



Painting Squares

area

Age
Umri
7+



Kibena's grandma is going out for the day. As she leaves, she tells Kibena not to leave the house and that Mzee Kigo will come to check on her.





Kibena goes back to her game of danadana. “I don’t need Mzee Kigo to come check on me,” she mutters to herself. “I’m not a BABY!”

She counts to herself as she bounces the ball off her foot.

1, 2, 3, 4, 5, 6...



Then suddenly the ball slips from between her feet, hits the bucket of paint, and knocks it over.



The ball lands in the middle of the puddle of blue paint. At that moment, along come her friends Kiduchu, Koba, and Baraka.



Koba tries to kick the ball out of the paint, but it only makes matters worse! The ball hits the wall of the house, leaving a big splatter of blue paint on the wall.



Kibena tries to wipe away the blue paint on the wall, but she only spreads the paint around more. Then Baraka has an idea!



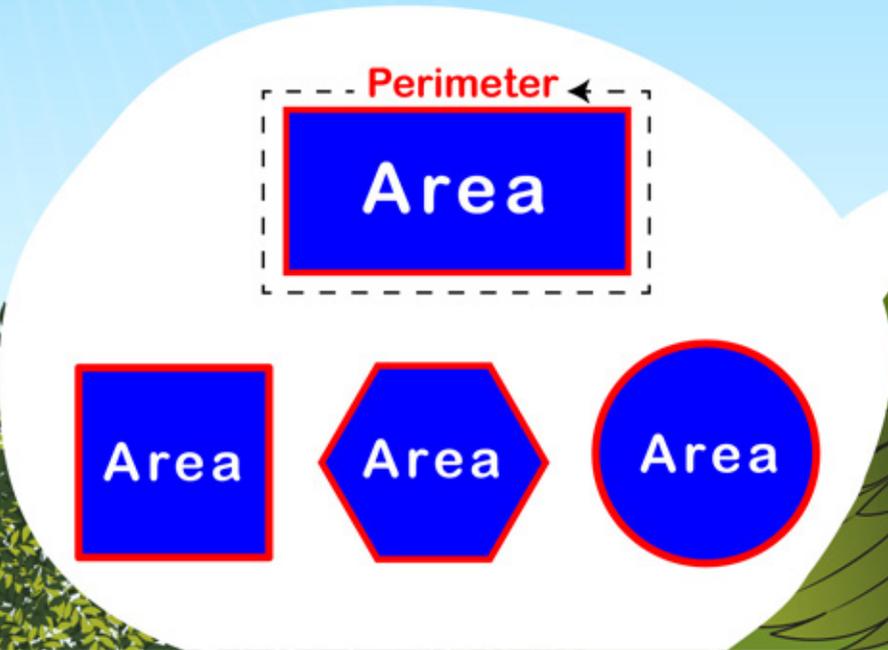
“Let’s paint the whole wall so Grandma won’t find out what really happened,” he says. Just then, Uncle T passes by the house. Uncle T tells them that Mama Ndege has a supply of paint.



Kiduchu, Koba and Baraka run off to Mama Ndege's house. Kibena stays at home, following Grandma's instructions. "How much paint do you need?" Mama Ndege asks.



Mama Ndege tells them that they need to know the AREA of the wall they want to paint. “The **AREA** is the amount of space inside the **perimeter** of any shape,” she explains.

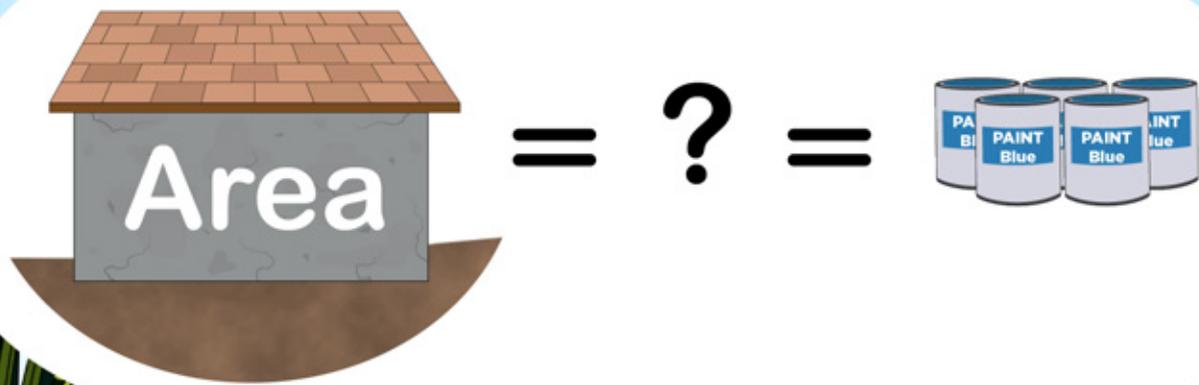


“The wall is a rectangle,” she continues.

“The area is the space from top to bottom,
and from side to side of the wall.

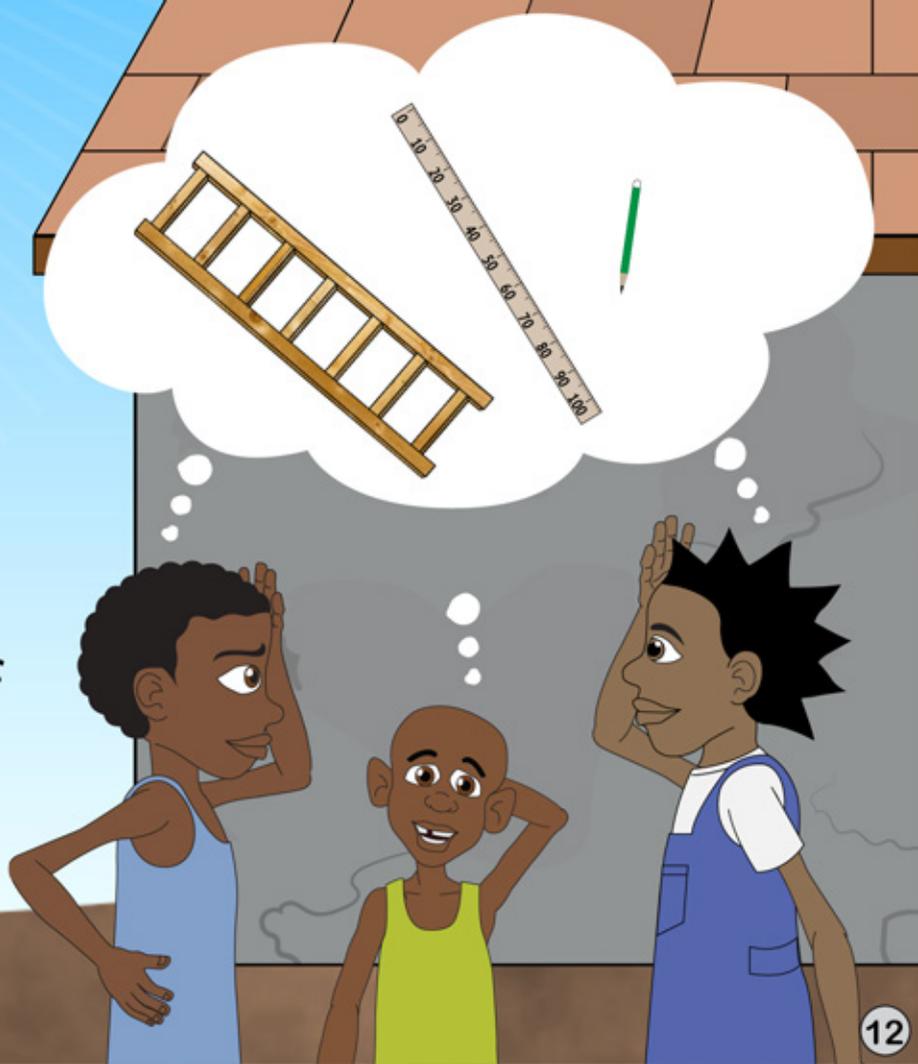


Once you know the area, we can figure out how many cans of paint you will need.”
She sends the kids off to find the area of the wall.



Back at Kibena's house, they scratch their heads. "What tools do we need to measure area?" asks Kiduchu.

They come up with a list: a ruler to measure, a ladder to reach the top of the wall, and a piece of chalk or a pen for marking.



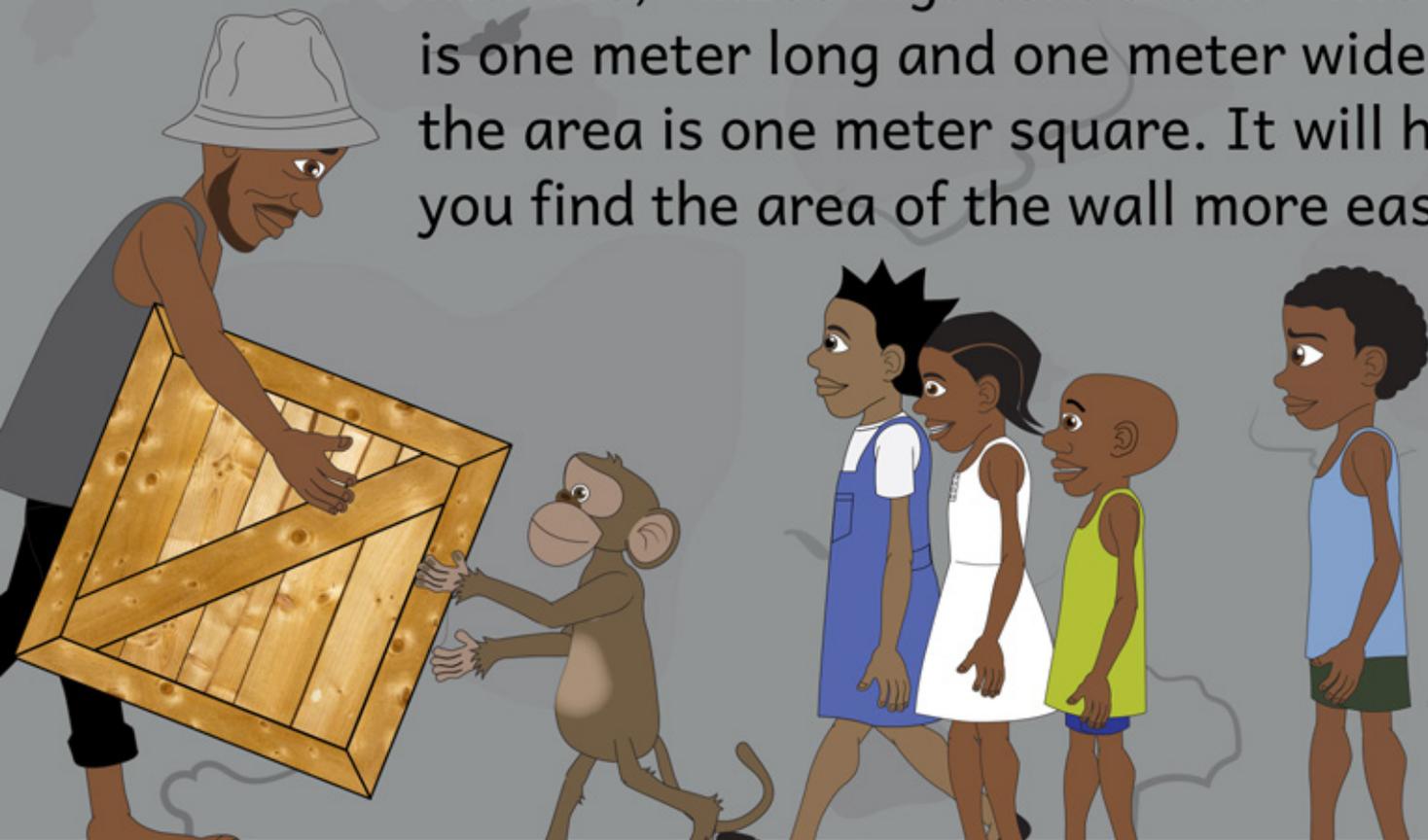
Kiduchu, Koba and Baraka run off to find the tools.
Then they discuss how to start their measuring project.



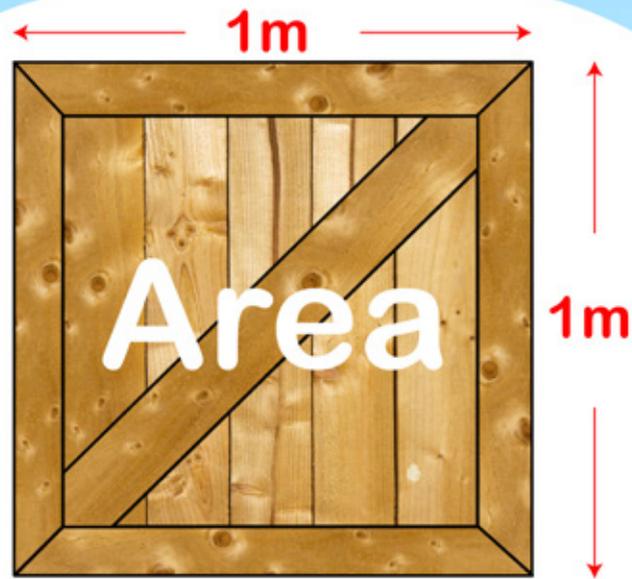
Just then, Mzee Kigo comes along, with Ngedere. “Good afternoon!” they all greet one another. Mzee Kigo sees that the kids look busy, and looks at their measuring tools.



“It’s your lucky day that I have this crate with me,” Mzee Kigo tells them. “The lid is one meter long and one meter wide, so the area is one meter square. It will help you find the area of the wall more easily.”

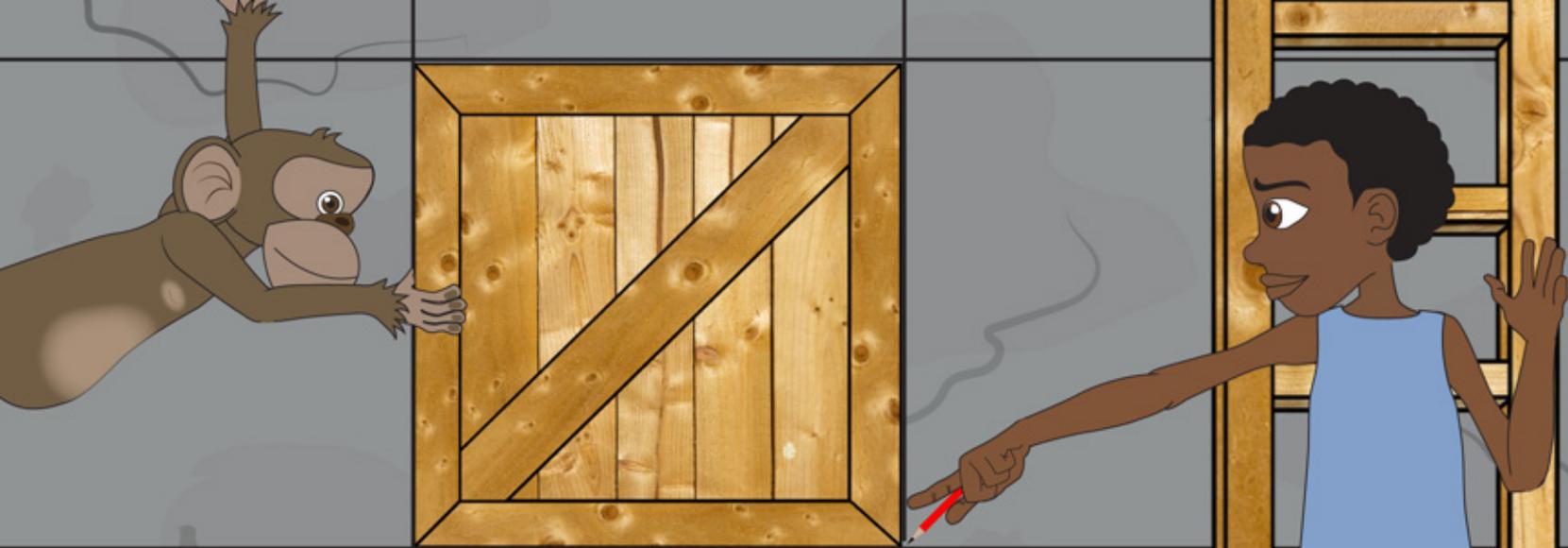


How should they use the crate lid that Mzee Kigo left for them? “I’ve got it!” Kibena says.
“The area of the crate is one meter square.



$$1\text{m} \times 1\text{m} = 1\text{m}^2 \text{ (one meter square)}$$





We need to figure out how many crates it takes to cover the whole wall. Then we will know the area of the wall, in square meters!”

They finish drawing the squares on the wall, and then count them.
Uncle T helps them count.

1

2

3

4

5

6

7

8

9

11

12

13

14

15

16

17

18

19

20



“One, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, TWENTY!”

1

2

3

4

5

6

7

8

9

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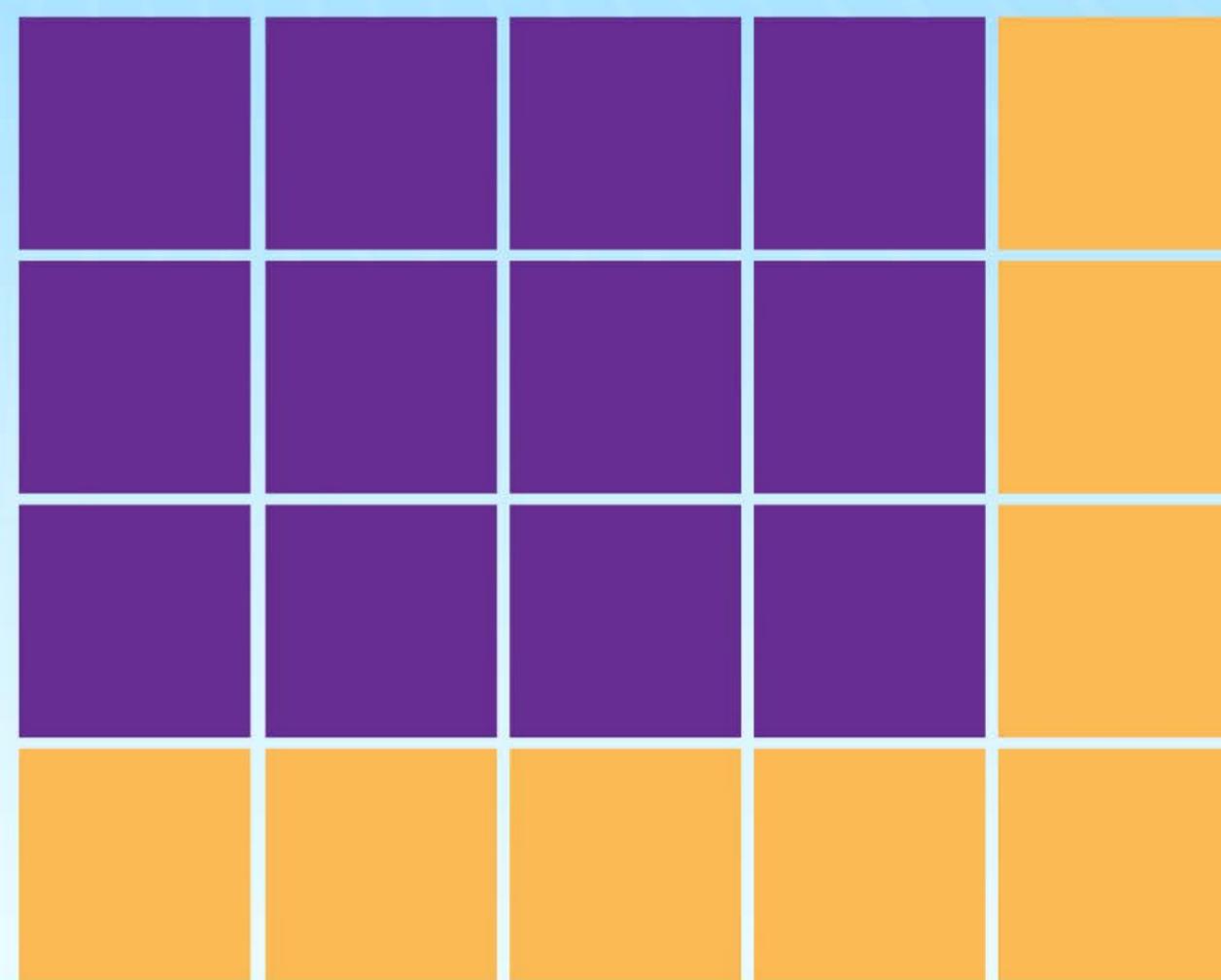
20



“Mathematics is
AWESOME!”
Baraka tells them.
But Ngedere is still
confused.



As Kibena explains to Ngedere, she suddenly has a thought. “If you take the length times the width, which is **four times five**, you get the AREA: twenty square meters!” Even Ngedere understands.

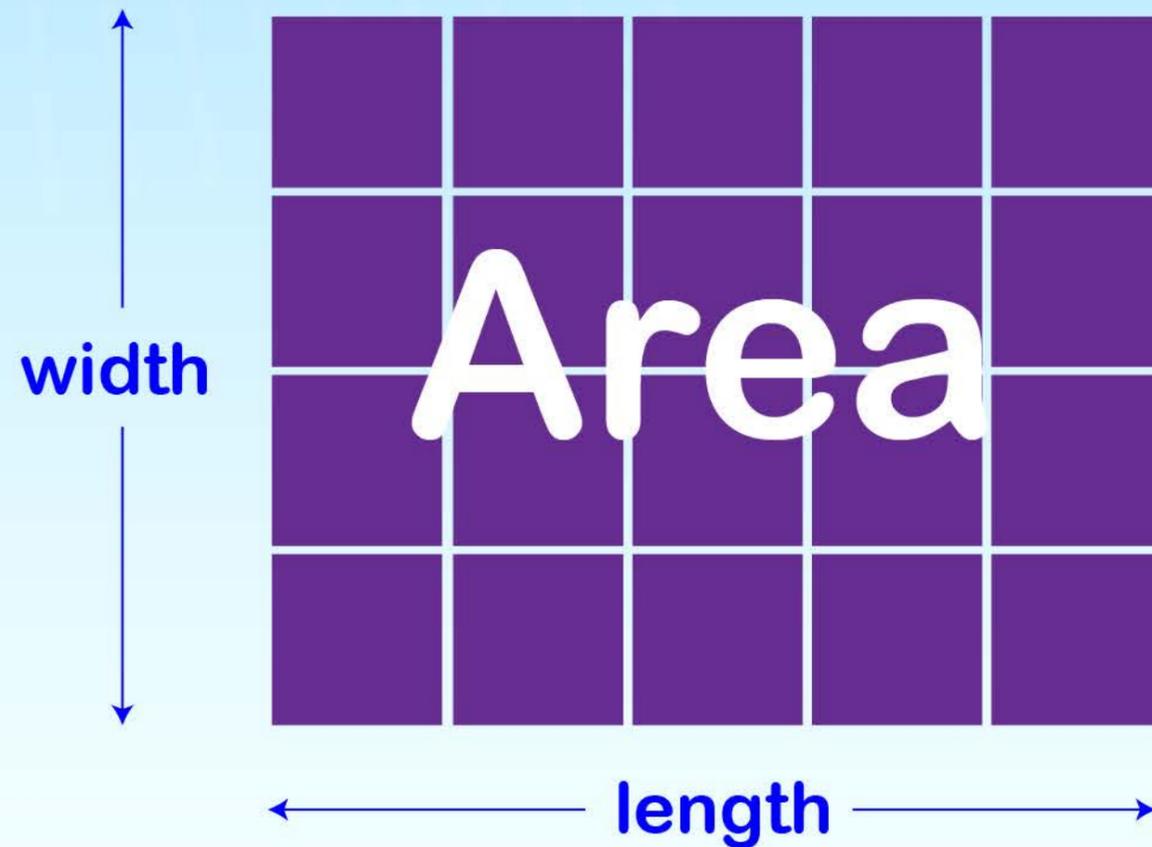


$$4m \times 5m = 20m^2$$



Kibena has discovered the formula for the area of a rectangle: **length times width**. She waits at home while the others go back to Mama Ndege's house to fetch the paint.

$$\text{length} \times \text{width} = \text{area}$$



“We’ve measured the area of the wall,” Baraka tells Mama Ndege. “It’s twenty meters square.” He explains how they used the crate to measure each square meter, and added them up to get the AREA.



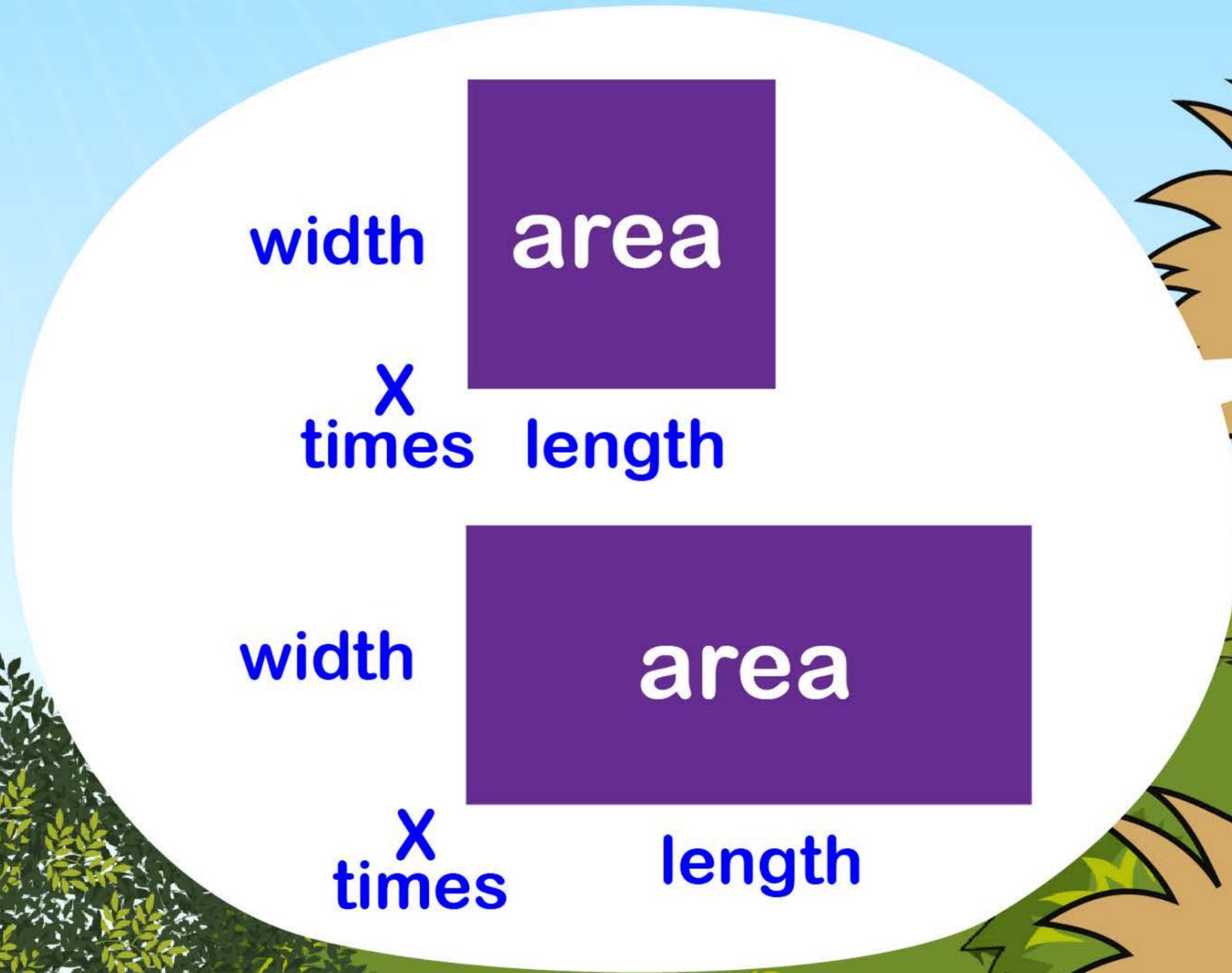
1	2	3	4	5
6	7		9	10
11	12	13	14	15
16	17	18	19	20



Kiduchu asks Mama Ndege about Kibena's formula.

"Kibena is right," says Mama Ndege.

"**Length times width** gives you the area of squares and rectangles.

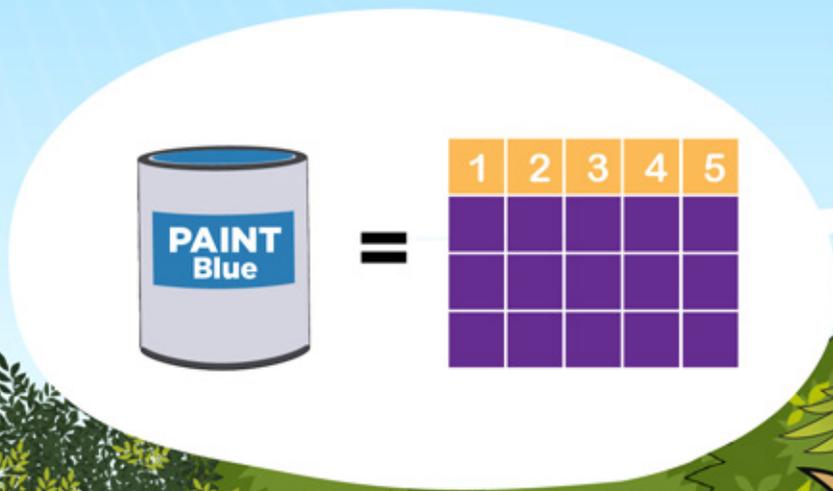


The answer for an AREA will always be expressed as square meter, or square centimeter, or square kilometer.”

m^2 cm^2 km^2



Back to the paint job! Mama Ndege tells them that one can of paint will cover an area of **five meters square**. “How many cans of paint do you need?” she asks them.



Kiduchu does the math in her head.

“Twenty divided by five is four,” she says,

“so we need four cans of paint.”

Mama Ndege sends the kids to get the four cans.



$$20 \div 5 = 4$$



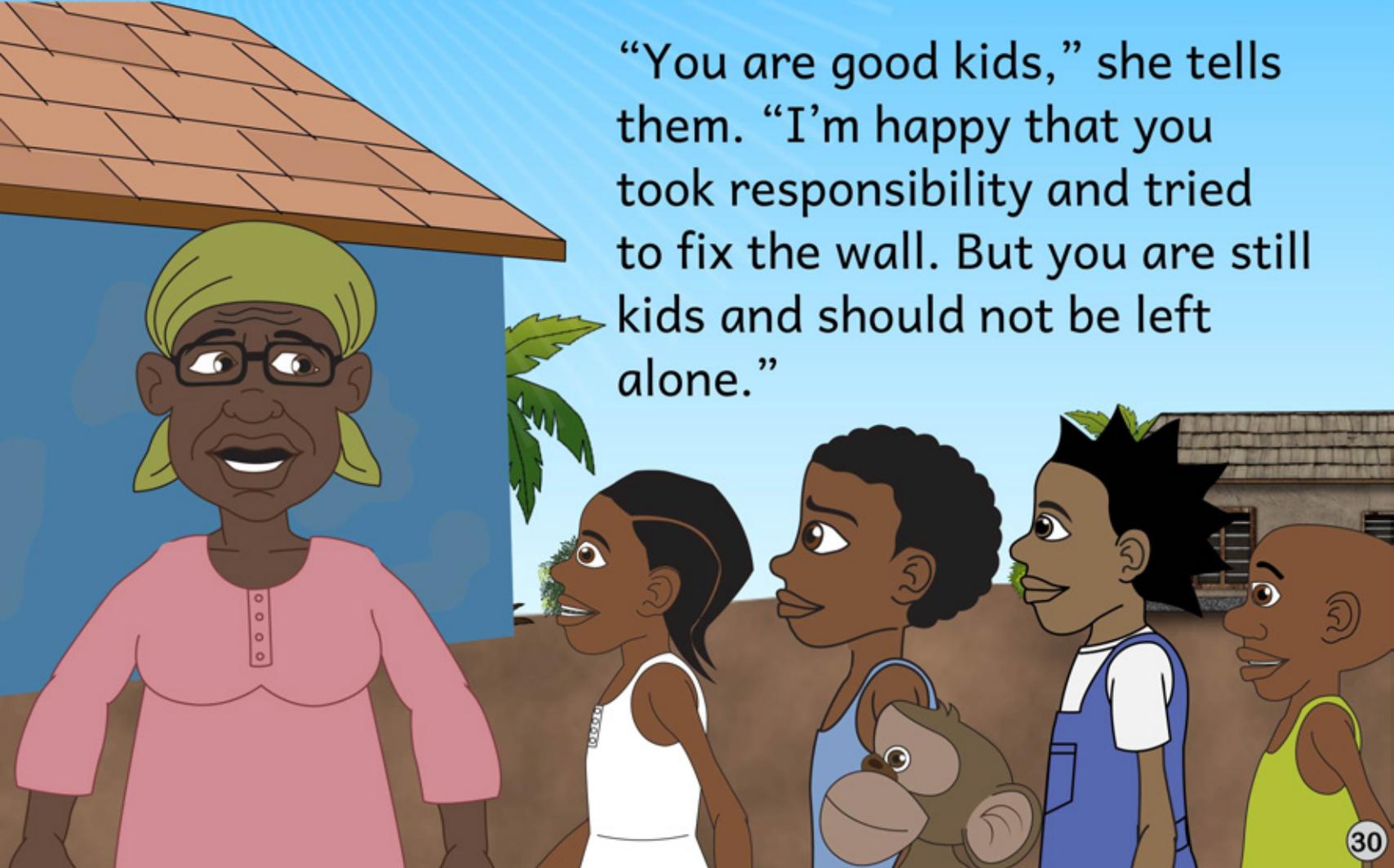
Back at Kibena's house, the kids paint the wall.
"It looks beautiful!" Koba exclaims.
Kibena is happy that her grandma will treat
her like a grown-up, even if she finds out
what really happened to her wall.



When Kibena's grandma returns, she sees the spilled paint bucket, along with the other buckets and the measuring tools. But she also sees the freshly painted wall.



“You are good kids,” she tells them. “I’m happy that you took responsibility and tried to fix the wall. But you are still kids and should not be left alone.”





The End

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