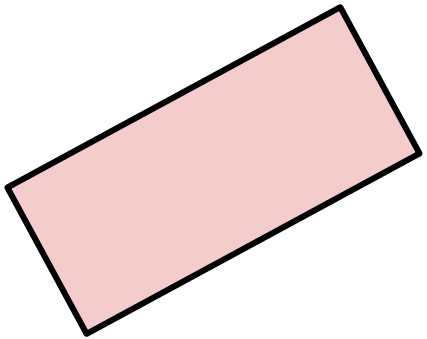
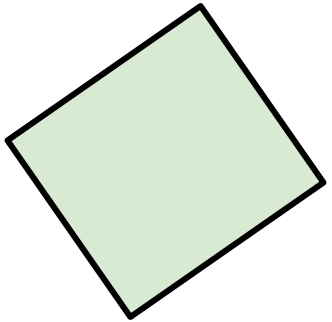
MathTeacherCoach.com

Area and Perimeter Models

Unit 3 Lesson 1





Math 4

Students will be able to...

1. Interpret a multiplication equation as a comparison
2. Multiply or divide to solve word problems involving multiplicative comparison
3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems

Key Vocabulary

35 is 7 times as much as 5

35 is 7 times more than 5

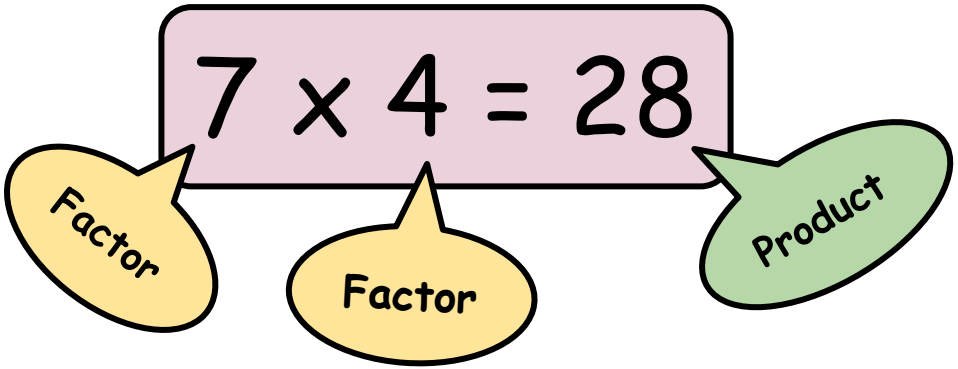
7x5=35

35 is 7 times as many as 5

35 is 7 times as large as 5

Multiplicative Comparison

A statement that shows how two factors and their product can be read as a comparison.



Comparison: 28 is 7 times as many as 4

Let's try...

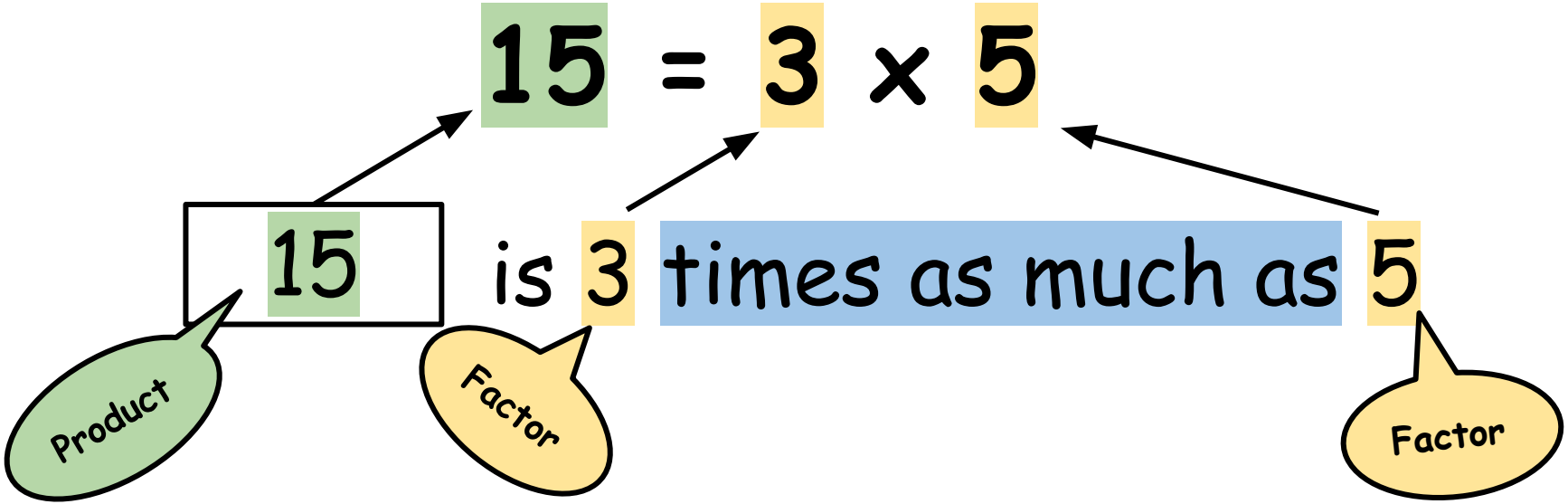
Use the equation to complete the sentence.

$$15 = 3 \times 5$$

?  is 3 times as much as 6

? ?

Use the equation to complete the sentence.



Let's try...

Use the equation to complete the sentence.

$$45 = 9 \times 5$$

45 is 9 times as much as 

Use the equation to complete the sentence.

$$45 = 9 \times 5$$

45 is 9 times as much as 5

Wrong Way: 45 is 5 times as much as 9

Let's solve word problem using multiplicative comparison!

Jack bought 7 cupcakes. Sally bought 3 times more cupcakes than Jack did.

How many cupcakes did Sally buy?

Step 1 : Circle the important keywords

Jack bought 7 cupcakes. Sally bought 3 times more cupcakes than Jack did.

How many cupcakes did Sally buy?

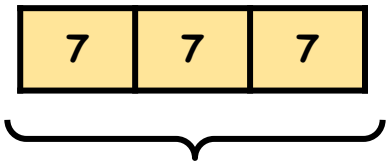
Unknown Product

Step 2 : Draw a tape diagram!

Jack

Each box is called tape. One piece of tape represents the amount of Jack's cupcake.

Sally



Sally has 3 times more cupcakes than Jack so she gets 3 tapes.

How many in total?
(Unknown product)

Step 3 : Write the equation

Sally has 3 times more cupcakes than Jack (Jack has 7).

$$3 \times 7 = 21$$

Unknown Product

Answer: Sally has 21 cupcakes.

Let's try another word problem!

Pam has 40 pokemon cards. This is 5 times as many as Ryan has.

How many cards does Ryan Have?

Step 1 : Circle the important keywords

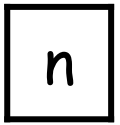
Pam has 40 pokemon cards. This is 5 times as many as Ryan has.

How many cards does Ryan Have?

What are we comparing? Ryan and Pam's pokemon cards

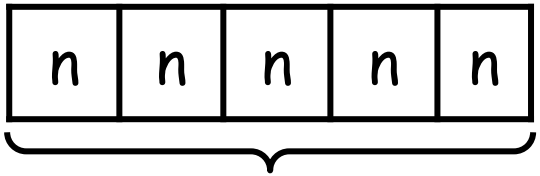
Step 2 : Draw a tape diagram!

Ryan



One piece of tape represents the amount of Ryan's pokemon cards.

Pam



Pam has 5 times more Pokemon cards than Ryan so she gets 5 tapes.

40

Step 3 : Write the equation

Pam has 40 pokemon cards and that is 5 times more pokemon cards than Ryan's.

$$40 = 5 \times n$$

Step 4 : Solve the equation.

$$40 = 5 \times n$$

$$40 = 5 \times 8$$

$$n = 8$$

Answer: Ryan has 8 pokemon cards

Let's try this question...

The giraffe is 20 feet tall. The kangaroo is 5 feet tall.

How many times taller is the giraffe than the kangaroo?

Step 1 : Circle the important keywords

The giraffe is 20 feet tall. The kangaroo is 5 feet tall.

How many times taller is the giraffe than the kangaroo?

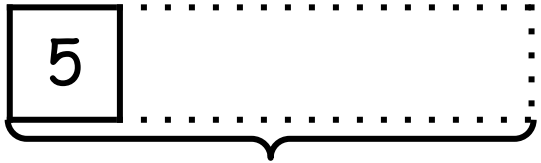
★ What are we comparing? giraffe and kangaroo's height

Step 2 : Draw a tape diagram!

Kangaroo

One piece of tape represents the amount of Ryan's pokemon cards.

Giraffe



We want to know how many times taller the giraffe is.

Step 3 : Write the equation

Giraffe is 20 feet tall. The giraffe is n times taller than kangaroo (5 feet tall).

$$20 = n \times 5$$

Step 4 : Solve the equation.

$$20 = n \times 5$$

$$20 = 4 \times 5$$

$$n = 4$$

Answer: The giraffe is 4 times taller than the kangaroo.

Area and Perimeter Models

How are they different?

Multiplicative Comparison

A statement that shows how two factors and their product can be read as a comparison

30 is 5 times more than 6

30 = 5 × 6

Additive Comparison

A statement that shows how two addends and their sum can be read as a comparison

30 is 10 more than 20

30 = 10 + 20

Which equation should we use?

Ken gets to choose whether he gets bicycle or video game for his birthday. The video game costs $8. The bicycle costs 6 times as much as the video game.

Which equation can you use to find how much the bicycle is?

6x8	OR	6+8

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CORRECT!

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Which equation can you use to find how much the bicycle is?

6x8

OR

6+8

CORRECT!

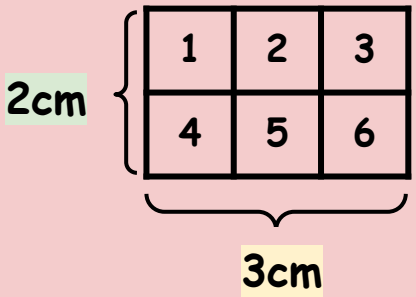
Area and Perimeter

Area

The number of square units inside a shape.

Length x Width = Area

3cm	x	2cm	=	6cm²

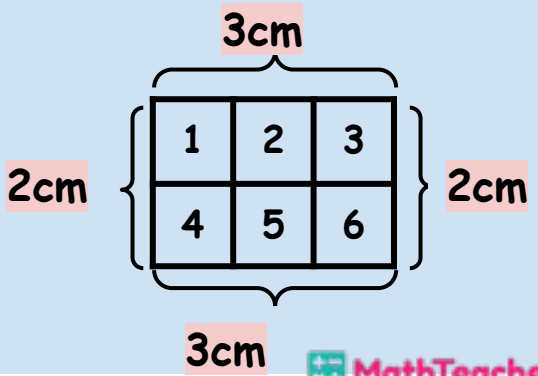


Perimeter

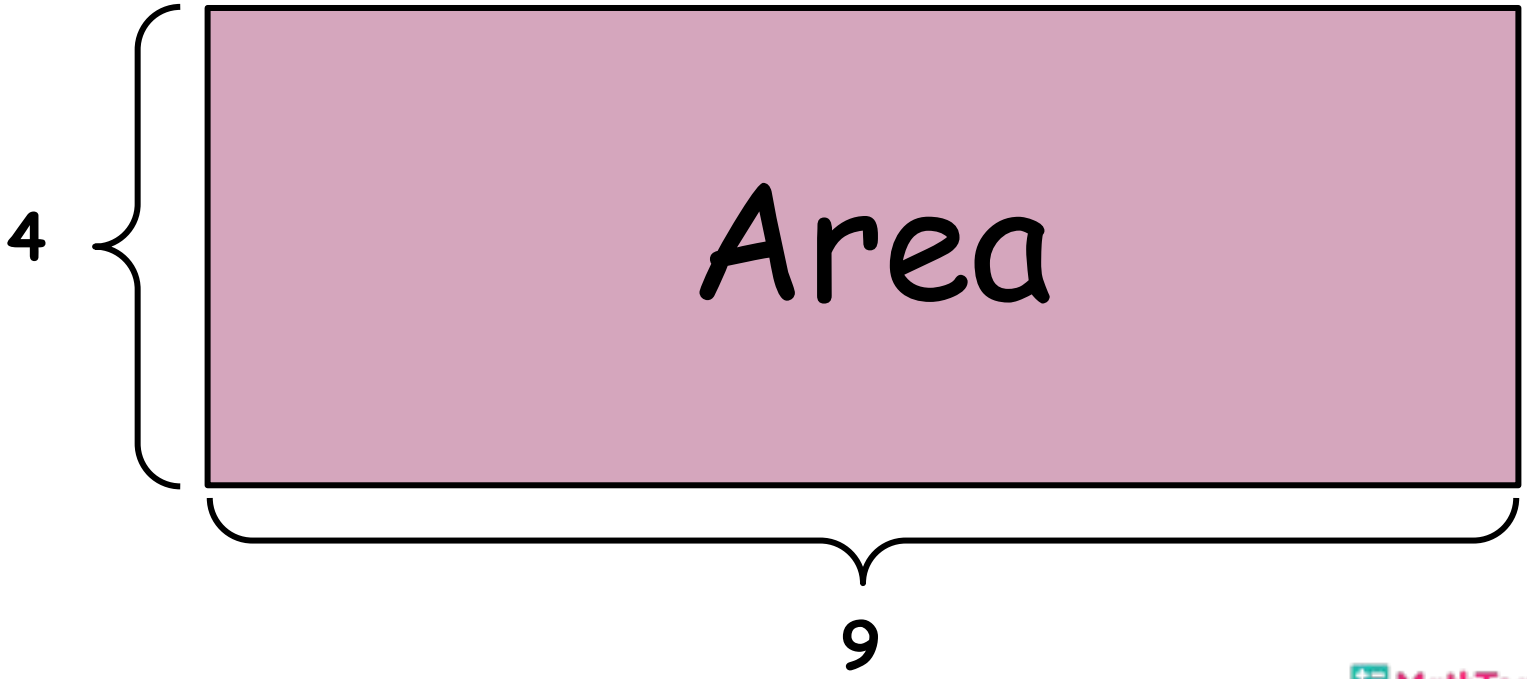
The distance around the outside of a shape.

Side+side+side+side = Perimeter

3	+	3	+	2	+	2	=	10



What is the area of the rectangle?

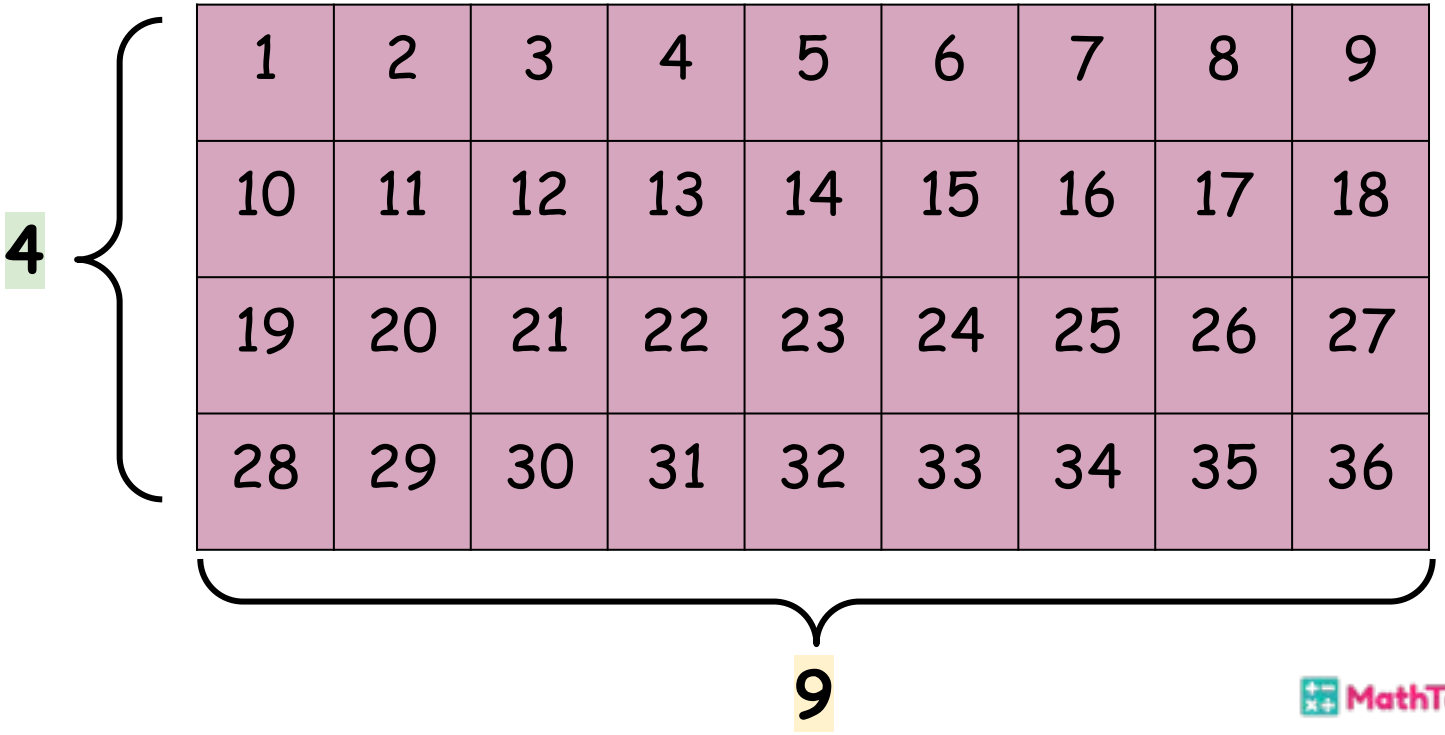


Area and Perimeter Models

Area Formula

Length × Width = Area

9 × 4 = 36



Let's try a word problem!

A train ticket is 10 centimeters long and 4 centimeters tall.

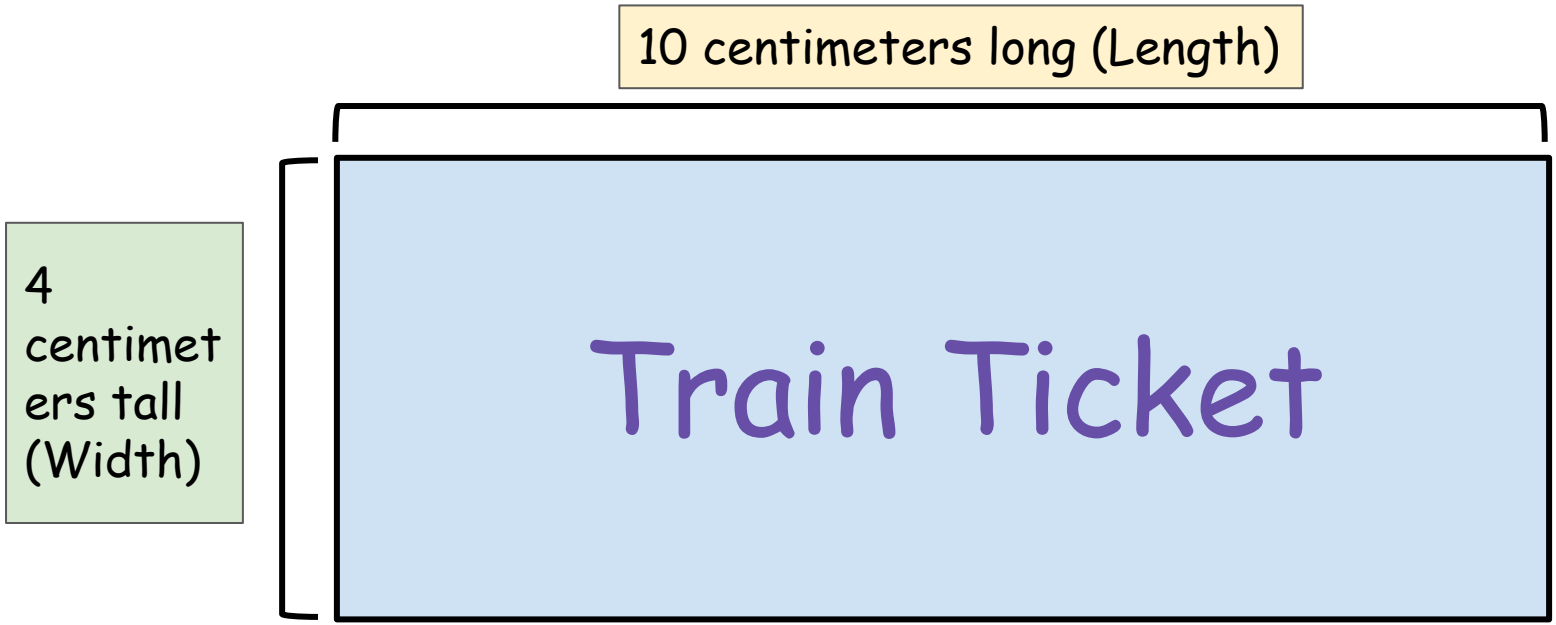
What is its area of the train ticket?

Step 1 : Circle the important keywords

A train ticket is 10 centimeters long and 4 centimeters tall.

What is its area of the train ticket?

Step 2 : Draw a picture!

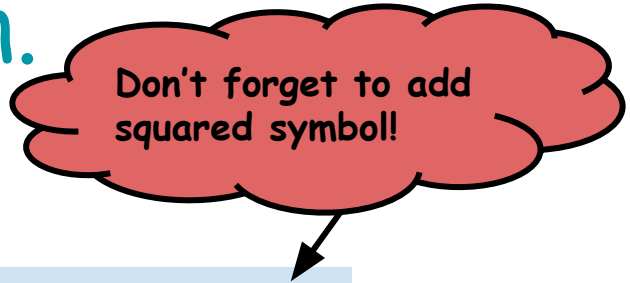


Step 3 : Write the equation

Length x **Width** = **Area**

10 x **4** =

Step 4 : Solve the equation.



$$10\text{cm} \times 4\text{cm} = 40\text{cm}^2$$

Answer: The area of the train ticket is 40cm^2 (square centimeters)

Let's find the unknown factor!

John's pokemon card is 5 centimeters long. The area of his pokemon card is 30 square centimeters.

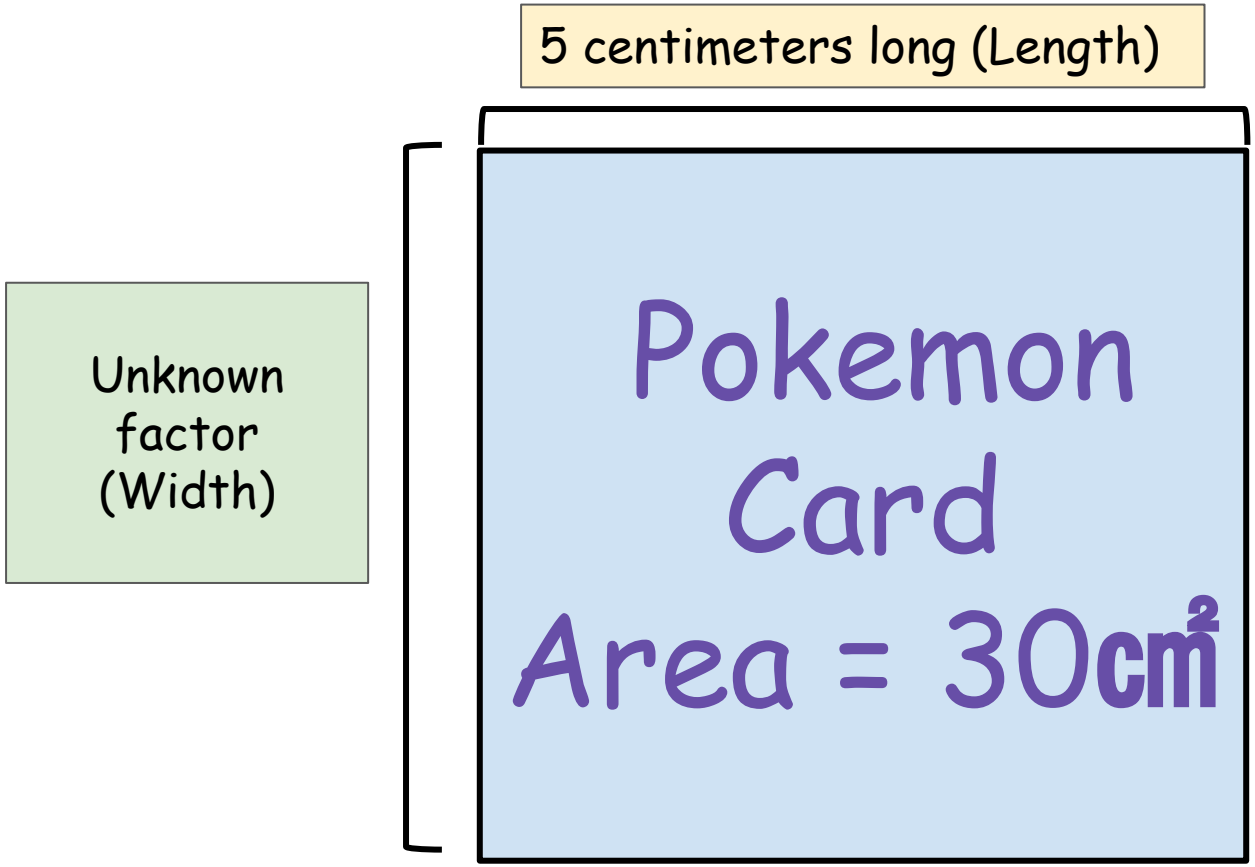
What is the width of his pokemon card?

Step 1 : Circle the important keywords

John's pokemon card is 5 centimeters long. The area of his pokemon card is 30 square centimeters.

What is the width of his pokemon card?

Step 2 : Draw a picture!



Step 3 : Write the equation

Length x Width = Area

5 x n = 30

Step 4 : Solve the equation.

$$5 \times n = 30$$
$$5 \times 6 = 30$$
$$n = 6$$

Answer: The width of the pokemon card is 6cm (centimeters).