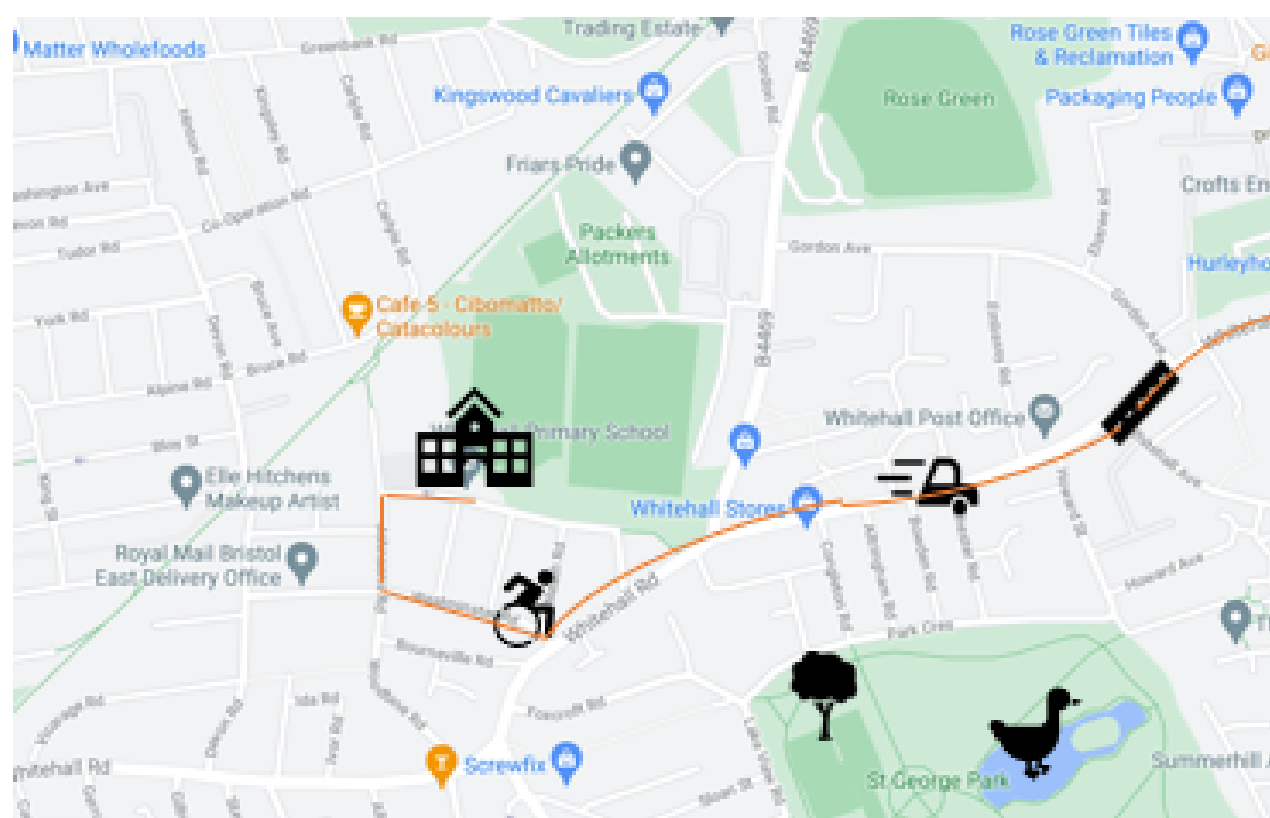
- A print out of a map covering your route to school
- Tracing paper
- This worksheet
- Paper, pens or colouring pencils and glue
- (If homework) 10 minutes extra before you usually leave for school



Task:

1. Before next class, draw your route to school on top of the printed map using tracing paper. You can ask the teacher to print out the map if you need.
2. Glue the map to a larger piece of paper and add a key.
3. On your journey to school, spend some time observing things on your way that affect your route and how you feel. For example, notice if there are cars on the pavement blocking your path, or if certain smells makes you feel a certain way.
4. Add these observations to your map. Add each on to your key.

Example



- Key**
- School – it makes me feel safe, but it is cold!
 - Roads – they allow me to get to school but are noisy
 - Fast cars – they are scary
 - Trees – they make me feel calm
 - Ducks – I love to watch them at the lake
 - Access – I struggle to cross the road here (there isn't a drop kerb)
 - Route to school

Why do you take this route to school?

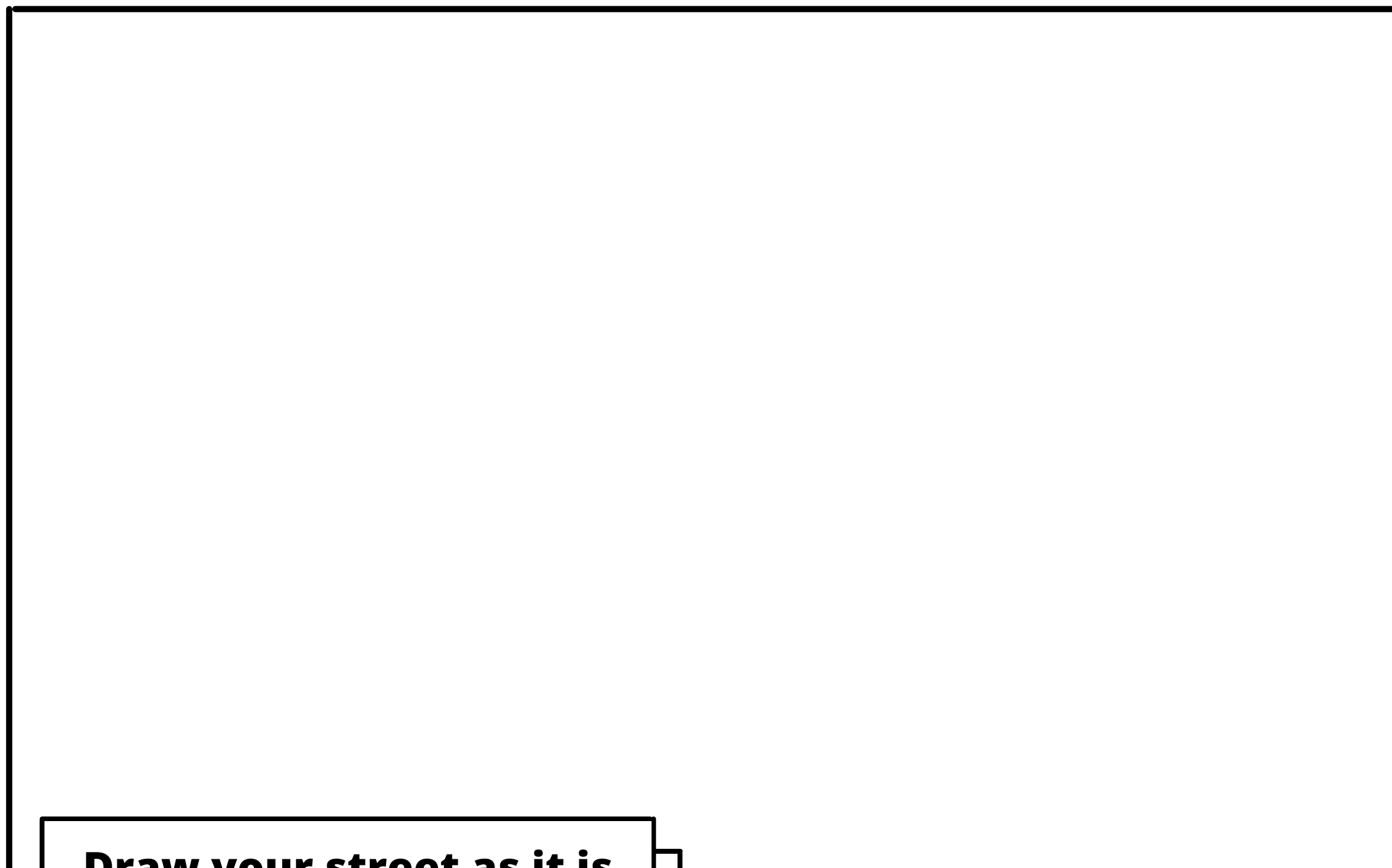
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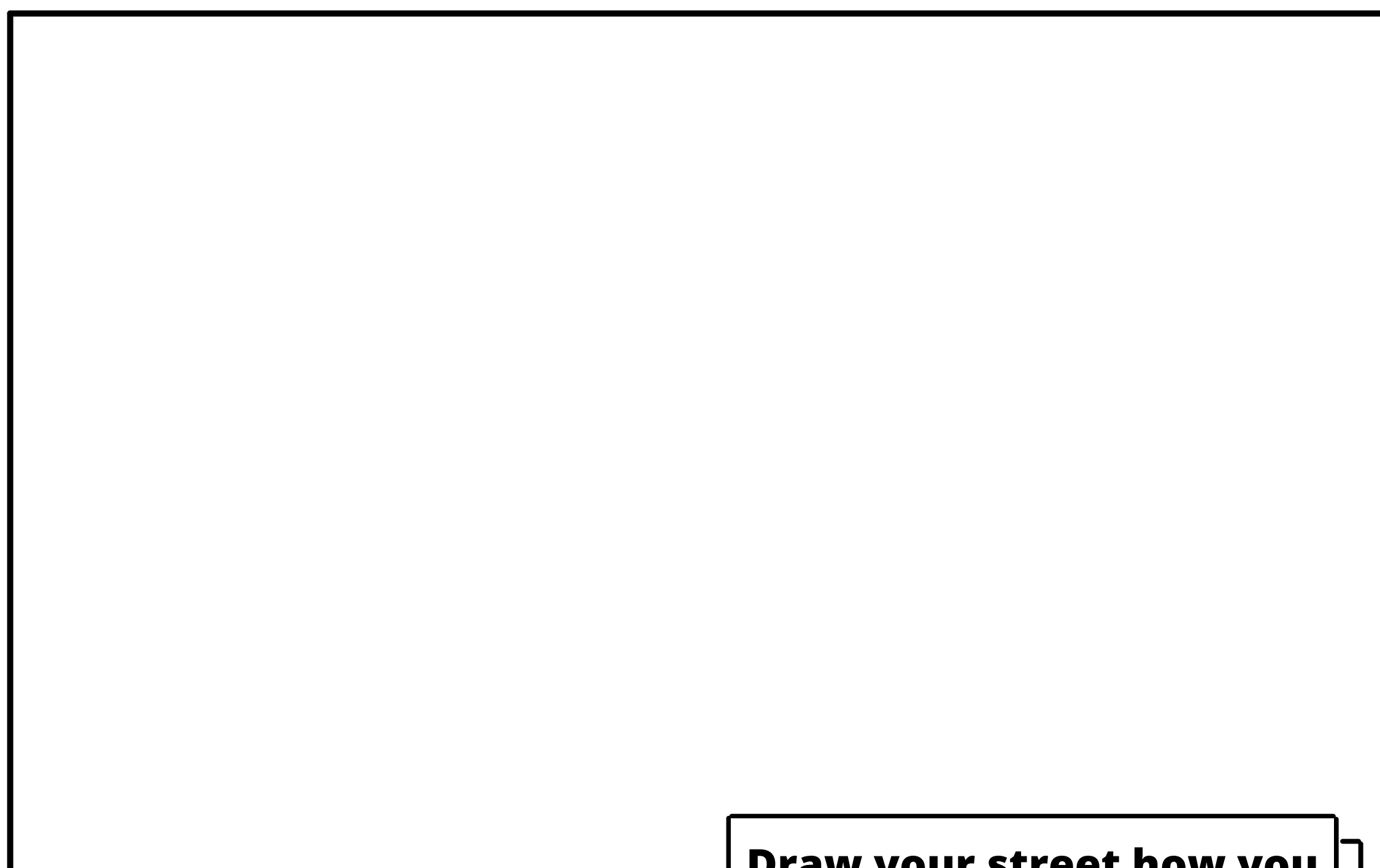
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Worksheet two

How does your street move?



**Draw your street as it is
today**



**Draw your street how you
would like it to be**

Worksheet three

Data explorers

You will need:

- This worksheet
- Paper, a pen/pencil and colouring pencils

Task:

1. Look at the three graphs, then fill out the questions below
2. Draw and label a graph to show the number of different transport types.

QUESTIONS

Write how many of each transport type you see:

Transport type	Number
Cars	
Walkers	
Bicycles	
Heavy vehicles	

Which day has more traffic? (circle the correct answer)

Friday Saturday

What is the most frequent car speed? (circle the correct answer)

0-10 kmh 10-20 kmh 20-30 kmh 30-40 kmh

40-50 kmh 50-60 kmh 60-70 kmh 70+ kmh

How much is this speed in mph? (0.6 kmh = 1 mph)

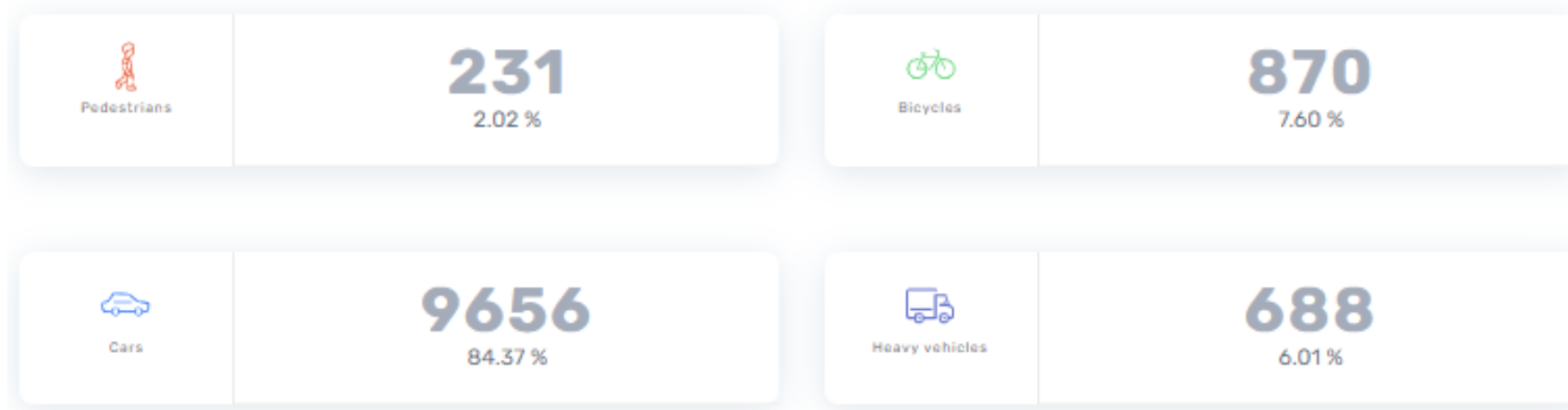
.....kmh x 0.6 =



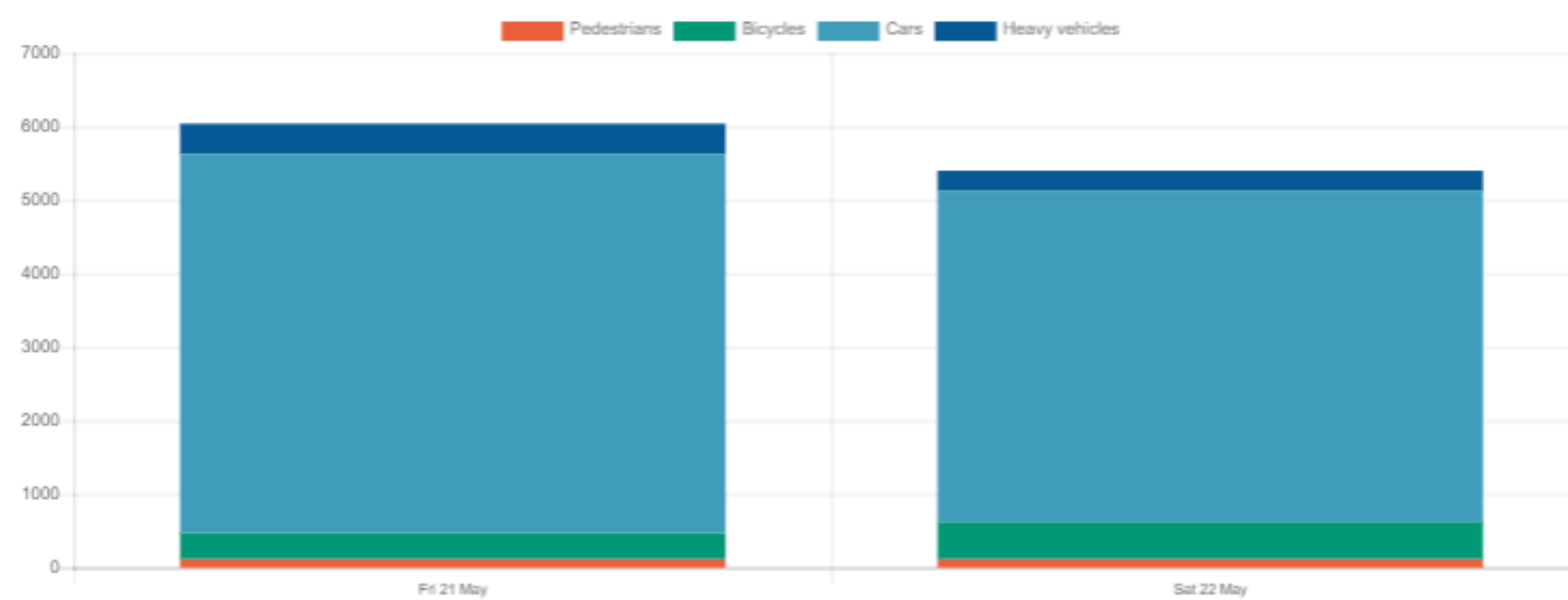
Worksheet three

Data explorers

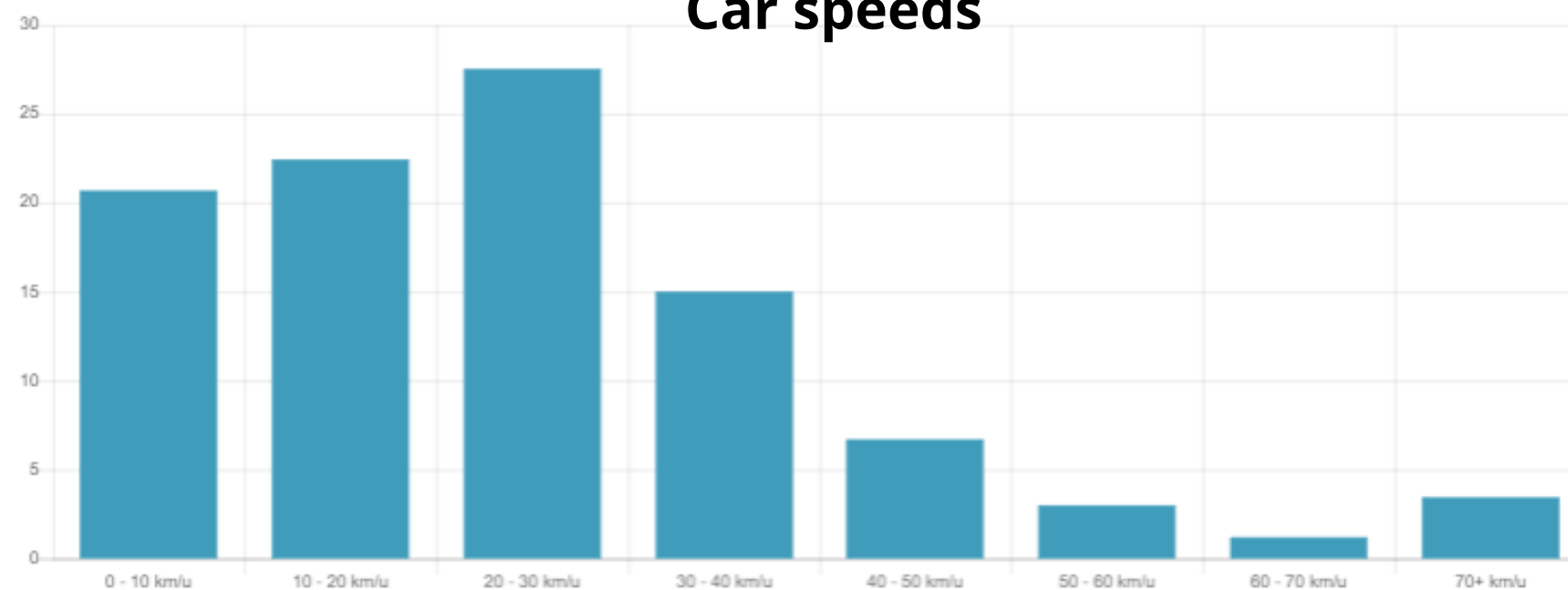
The number of each transport type over a 24 hour period



Total traffic, each day



Car speeds



Transport graph:



Worksheet four A

Counting traffic

You will need:

- This worksheet
- Paper, pen and clipboard
- Adult supervision

Task:

1. Choose a date and time to record traffic outside, on the road by the school
2. With supervision from an adult or teacher, head to your location and begin counting.
3. Fill out the air pollution log, writing the types of vehicles on the left-hand column and tallying the number of times you count them on the right-hand column.
4. Draw what you see, labeling the road and the main objects you observe related to traffic, like parked cars, cycle parking, pot holes or speed cameras.

Air Pollution Log

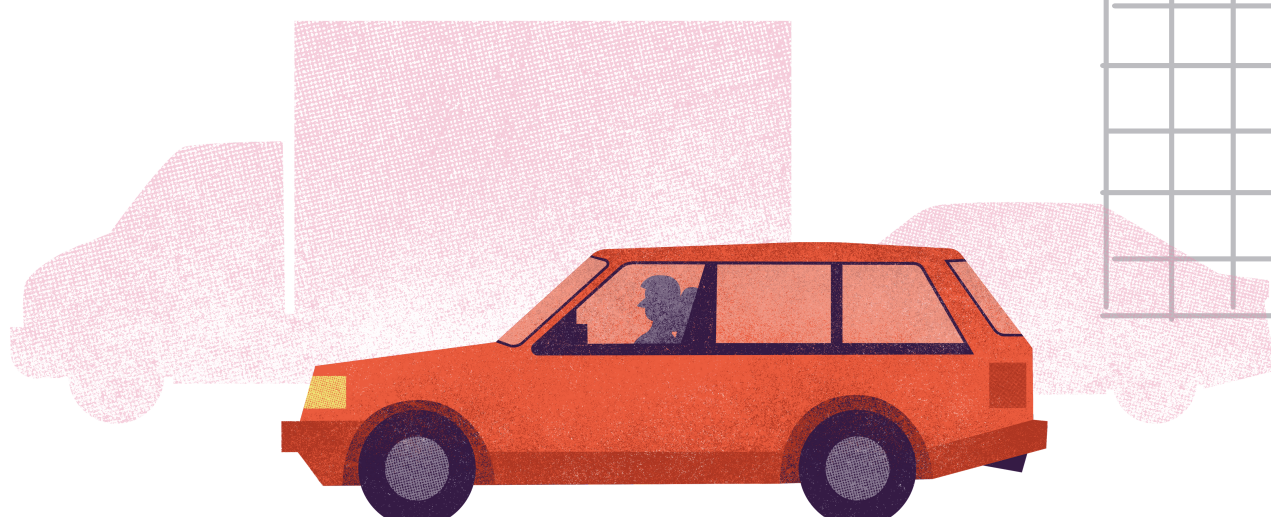
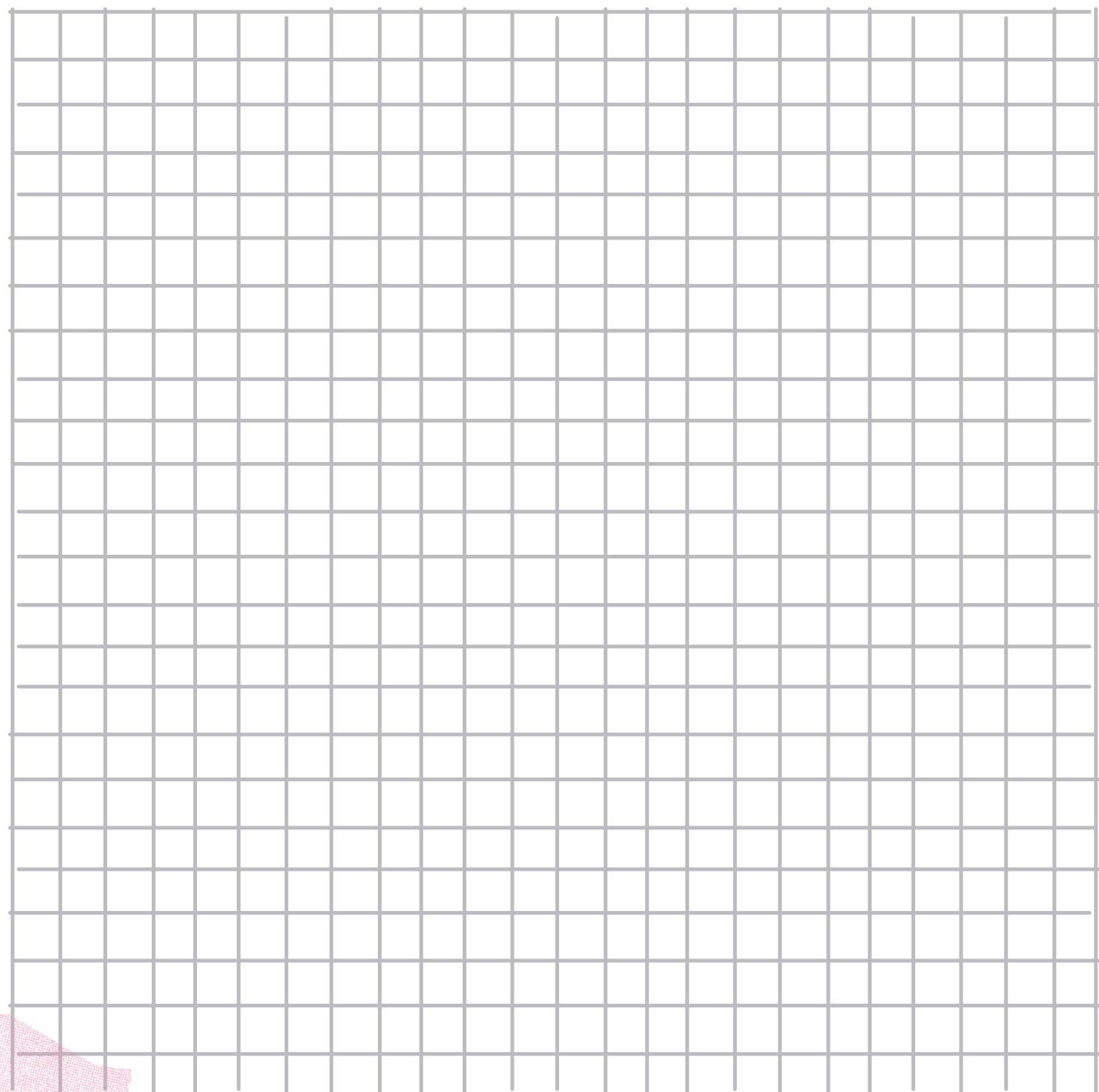
Transport type	Tally

Time of day:

Day of the week:

Weather conditions:

Sketch of location



Worksheet four B

Measuring noise levels

You will need:

- map of your chosen street/area
- sound level meter or equivalent app
- paper, pen and clipboard
- adult supervision

Task:

1. Decide on a date and time to record noise levels outside, on the road by your school.
2. Ask your teacher for a sound level meter
3. With supervision from an adult or teacher, head to your location and begin recording.
4. Fill out the Noise Pollution Log, writing the types of noise on the left-hand column and recording the intensity of noise, in decibel units (dB), on the right.
5. Draw what you see, labeling the road and the main objects you observe related to noise, like a nearby motorway, nursery, factory or road works.

Noise Pollution Log

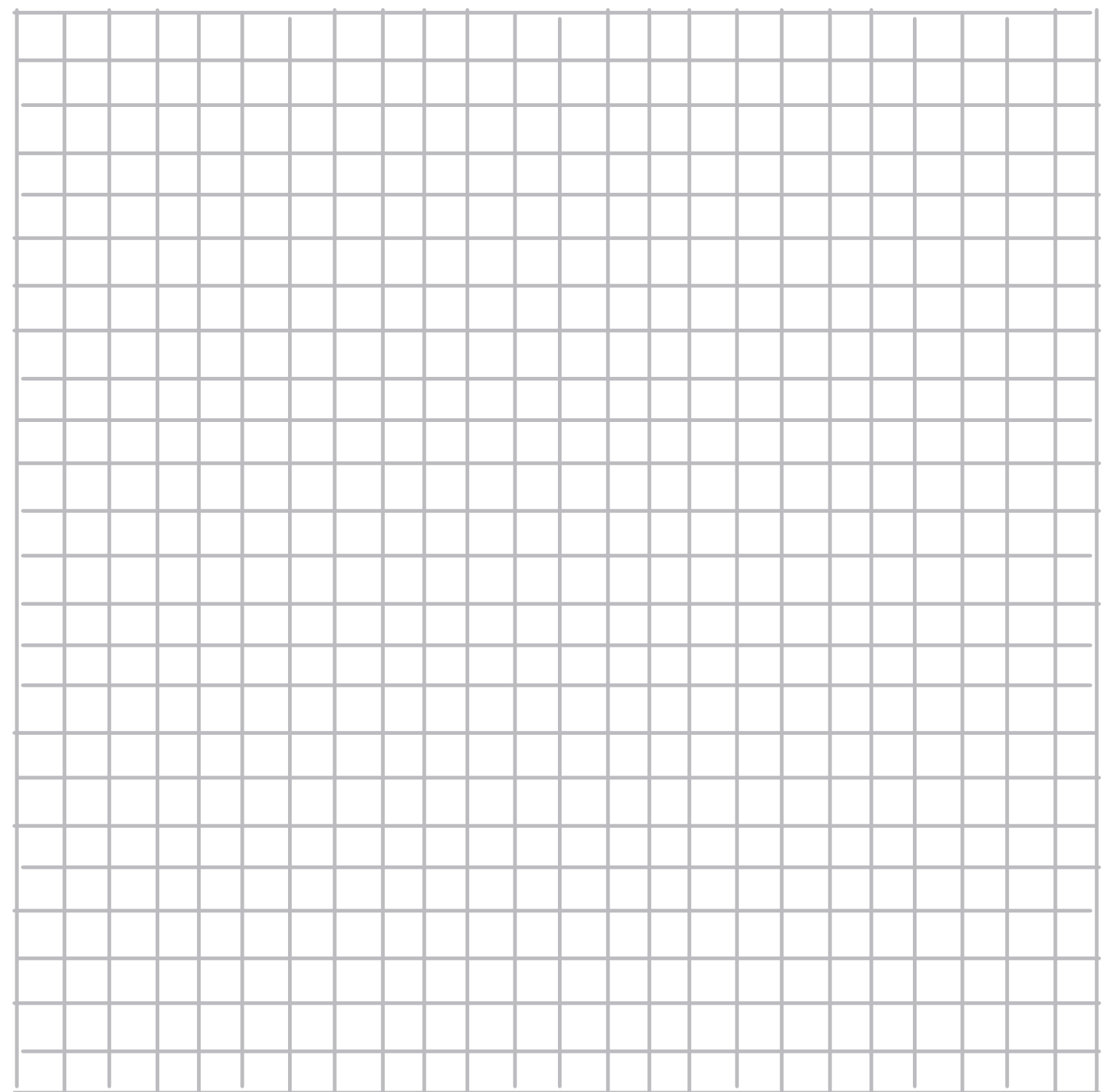
Type of noise	Decibel units (dB)

Time of day:

Day of the week:

Weather conditions:

Sketch of location



Worksheet four C

Measuring speed

You will need:

- Map of your chosen street/area
- Speed measuring device
- Adult supervision
- Pen/pencil and paper

Task:

1. Decide on a date and time to record speed levels outside, on the road by your school.
2. Ask your teacher for a speed measuring device.
3. With supervision from an adult or teacher, head to your location and begin recording.
4. Fill out the Speed Log, recording the transport type on the left-hand column and the speed, in Miles per hour (MPH), on the right.
5. Draw what you see, labeling the road and the main objects you observe related to speed, like speed bumps or speed cameras.

Speed Log

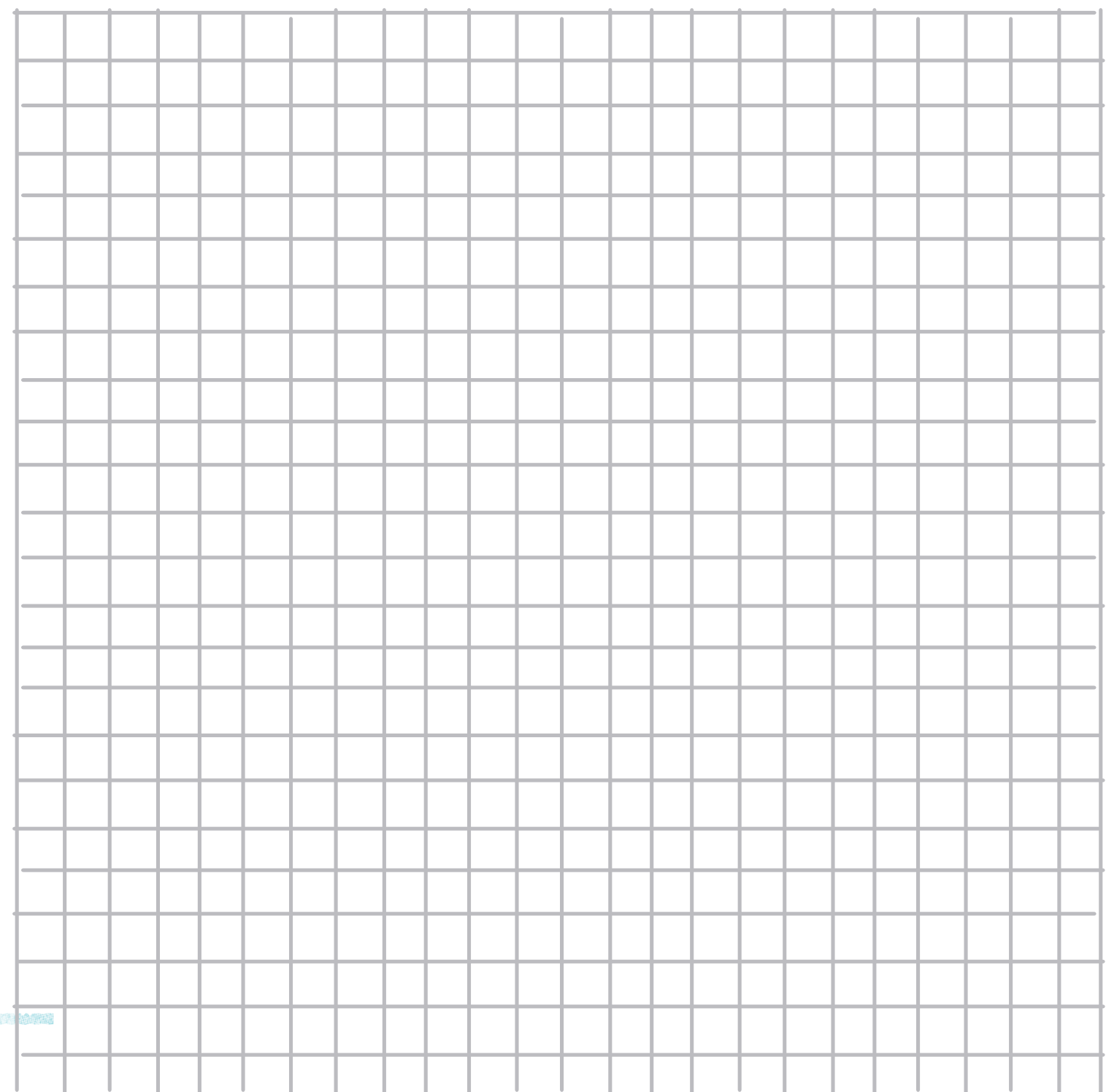
Transport type	Miles per hour (MPH)

Time of day:

Day of the week:

Weather conditions:

Sketch of location



Worksheet four D

Counting obstructions

You will need:

- map of your chosen street/area
- paper, pen and clipboard
- optional camera
- adult supervision

Task:

1. List the types of obstructions you see outside your school/on your journey to school that may prevent people from completing their journey by bike or on foot. Include who you think these obstacles affect (e.g. cyclists, people in wheelchairs)
2. Draw your route and the obstructions in the space provided.
3. Write down some suggestions for how to remove these obstructions.

Obstructions log

Type of obstruction	Who it affects

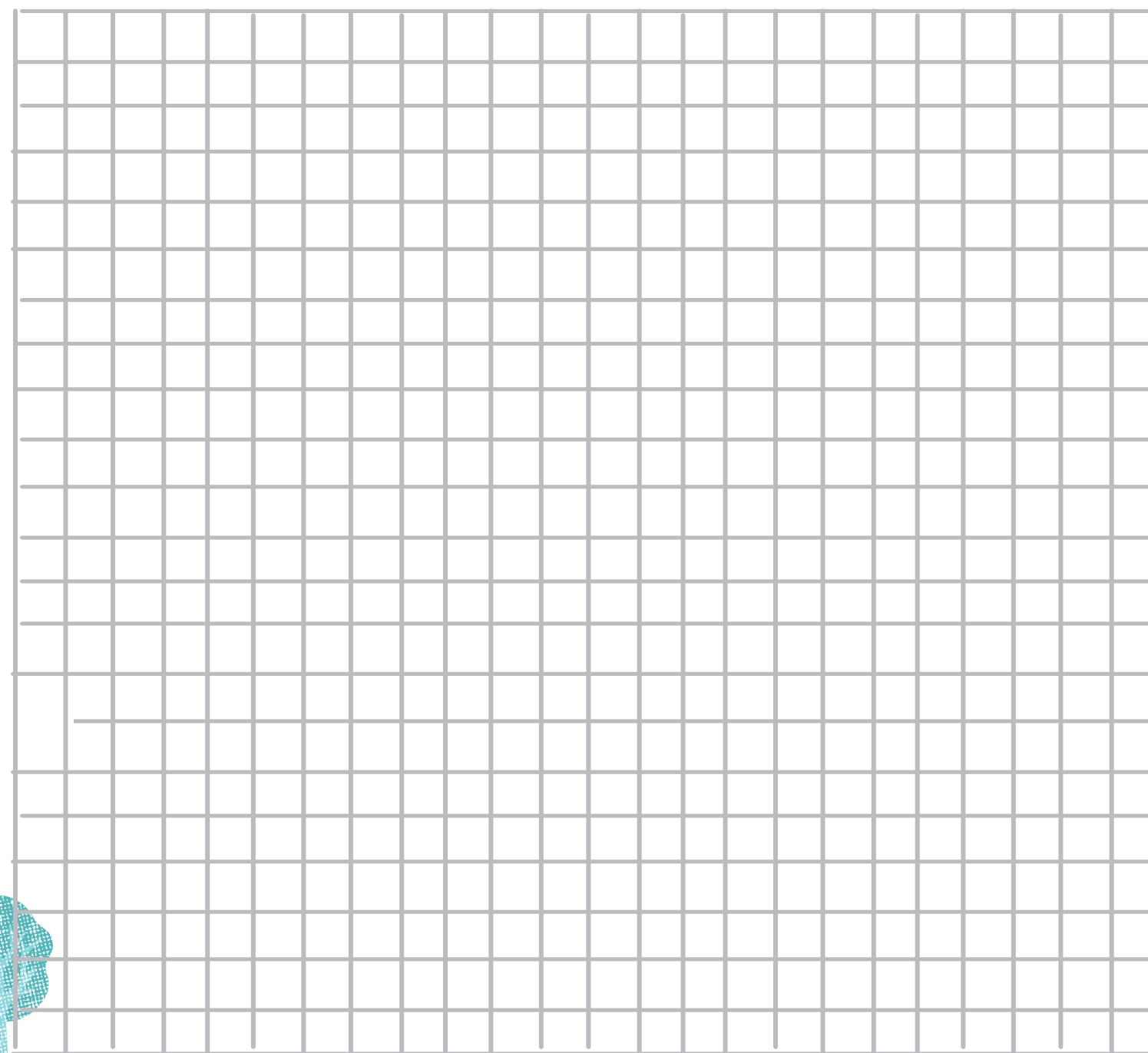
Date and time:

Weather conditions:

How might these obstructions be removed?

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Sketch of location



What are obstructions?

They are things that prevent people from travelling safely and quickly. These include: high kerbs, cars on the pavement, dog poo, rubbish and broken pavements. Can you think of any others?



Worksheet four E

Documenting smells

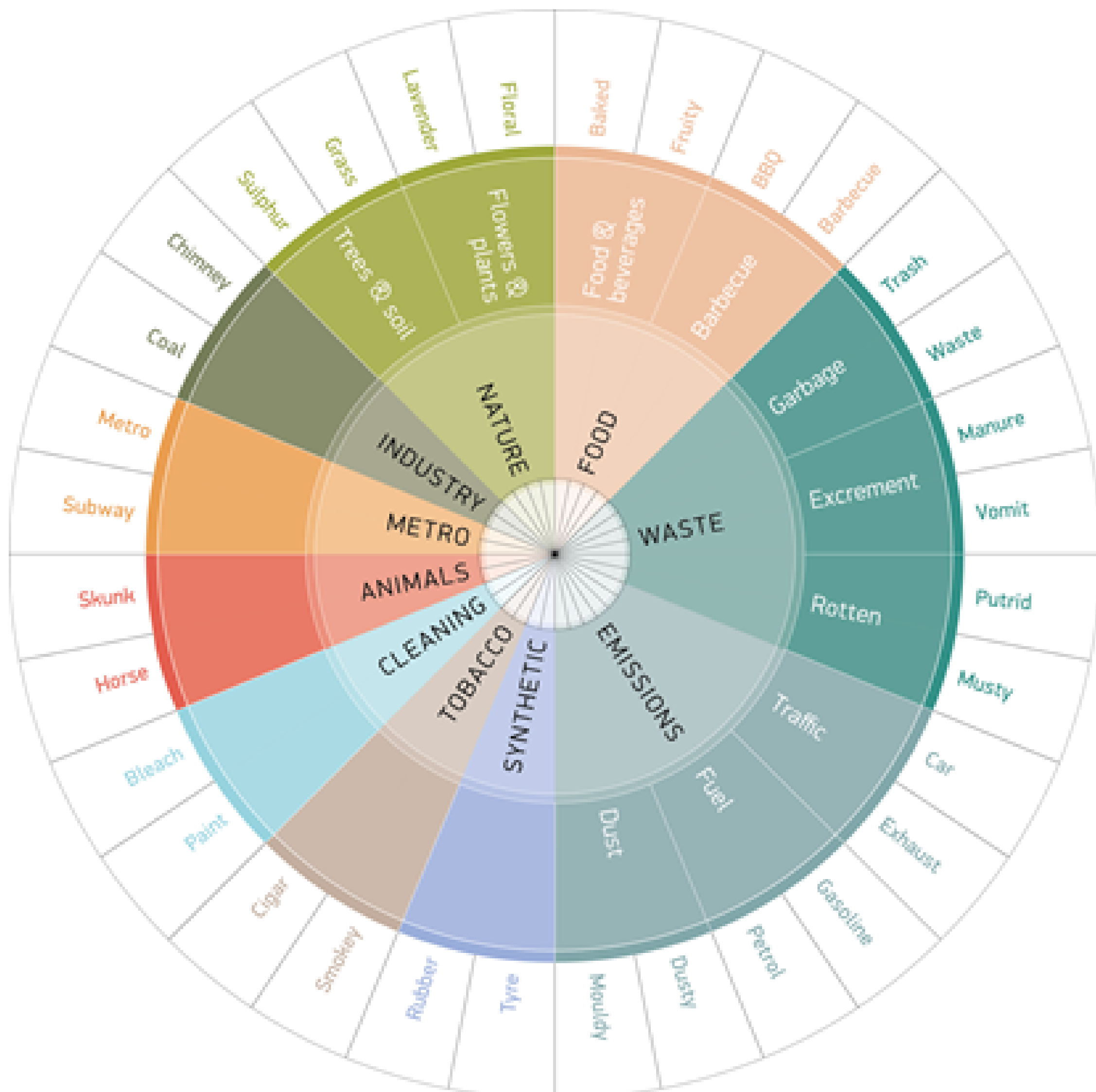
Smells are a sign of what's in the air.
Smells are chemicals. Some chemicals are good, like the smell of flowers or oranges, some are bad, like petrol or rotten food.

You will need:

- aroma wheel
- map of your chosen street/area
- paper, pen and clipboard

Task

1. Think of a walk you take frequently. How often do you stop to smell different parts of your journey?
2. Plan this walk/or agree on a common route to school or around your neighbourhood.
3. Print the map and draw your route.
4. Print this page so you have a copy of the aroma wheel on your walk.
5. Take your walk, stopping along the way to document smells on your map. Label and add a key.



Urban Smellscape Aroma Wheel

(depicting background and episodic aromas only)
Aielo, L. McLean, K. Quercia, D. Schifone, R. 2015

Worksheet five

My journey matters to me

You will need:

- This worksheet
- Paper and a pen/pencil

Task:

1. Pupils take it in turns to read a paragraph out loud in class, from the information in the right-hand column.

2. Answer the following questions:

- Which person has three cars?

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- Who loves taking the bus?

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- Why does Sally struggle to travel?

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- What are the main reasons why the cyclists ride their bikes?

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- What are the main concerns of the residents? List all of them.

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- If new bicycle parking was to be built, do you think everyone would be happy?

Explain your answer.

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What are your concluding thoughts from this exercise?



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Worksheet five

My journey matters to me

Five residents on the same street were asked about how they travel. This is what they said:

Sasha Pearson:

I am 24 years old. I love to travel by bicycle for my health and for the planet. I like that there is a cycle lane close to my house. I don't like how noisy and polluted the road is. It would be great if there could be more cycle lanes and fewer cars.

Sally Jones:

I am 55 years old. I travel by mobility scooter. I like that there are shops close by. I don't like that the pavements are uneven and cars park on them. Often, I struggle to get to the local shops as people are parked on the pavements. I wish people would think about people in wheelchairs and mobility scooters.

Abdul Ibrahim:

I am 48 years old. I travel by car - I have three. I like that there is space for all of my cars. I don't like that people want more space for bicycle parking, it annoys me. Everyone should be able to have a car as it means you can travel out of the city at weekend, and drive to the supermarket to collect food for the week.

Adam Smith:

I am 13 years old. I take the bus to school and to see my friends. I like that the bus stop is close by. I don't like that my school and friends are too far by bicycle or walking. It is also difficult travelling by bus sometimes. The bus is sometimes full and I have to wait more than half an hour for the next one.

Jazmine Leah:

I am 33 years old. I travel by bicycle and love that it is free exercise. I like that there is a path near my house only for walkers, cyclists and scooters. I don't like how noisy and polluted the road is. The road is particularly bad during rush hour, when people are travelling to work. Why don't more people walk, cycle or get the bus?



Worksheet five (homework)

My journey matters to me

Has transport in cities always been like this? Let's research how our parents and grandparents used to travel around their town/city when they were younger.

You will need:

- This worksheet
- Paper and a pen/pencil



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Homework:

1. Ask them what their favourite form of transport is (including walking and cycling) and why.
2. Ask them about the biggest changes they have seen to the way people travel over the years.
3. Ask them what they would like to see change to allow more people to walk, cycle or use mobility scooters.
4. Write down your answers on this worksheet.
5. Be prepared to present your findings in class next time.



Worksheet six

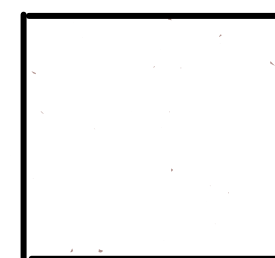
A postcard for our future

Task:

1. Cut out the front and back of the postcard.
2. Write your request to your local councillor, the mayor or the head teacher, in the blank space on the back of the postcard. Then, write their address on the right-hand side.
3. Glue together the front and back.
4. Post.



WeCount - for sustainable
travel and mobility





Worksheet seven

Clean air top trumps

We are going to play Clean Air Top Trumps.

You will need:

- A print out of this worksheet
- Pens/pencils
- Scissors
- Adult supervision

Task

1. Carefully cut out the cards carefully
2. Look at the example card with the bus.
3. Draw pictures of different types of transport and ways to travel (e.g. bicycle, walking, car) in each of the cards square boxes.
4. Mark out of 10 how low or high that type of travelling is

Think: how hard it is to do this – what skills do you need? What equipment? how expensive is it? how fast will journeys be? how much harm will this cause to the environment?

5. When you are ready, read the instruction card and begin playing!

Instructions

We have the power to improve our air and our climate. Use these cards to talk through possible solutions to air pollution and climate change, and rank which solutions are the best for people and the environment.

To start the game, shuffle and deal all the cards face down. Each player holds their cards so that they can see the top card only. The player to the dealer's left starts by reading out a category from the top card (e.g. easy, cheap). The other players then read out the same category from their cards. The winner of the round is the person with the biggest number.

You can create your own cards using the blank cards provided.

www.claircity.eu

Can you find the least polluted route? Help your friends reduce their exposure to air pollution and make their way safely to school

www.claircity.eu

Easy
Cheap
Fast
Environment

www.claircity.eu

**Take the bus to school,
for shopping and hobbies**

Easy	3
Cheap	5
Fast	5
Environment	7

www.claircity.eu

Easy
Cheap
Fast
Environment

www.claircity.eu

Easy
Cheap
Fast
Environment

www.claircity.eu

Worksheet seven

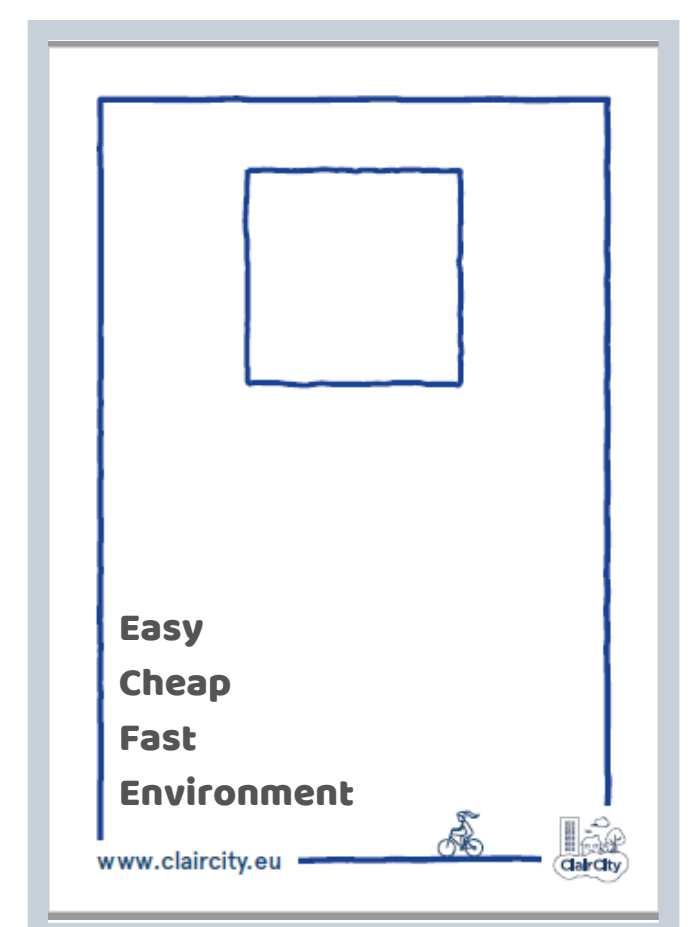
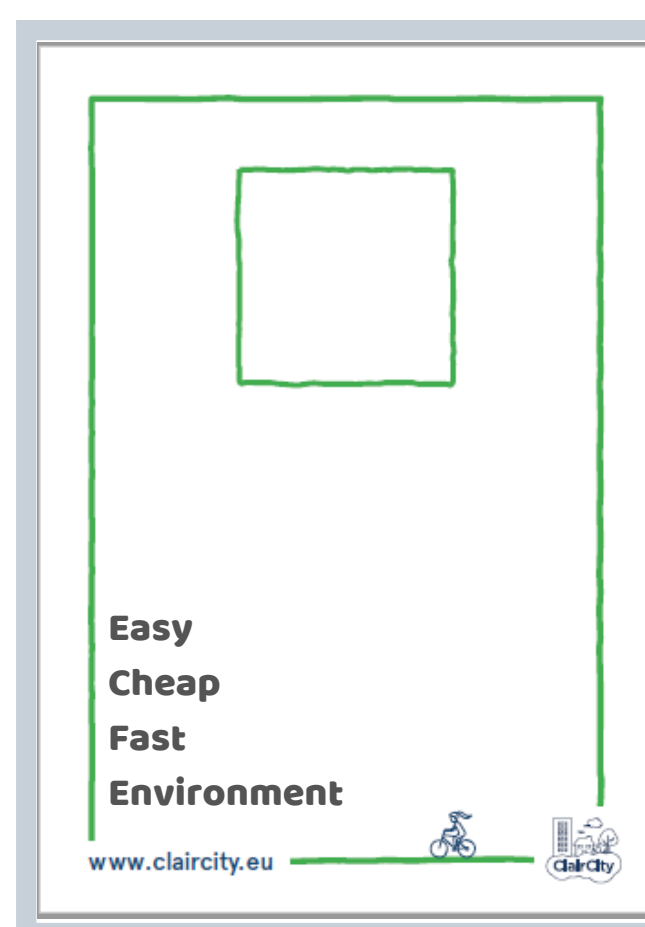
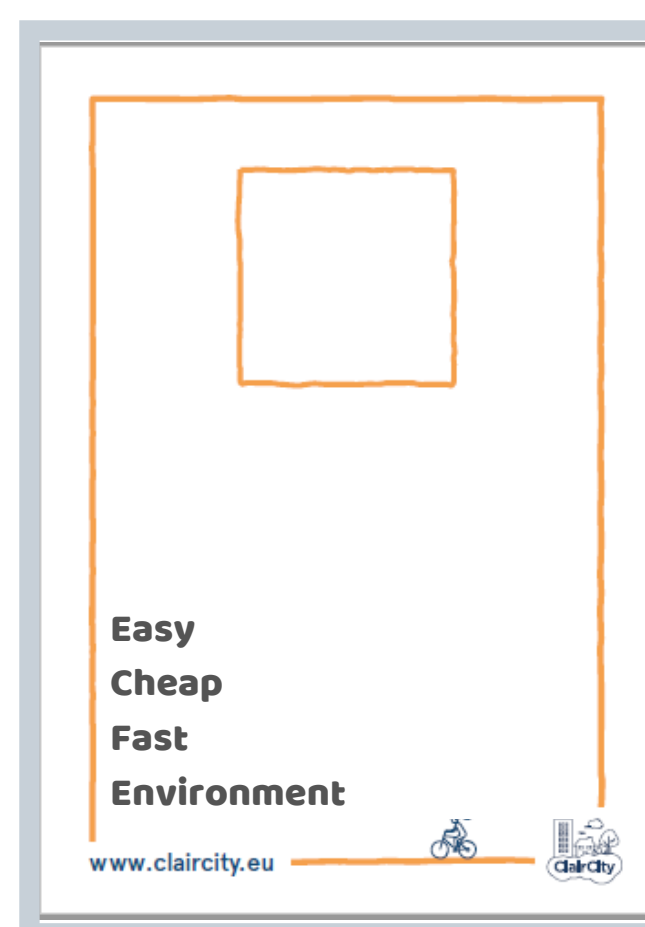
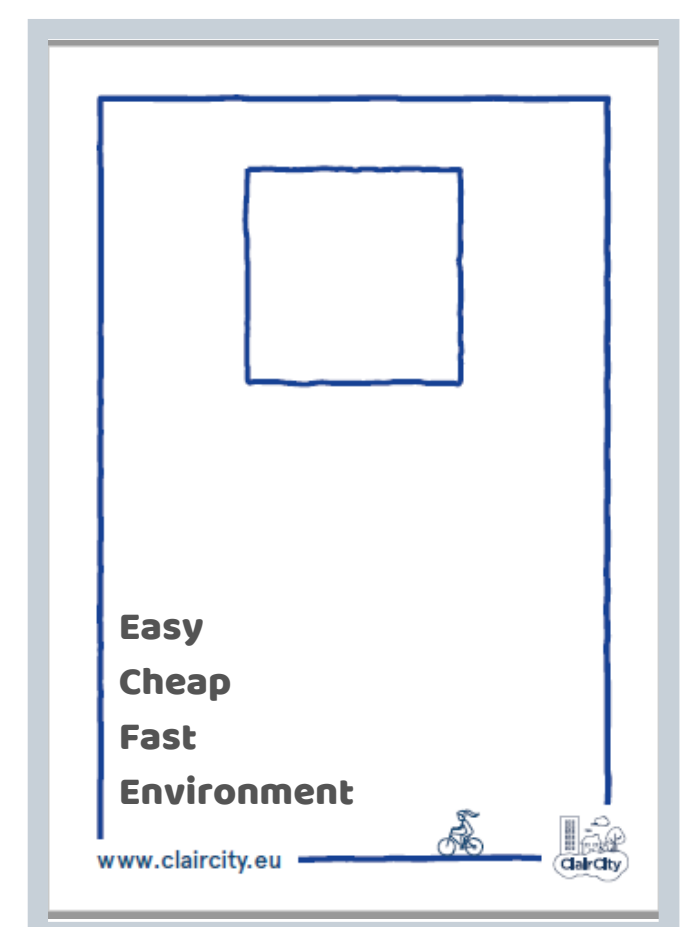
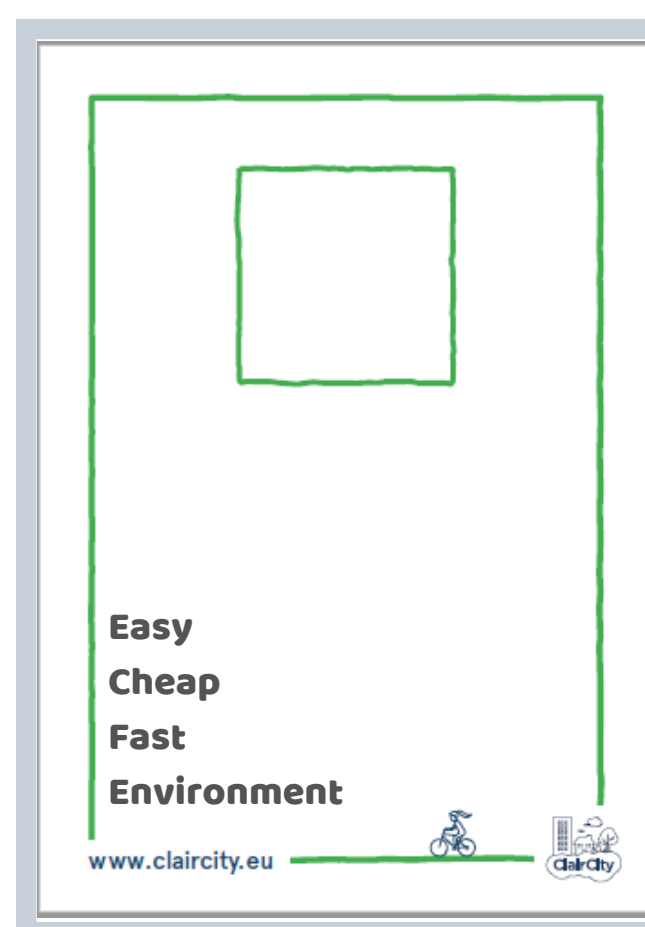
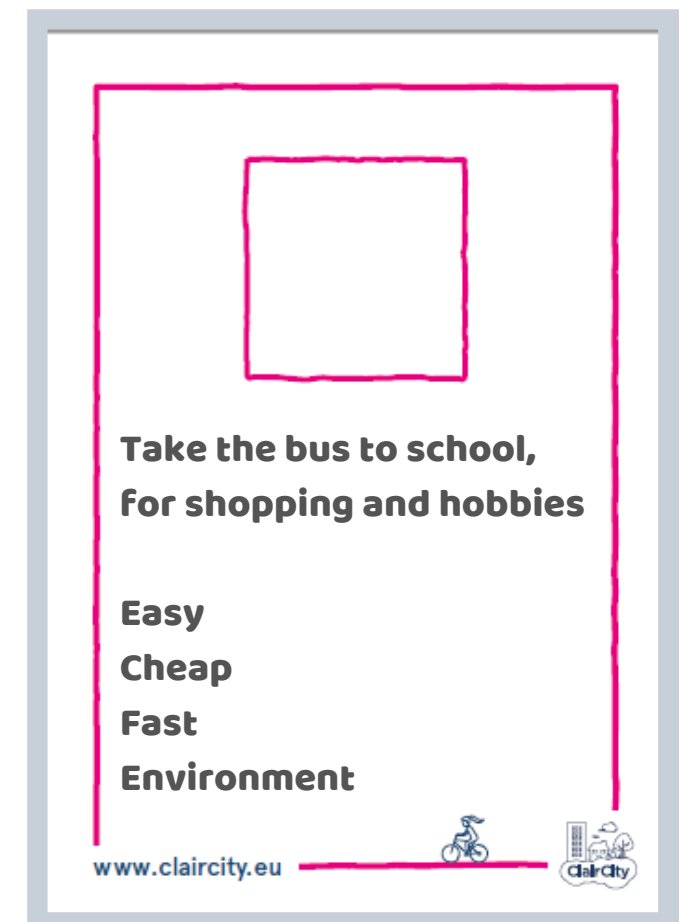
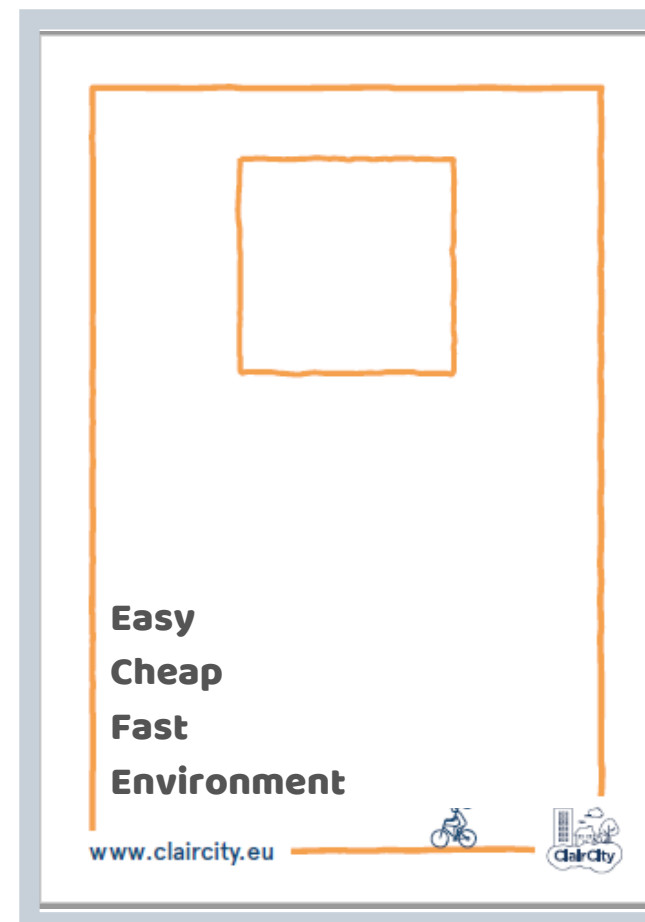
Clean air top trumps

Task

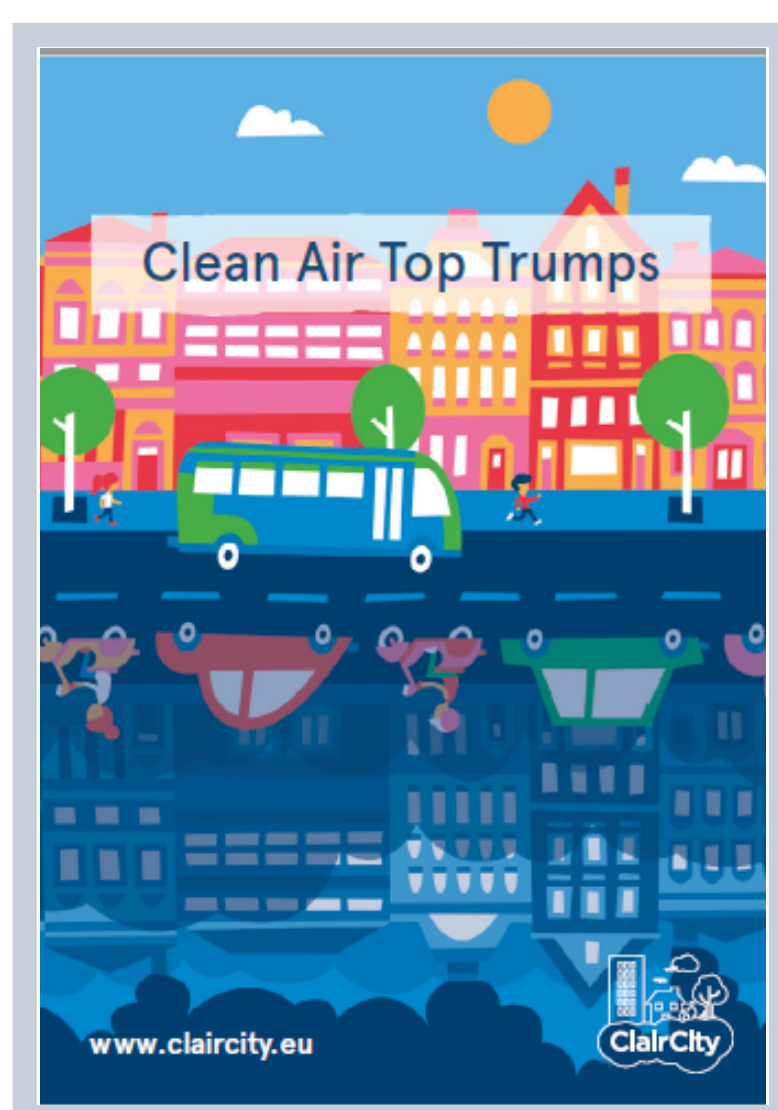
6. Is one card better than the other? Have a think why this might be the case.

7. Do you still have time? Draw a design for the front of the cards.

Your design could be of a future city with no air pollution or traffic problems. What would that look like? You can use the example below to help you.



Example cover design



Worksheet eight

I love to travel by...

What is your favourite way to get around, other than the car? Walking, cycling, scooting, or something else? Think about the thing that makes you feel the happiest and healthiest.

Task:

1. Write down all the things you love about your chosen form of travelling around the city. Come up with at least 10 reasons why.
2. Draw a picture of you travelling to school on the transport you love



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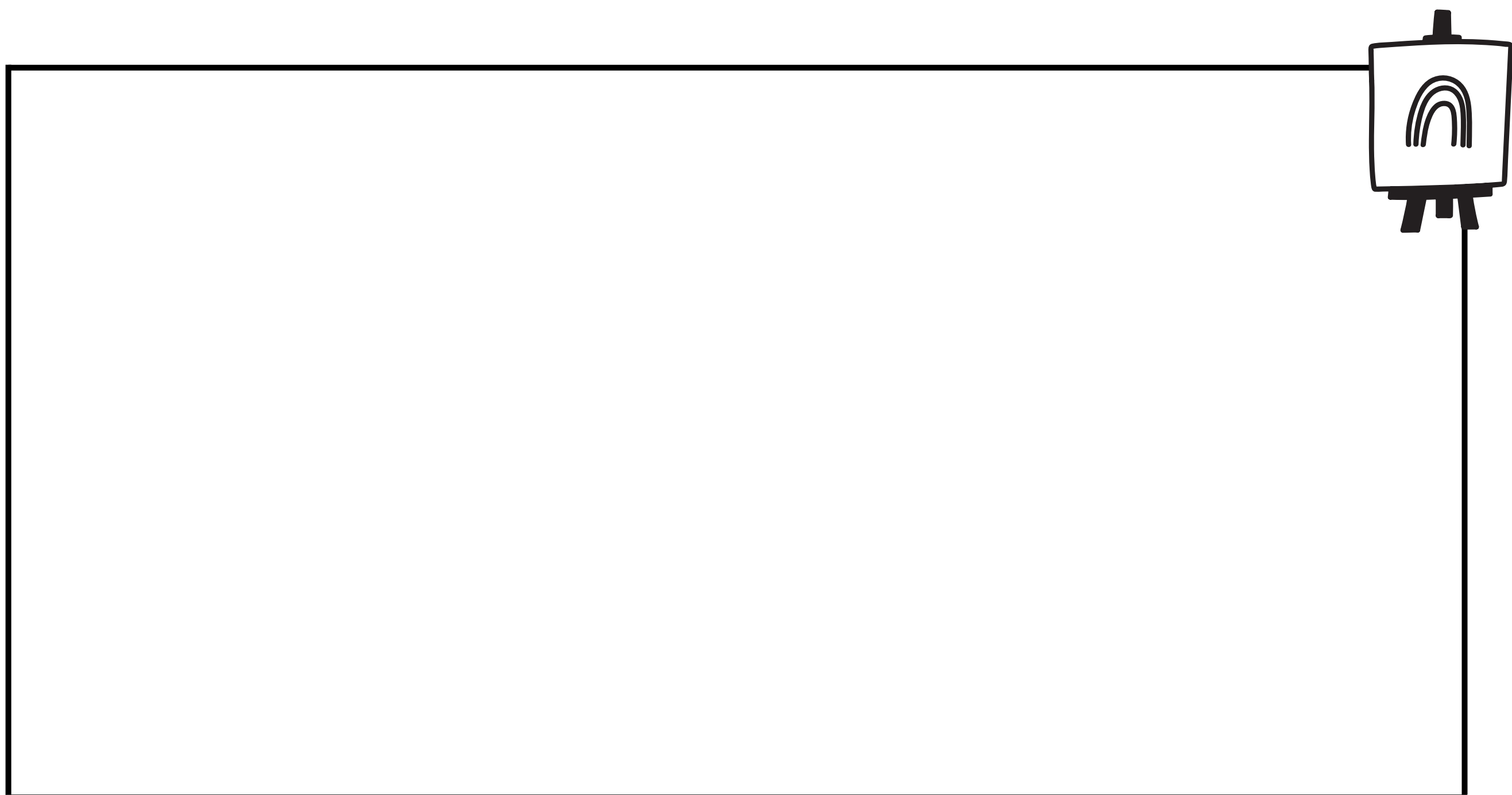
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Worksheet nine

Design a bike for the future

If you could design your own bike, what features would it have? What would it need to make it easier to travel by bike for all your journeys? For example, to school, the shops and to your hobbies. Think about sustainable materials too. Be creative!

Task:

1. Write down your ideas
2. Add the features to the bike and label your modifications

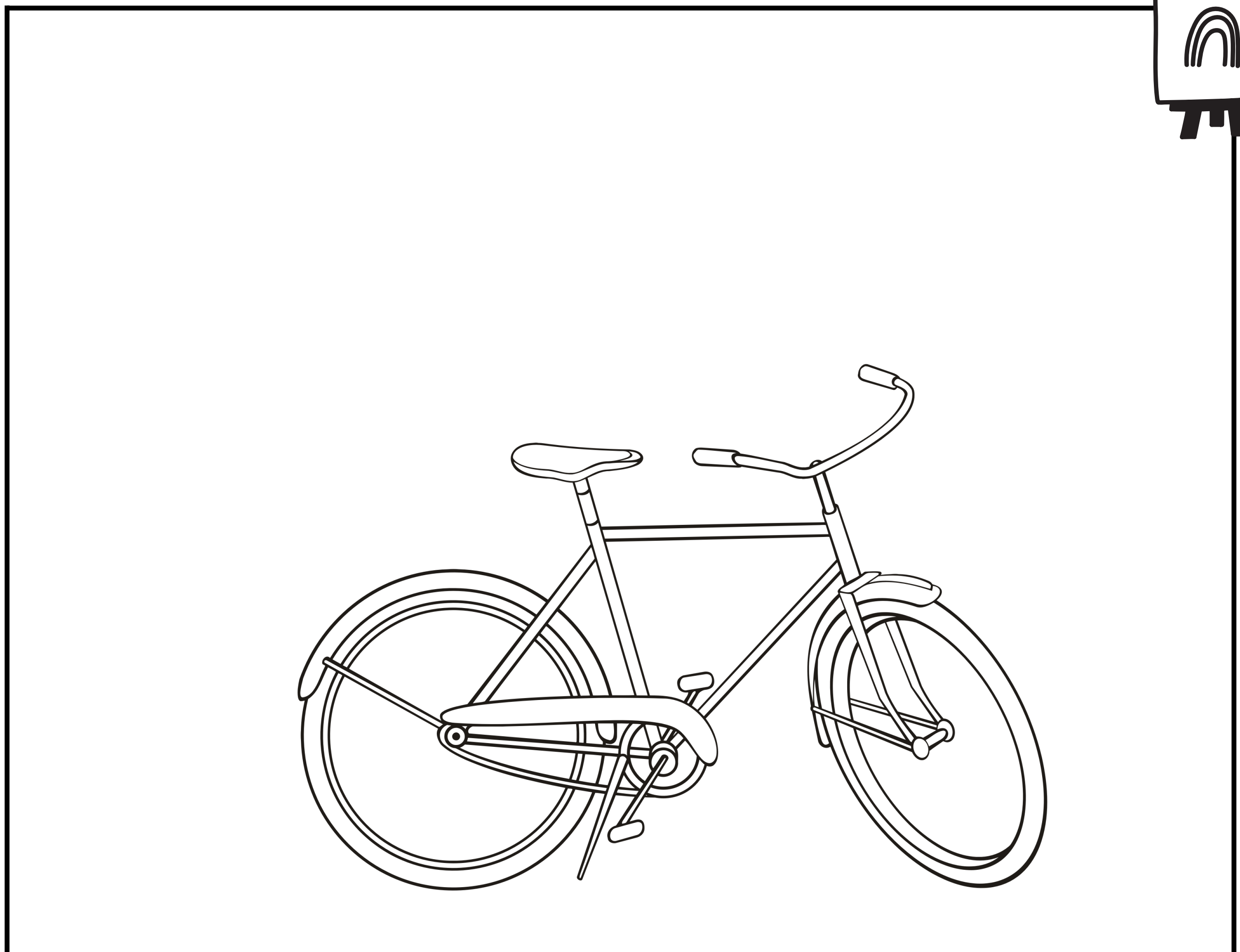
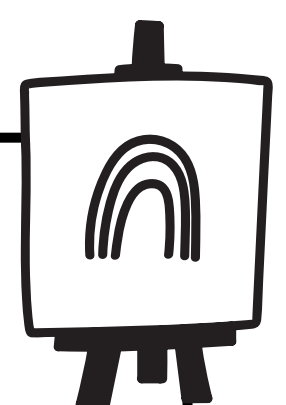


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Bonus worksheet

What's the view outside your window?

