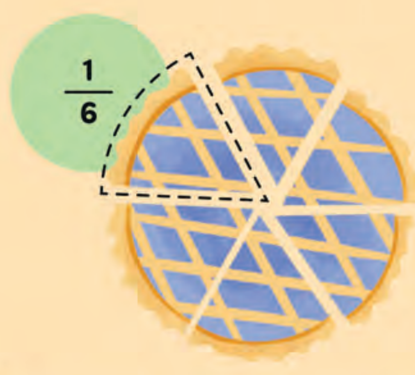
EVERYDAY STEM

Illustrated by Xiana Teimoy

PLANNING Grandma's party

MEASUREMENTS, FRACTIONS & FUN

Written by Lenka Chytilová & Helena Haraštová



Albatros

MEASUREMENTS, FRACTIONS & FUN | PLANNING GRANDMA'S PARTY | Lenka Chytilová & Helena Haraštová & Xiana Teimoy

03 MEASURING TIME

HOW LONG DO WE BAKE THE CAKE FOR?

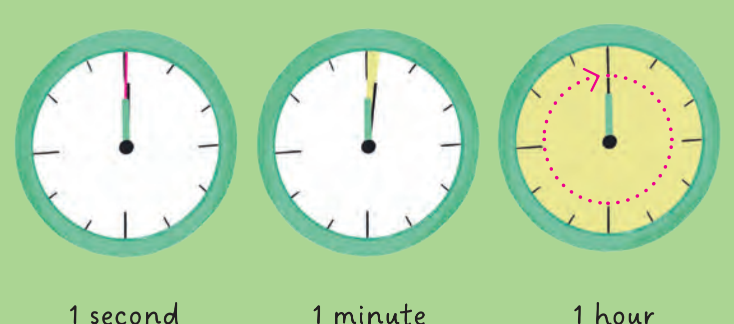
Hooray! Grandma's cake is ready to go in the oven. "But how long does it need to be in there before it's done?" asked Cooper. Teresa knew what to do immediately – she looked at the recipe and then set the timer on the oven.

EXPLANATION

How time flies!

We look at time measurements every day. Knowing what time it is allows us to do many things, like meeting up with friends or making doctor's appointments. We can tell the time from a traditional clock, which we read from the large minute hand and the small hour hand, or from a digital clock, where the hours and minutes are separated by a colon.

But we can also talk about a period of time, for example, between the beginning and the end of baking our cake.



UNIT CONVERSIONS

1 hour = 60 minutes

1 minute = 60 seconds

UNITS

How do we talk about time?

You've probably heard someone say, "Just give me a minute!" or "Time is really dragging by today." But what do we call specific periods of time? The basic unit is a second – in one second you can clap your hands once. After that, short periods of time are measured in minutes (mins) and longer ones, such as the time people spend at school or work, in hours (hrs).

MEASURING DEVICES

How do we measure time?

Our ancestors could only use cycles in nature (sunrise, sunset, etc.) to tell the time. Today, we have many more options . . .

Can you think of any other devices used to measure time?

COMPARE . . .

How long it takes you to . . .

. . . bake a cake

45 minutes

. . . clean your teeth

5 minutes

. . . complete a jigsaw puzzle

10 minutes

. . . make your bed

40 seconds

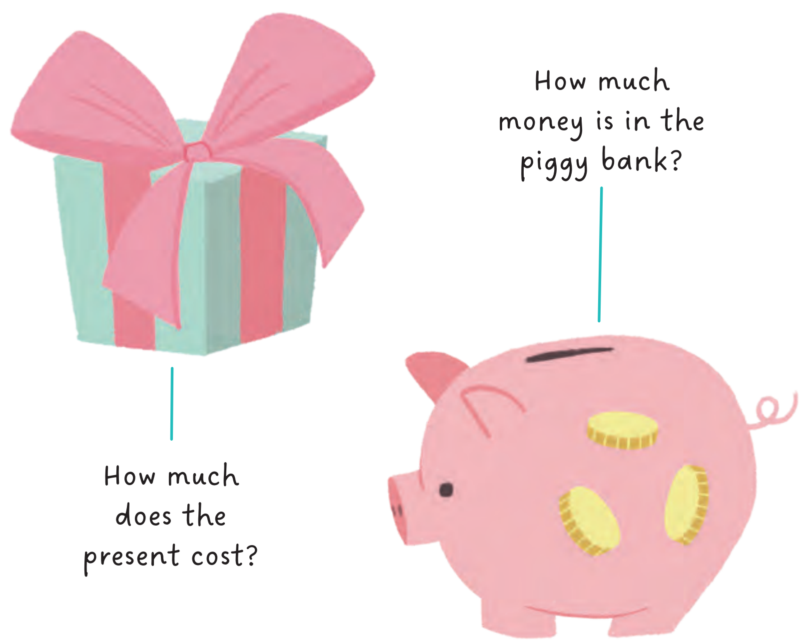
06 COMPARING NUMBERS

CAN WE AFFORD TO BUY GRANDMA A PRESENT?

Teresa has saved up some money in her piggy bank. She would like to buy her grandmother a nice present. But will her savings be enough?

EXPLANATION

We compare numbers every day, most of the time without even realizing it. When we leaf through a book looking for the right page or look at the weather forcast to see if it'll be warmer tomorrow, we're comparing numbers. Like the Bright family, we also do it when we go shopping.



ONE MORE THING

Percentages

You must have seen a percentage sign in a shop at some point. It looks like this: %. But do you know what it means? If we divide an amount into 100 equal parts, each part will be worth one percent (expressed as "1%") of the original amount. For example, one percent of 100 is 1, one percent of 200 is 2, and so on. So what does it mean when there is a 20% discount? It means that we subtract 20 of its "parts" from the original price. Therefore, a present that used to cost $100 will only cost us $80.

COMPARE . . .

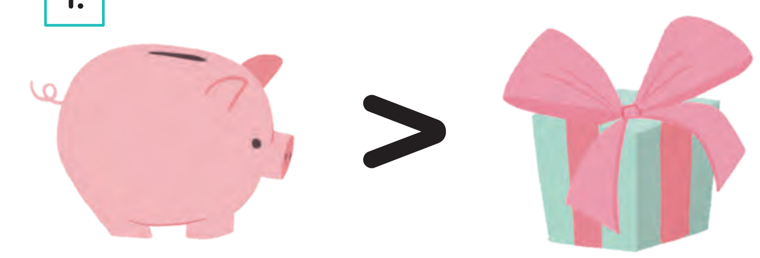
Let's compare how much money Teresa has saved in her piggy bank and the price of a present for Grandma.

1. There's more money in the piggy bank than the price of the present.
That's great! Teresa can go and buy the present. We can find out how much money she has left by subtracting the price from the amount of savings in her piggy bank.

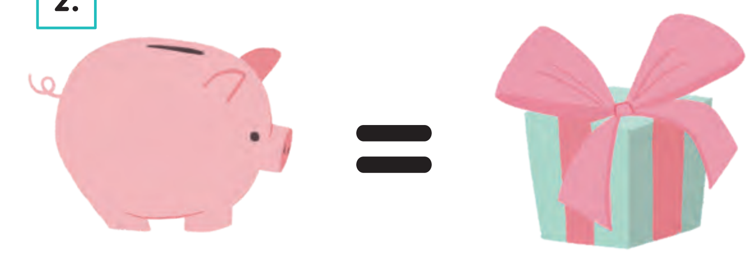
2. The money in the piggy bank is exactly the same as the price of the present.
Teresa can still buy the present, but her piggy bank will be completely empty afterwards.

3. There is less money in the piggy bank than the price of the present.
Unfortunately, Teresa can't afford to buy the present on her own. However, Teresa can buy a present for Grandma with Cooper's help. If they put their savings together, they can buy a present from both of them.

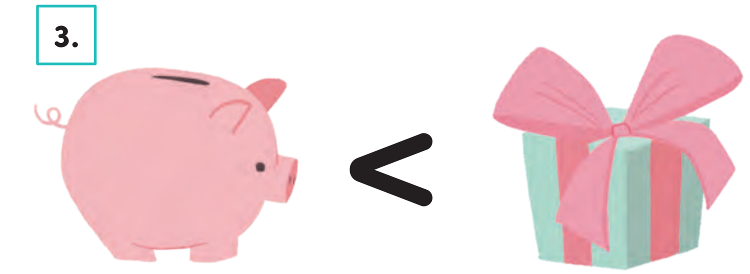
1.



2.



3.



11 **DENSITY**

HOW DO WE MAKE THE BALLOONS FLY?

Cooper saw how easily Teresa had handled the decorations and decided to blow up the balloons. But why weren't they flying up into the air like they did at the amusement park? "It's simple," smiled Teresa. "You just have to use your head a bit!"

EXPLANATION

We already know that there can be differences in the sizes and weights of things. And this is precisely the idea expressed by the term **density**. Heavy and solid materials are more dense than lighter materials that take up more space. For example, cotton candy is very light and takes up a lot of space, unlike a glass marble. This means that a piece of cotton candy has a lower density than a glass marble of the same size.

The density of liquids and gases can also vary.

An example of this is a spoonful of honey in a cup of tea. Before you stir it, the honey sinks to the bottom of the cup, because honey has a higher density than tea.

And it's the same with blowing up balloons. At the amusement park, the balloons were filled with a low-density gas called helium, which is lighter than the air we blow into balloons from our mouths. So if Cooper wants the balloons to fly, he'll have to have them filled with this special gas.

tea with honey
before stirring

tea with honey
dissolved in water

UNITS

Density is expressed in kg/m^3. You can see that this expression combines two units of measurement we've come across already – the units for weight and volume.

UNIT CONVERSION

$1\ kg/m^3 = 0.001\ g/cm^3$

ONE MORE THING

The air on our planet doesn't have the same density everywhere. At high altitudes, the air is "thinner." That's why, for example, mountain climbers may feel dizzy as they reach the top of a mountain.

HAPPY BIRTHDAY, GRANDMA!

Now let's go through what Teresa and Cooper learned while they were preparing this wonderful party.

PLANNING GRANDMA'S PARTY

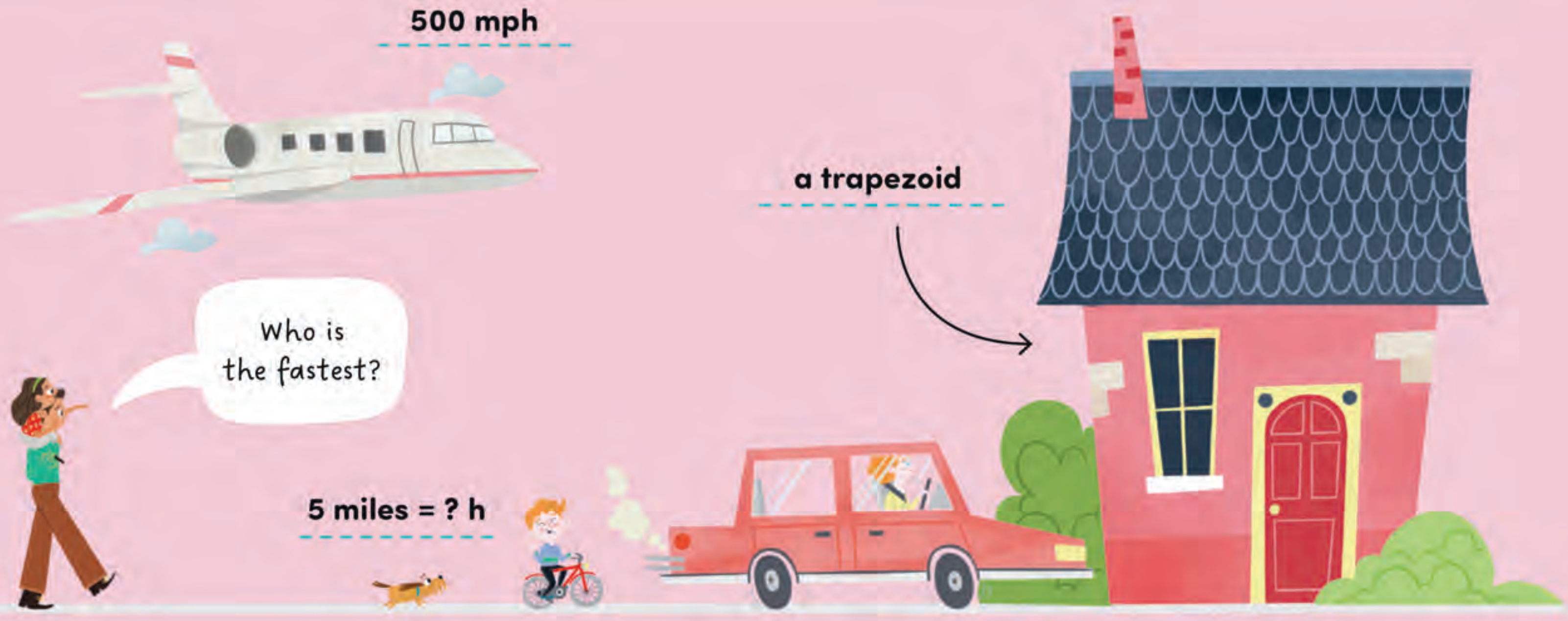
MEASUREMENTS, FRACTIONS & FUN

Written by Lenka Chytilová & Helena Haraštová
Illustrated by Xiana Teimoy

EXPLANATION

Physics, math – they say they're boring and complicated sciences . . . nothing for kids, who long for fun and adventure. But what if it's simply not true? What if physics and math CREATE the wonderful, fascinating world we love to play in and explore so much? What if these sciences are the CAUSE of all the breathtaking wonders all around us? Seriously, that's how it is. Why is a pound of feathers bulkier than a pound of iron? Why am I hot in my cap one day and cold the next? And who's going to arrive first at Grandma's birthday party?

Let's discover the world of measurements and fractions in the most natural way – by encountering them every day. Together with Teresa, Cooper, and the whole Bright family, you will get everything ready for the best birthday party Grandma has ever had, and see that science is all around us!



Also available:

FOR BRIGHT MINDS FROM 6 YEARS OLD

ISBN 978-80-00-07286-9
albatros
$16.95
Printed in China by Leo Paper Group.
www.albatrosbooks.com