

# Adventure 1

## Pucuy's mission

PUCUY RETURNS TO FUTURA FROM HER LAST MISSION ON HER INTERGALACTIC SHIP.



IN CHAOTICA, KITAN IS WORRIED ABOUT MR. SMOG. HE PHONES PUCUY TO ASK FOR HELP.





## EPISODE

# 1

## Kitan's arrival

Understand the **reference points** and **translations** and **turns** that Kitan has to make to get to Futura's take-off port.



## EPISODE

# 2

## Futura in numbers

Notice how Pucuy and Kitan read **numbers up to five digits**. Take measurements and make **conversions between units of length** to understand the information about Futura better.

## EPISODE

# 3

## Renard's disappearance

How do Pucuy and Kitan **round** numbers? How do they **decompose** numbers? How do they **organize and interpret information** in charts?



## Before you start your adventure...

Join Pucuy on her mission to save Chaotica. You'll need to use your knowledge and look for **useful words**.

## Superpowers from previous grades

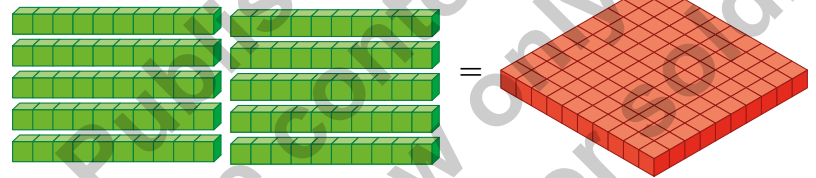


### Superpower: Grouping ones, tens, and hundreds

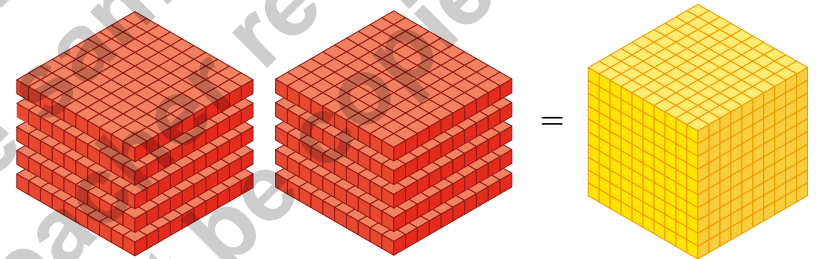
10 units grouped together makes one rod.



100 units grouped together or 10 rods makes one flat.



10 flats, 100 rods, or 1000 units grouped together makes one cube.



>>ACTIVATE  
your superpowers



### Superpower: Distinguishing spatial relationships

To describe the direction of an object or person, use expressions like "towards the right" or "towards the left." For example, the car is going towards the right, and the cyclist is going towards the left.



### Useful words

- ☐ Set square
- ☐ Orientation
- ☐ Border areas
- ☐ Container



### Superpower: Creating a survey

A survey is a set of questions that you ask a group of people to find out their opinions. For example, you can write a survey to find out people's favorite ice cream or transport.

TO GET TO THE TRAIN PORT IN FUTURA, KITAN HAS TO FOLLOW PUCUY'S INSTRUCTIONS.



**CHALLENGE**

What is the approximate distance that I will fly using my turbo-backpack to get to the train port in Futura?



20 kilometers to the west, 10 kilometers to the north, and then 50 kilometers to the east. Look out for more directions in later episodes in this adventure!



## EPISODE

# 1

### Kitan's arrival

Before leaving for Futura, Kitan gets a map to identify the route. Spot helps him study and understand the map.



## GET SUPERPOWERS



### SUPERPOWER 1

To understand the turns he has to make on his journey, Kitan faces the window in his room.

- If he turns around completely, he will return to his initial position.
- If he turns one half a circle, he'll have his back to the window.



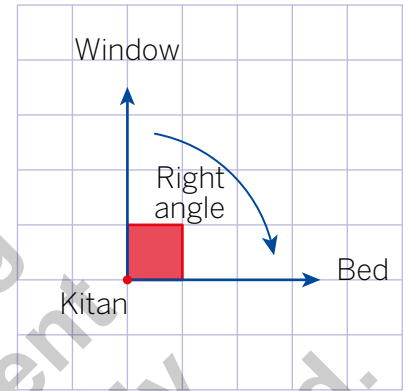
- If he turns to the right, he'll be facing the bed.
- If he turns to the left, he'll be facing the door.





## SUPERPOWER 2

Look at the grid opposite. Kitan has added his location in his room. He notices that if he traces a ray from his location towards where he's facing the window and another to where he's facing the bed, this makes a right angle.

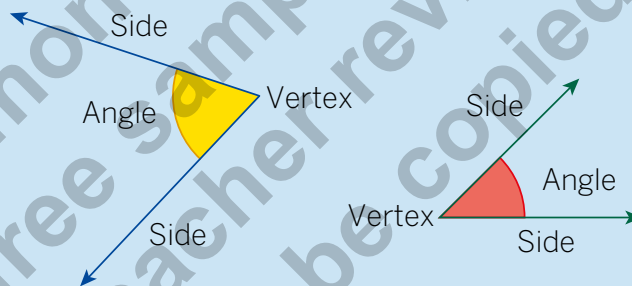


>>Right angle

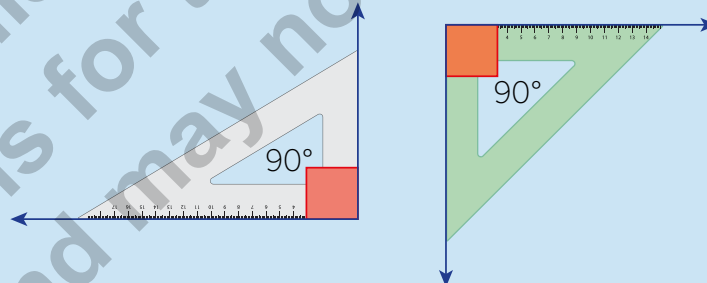


### Types of angles

An **angle** is the union of two rays starting from the same point, the **vertex**. We measure the angle in degrees using the  $^{\circ}$  symbol. The higher the number, the wider the gap between the two rays.

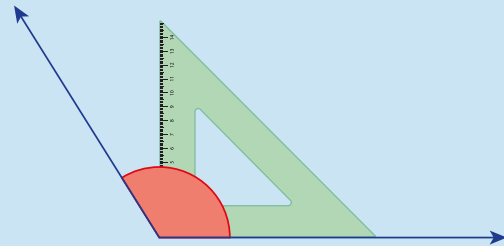
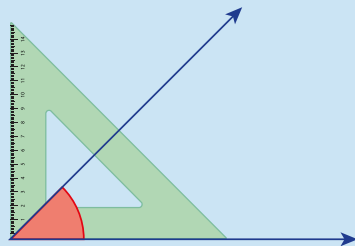


The angle that forms a square corner is a **right angle**. This is  $90^{\circ}$ .



We classify angles according to their measurements.

- We call it an **acute** angle if it's less than a right angle.
- We call it an **obtuse** angle if it's greater than a right angle.





## USE YOUR SUPERPOWERS

1. Spot and Kitan leave their house. Answer these questions.

a. Where are they looking if they turn right at a right angle?

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b. What place can they see if they turn left at a right angle?

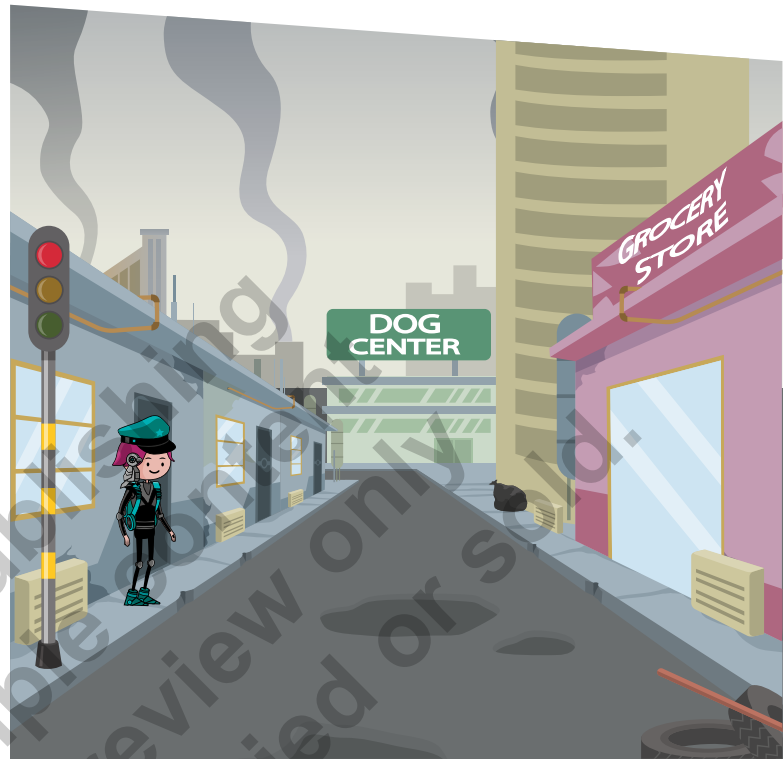
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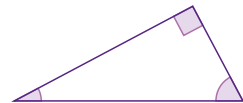
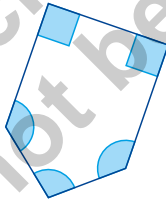
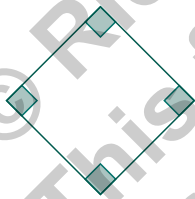
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2. Use a **set square** to mark and classify the angles in the following figures. Compare your answers with your classmates.



ON THIS ROUTE, KITAN  
TURNS AT RIGHT ANGLES AND  
WALKS IN A STRAIGHT LINE.



## Translations and turns of people or objects

On a route, people or objects can move or rotate to go from one place to another.

- **Translation** is the change in the position of a body as it moves it up, down, or sideways.
- **Rotation** is the circular movement of a body.

### GET SUPERPOWERS



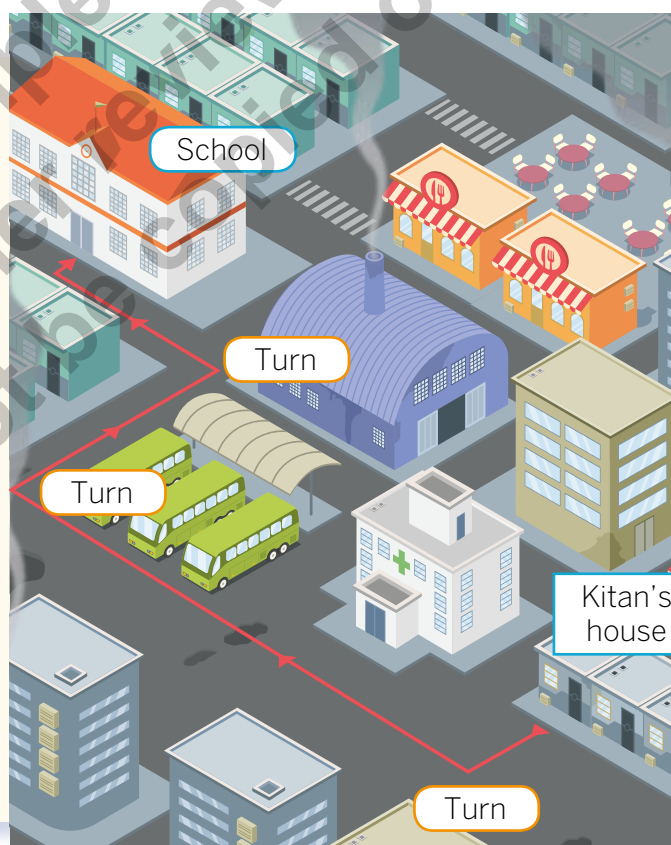
#### SUPERPOWER 3

Kitan uses translations and turns to get from his home to his school.

The description of this route is as follows:

- Leave the house, walk straight, and turn right.
- Walk straight past the hospital and bus station.
- At the end of the bus station, turn right.
- Walk to the junction and turn left.
- Walk straight until the school entrance appears on the right.

Kitan's house, the hospital, the bus station, and the school are some of the **reference points** on the route.



### Reference points

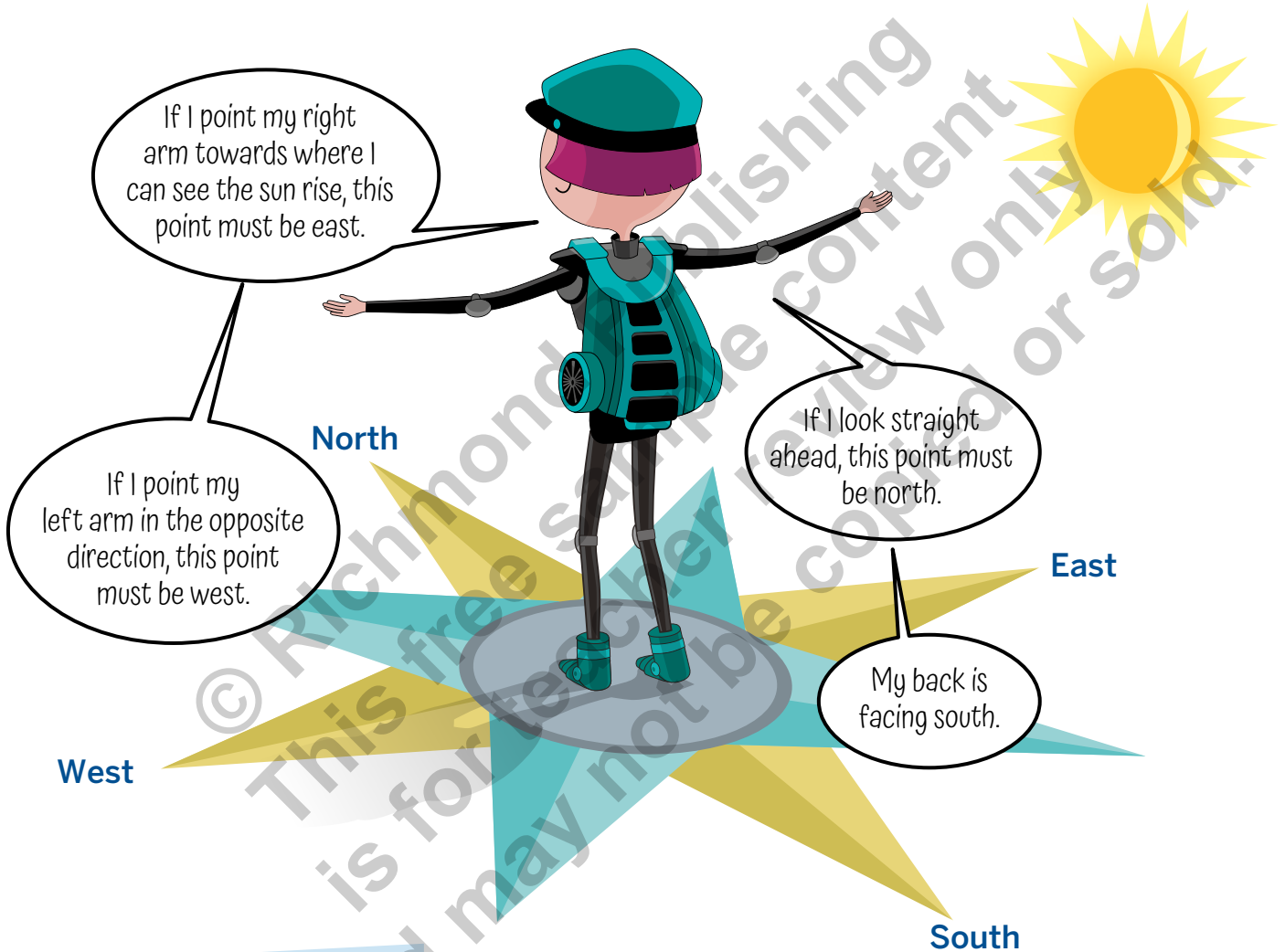
To describe the location of someone or something, you can use unique and permanent objects and places. These are called **reference points**. Use them as a guide to position yourself in a space. Parks, statues, rivers, mountains, streets, and **border areas** are examples of reference points.





## SUPERPOWER 4

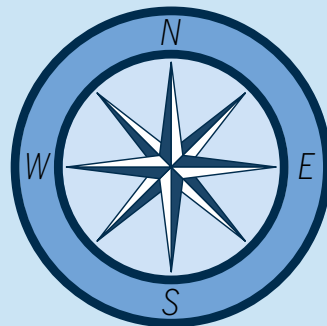
Another way to describe routes, is to determine the **orientation** of an object or a person in space, or to identify the boundaries of a place by using **cardinal points**. We know that the sun always rises in the east. This helps us to identify the other cardinal points.



### Cardinal points

We can use **cardinal points** to figure out which way something is facing, to go from one place to another, to identify the boundaries of a place, or to locate things in space. The cardinal points are north (N), south (S), east (E), and west (W), as in this **compass rose**.

You often find this figure in sketches, blueprints, and maps.



>>Cardinal points





3. Read the description. Show the route using turns, movements, reference points, and cardinal points. This picture will help you beat the challenge.



### Description

Turn west out of Kitan's house. Walk past the bus station.  
Turn north and walk straight for 10 blocks. Turn west.  
The take-off port is just past the gas station.

a. Write three reference points used on this route.

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b. Using just cardinal points, describe a different route to get from Kitan's house to the take-off port. Now draw this route on the map.

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c. What is to the west of the amusement park?

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**Surveyed: Maurice Kitan**

a. Have you visited Futura in the past year?

Yes\_\_\_\_ No\_\_\_\_

b. What's the best thing about Futura?

Culture\_\_\_\_ Flora and fauna\_\_\_\_

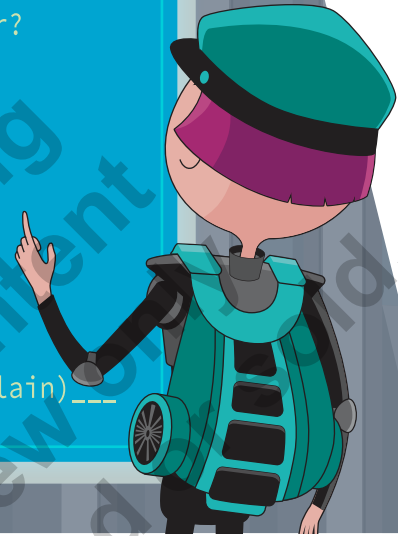
Transport\_\_\_\_ Infrastructure\_\_\_\_

Environment\_\_\_\_ Education\_\_\_\_

c. How did you find out about our city?

Friends\_\_\_\_ The Internet\_\_\_\_

Intergalactic notice\_\_\_\_ Other (please explain)\_\_\_\_



**Writing a survey**

A **survey** is a research method used to find out what a group needs, likes, dislikes, or prefers. To get this information, you ask people questions.

**GET SUPERPOWERS**



**SUPERPOWER 5**

We can provide a survey by using a questionnaire on paper, online, or on the phone. If the answer isn't a number, the variable is qualitative.

AS KITAN GOES TO MEET CAPTAIN PUCUY, HE ASKS HER SEVERAL QUESTIONS.



Pucuy, what's your favorite game?

The *Intergalactic Baris*. When I participated in the thirtieth edition, I came 80th.





## SUPERPOWER 6

To understand what Pucuy is talking about, you need to know about ordinal numbers.

- “Thirtieth” indicates edition 30 of the tournament. This is abbreviated to 30th.
- The abbreviation 80th indicates that Pucuy was number 80 in the competition. The first ten ordinal numbers and their abbreviations are as follows:

First: 1st	Second: 2nd	Third: 3rd	Fourth: 4th	Fifth: 5th
Sixth: 6th	Seventh: 7th	Eighth: 8th	Ninth: 9th	Tenth: 10th

Other ordinal numbers and their abbreviations include the following:

Twentieth: 20th	Thirtieth: 30th	Fortieth: 40th
Fiftieth: 50th	Sixtieth: 60th	Seventieth: 70th
Eightieth: 80th	Ninetieth: 90th	Hundredth: 100th

When a number ends with 1, we use *-st*. When a number ends with 2, we use *-nd*. When a number ends with 3, we use *-rd*. Exceptions are 11, 12, or 13, which all use the *-th* suffix. When a number ends with 0, 4, 5, 6, 7, 8, or 9, we use *-th*.

### Ordinal numbers

**Ordinal numbers** allow us to establish an order among the elements in a set. We can use them to indicate rankings in a competition, events that are repeated periodically, and the floors of a building, for example.

### USE YOUR SUPERPOWERS



4. Work with two classmates. Write a question to find out their favorite amusement park ride.

5. The second time Pucuy participated in *Baris*, she came fortieth, followed by Shan. Her friend Kira came sixtieth.

- a. Use ordinal numbers to abbreviate Pucuy, Shan, and Kira’s rankings.

Pucuy:       Shan:       Kira:

- b. Who got the highest ranking of the three participants? Why?

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