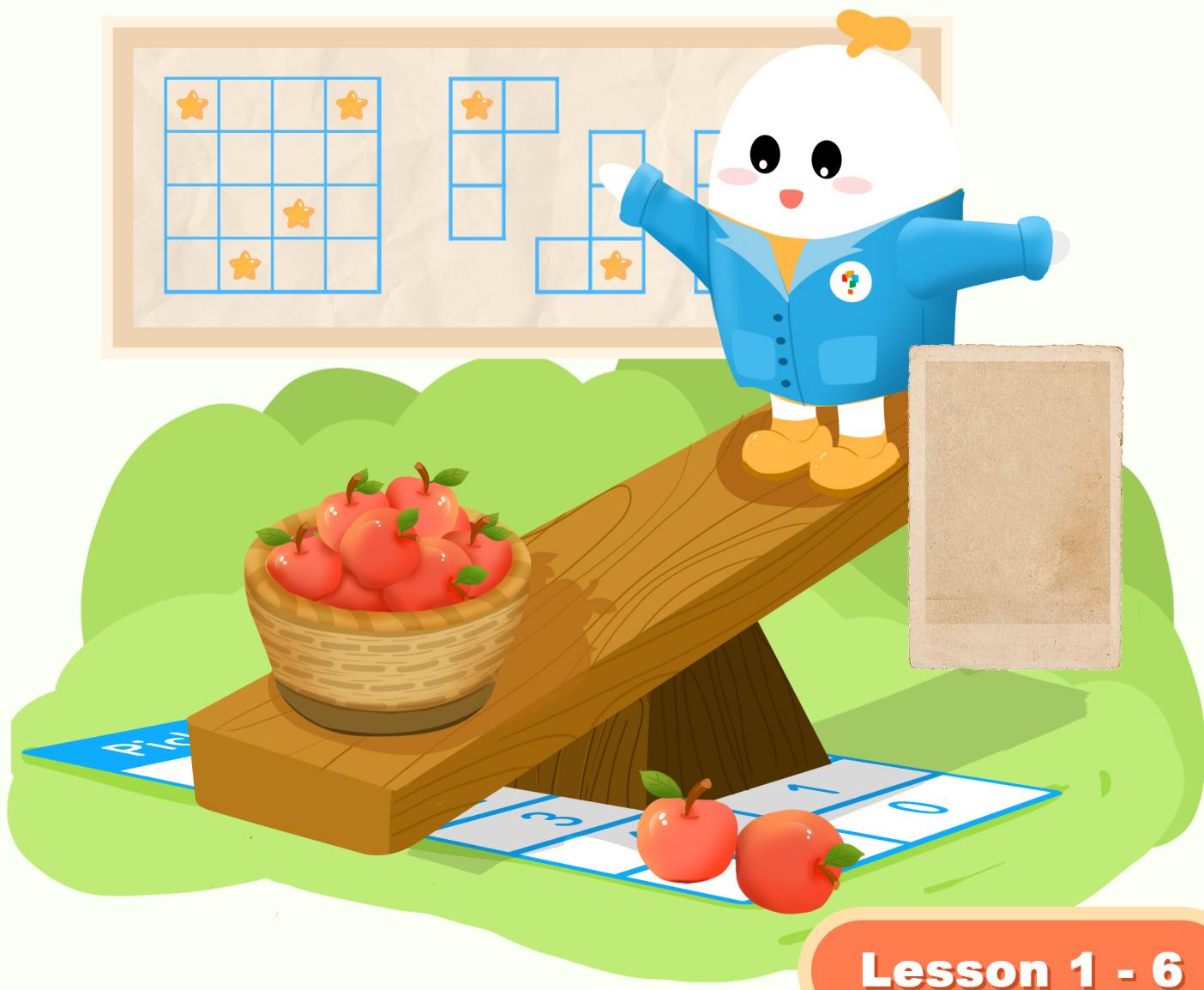
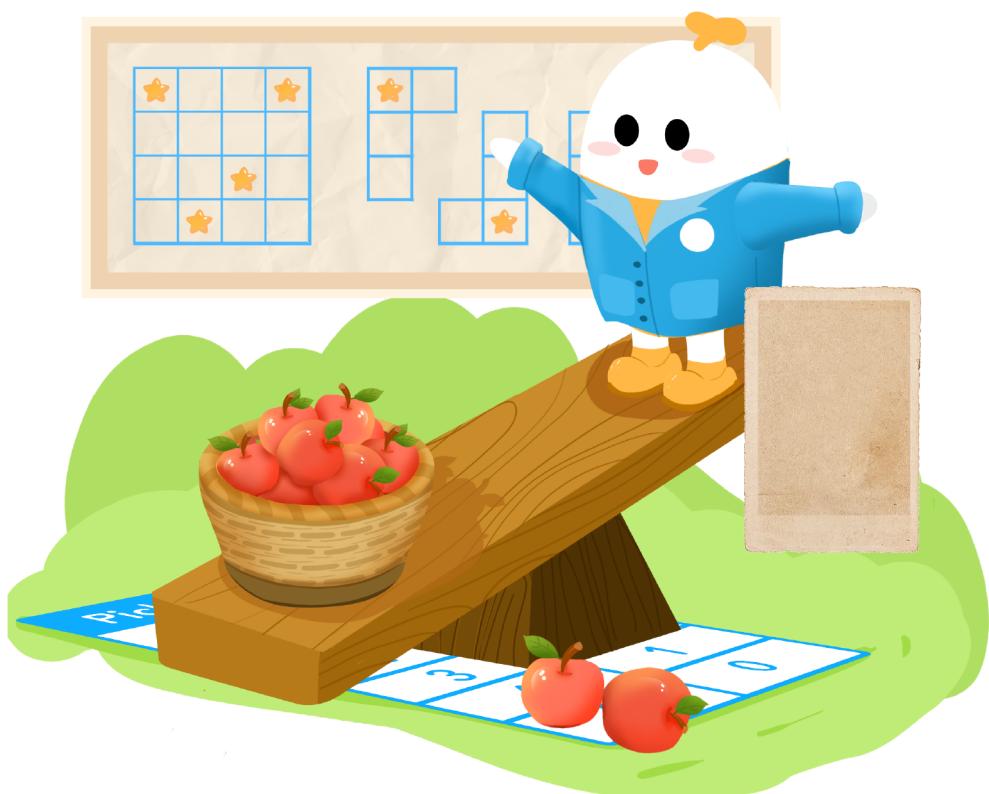




Think Academy



Think Academy



Name: _____

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PREFACE

Welcome to your Think Academy maths course, we're delighted that you've chosen to learn with us!

About Think Academy

Think Academy is part of the NYSE-listed TAL Education Group, trusted by over 30 million students and their families across the globe.

Over the past 18 years, Think Academy's expertise has focused on curriculum development and maths tuition, supporting students to excel in primary school level mathematics.

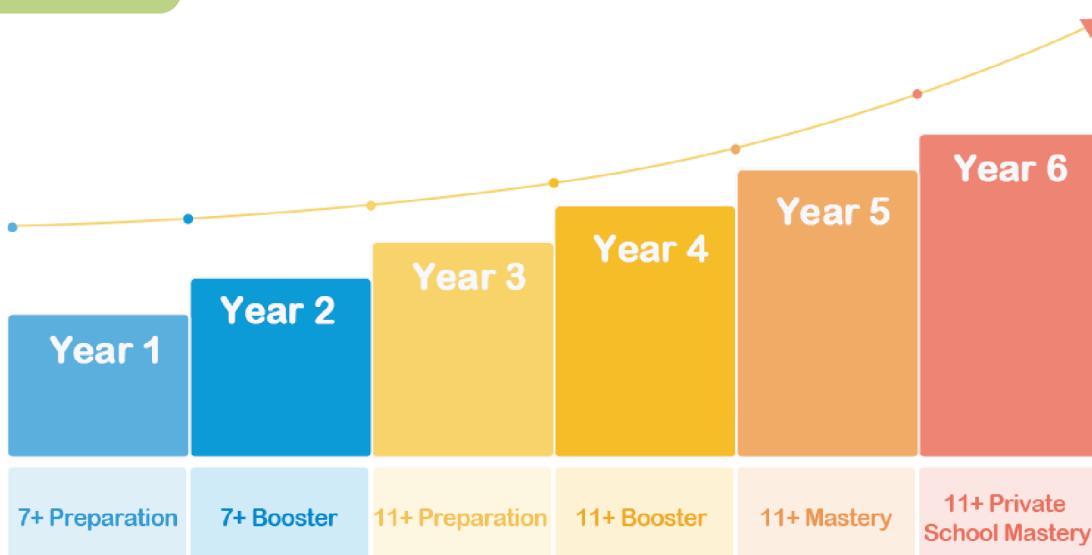
Our bespoke online maths courses harness the power of technology to ensure students achieve their full potential at primary school and throughout their 11+ journey.

Throughout this online maths course, you and your child will experience a fully guided learning process, led by their tutor with additional support from the tutor's assistant.

This course will introduce your child to new and challenging mathematical concepts. Their tutor will encourage your child to break boundaries by using the problem-solving techniques and fast calculation skills required to achieve 11+ mastery.

When it's time for class, open the Think Academy Classroom app to get started.

Our curriculum

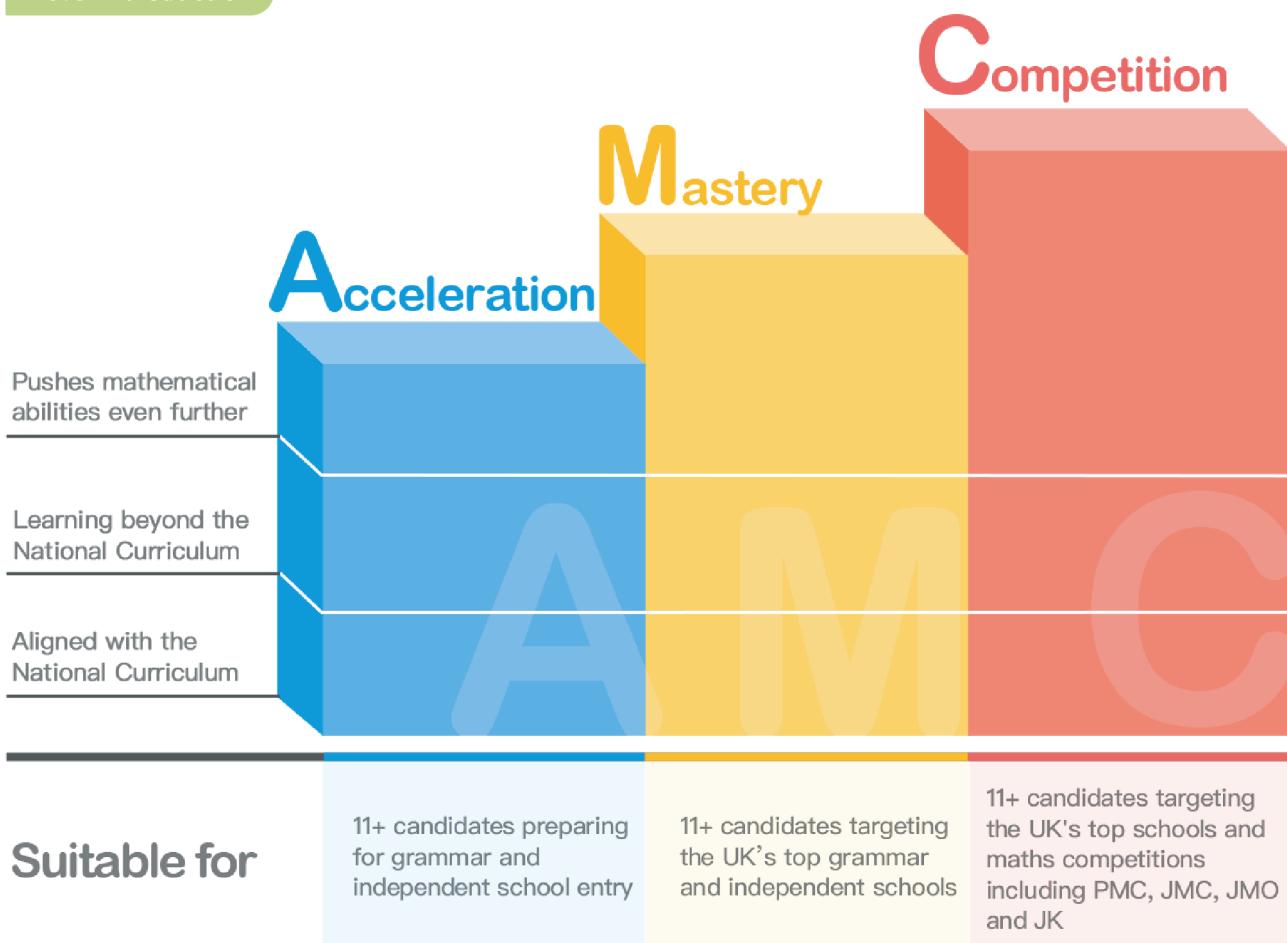


Think Academy's curriculum is designed to ensure students develop the necessary skills required for success in the UK National Curriculum, and later, in the 11+ exam. That is why our curriculum centres around the modules consistently used in all types of secondary school entrance exams.

Our curriculum



Level introduction



Learning Guidance

In Class

- Exploration

Your teacher will help you to understand the topic, exploring smart ways to answer difficult questions!

- Practice

Now you can try to answer some questions using your new skills!

- Reasoning

See if you can find any mistakes and find ways to correct them!

- Challenge

Stretch yourself by using your new skills to answer some more difficult questions!

Homework

- Teaching Time

Now you've learned these new skills, record yourself teaching your family how to answer a question from this topic!

- Four Days of Exercises

There are four days of exercises, 5 questions per day, to consolidate what you have learnt and to improve your speed and accuracy!

Extensive Challenges

There are 3 challenging questions for each lesson at the end of the book. It is not recommended to start this section unless you have mastered all the homework questions. This section provide you an exposure to challenging questions and an opportunity to reach for the higher class levels!

Stage Test

We provide a stage test every three (or four) lessons, to help you identify your strengths and weaknesses so that tutors can provide targeted instruction to help you improve. It also gives you an opportunity to understand your own progress over time!

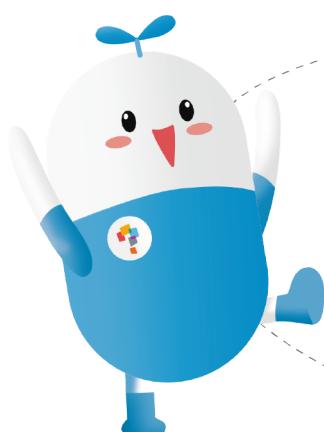
Welcome to the Think Academy Team!



Hi! My name's Pip. I'm going to be your guide as we go on an amazing maths adventure together!



And my name's Bud! I think maths can be fun for everyone - let me show you why!



There are lots of different things to learn, but don't worry, we'll be with you every step of the way!

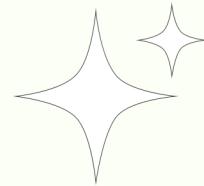
We'll teach you some super smart and fun ways to work out the most difficult maths problems...



*Congratulations!
You have completed your adventure!*

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Lesson 1	Area of Squares and Rectangles.....	01
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Lesson 1

Area of Squares and Rectangles



Let's Look Back

Perimeter

About this Lesson

Area of Squares and Rectangles

Let's Look Ahead

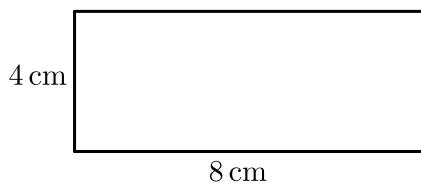
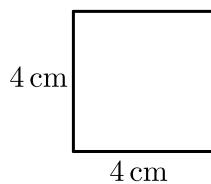
Strategies of Finding Area

Objectives

- Knowing the units of area
- Square and rectangle area formulae
- Find the perimeter from the area
- Find the area from the perimeter

Let's Get Ready

- 1 Below are a square and a rectangle. The perimeter of the square is _____ cm, the perimeter of the rectangle is _____ cm.



- 2 The perimeter of the square is 20cm, so the length of the square is _____ cm.

- 3 The perimeter of a rectangle is 20cm.

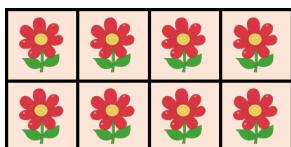
(1) Given that the length of the rectangle is 7cm, then the width is _____ cm.

(2) Given that the width of the rectangle is 4cm, then the length is _____ cm.

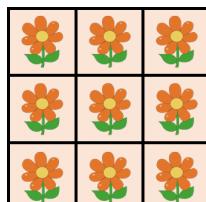
In Class

Learn and Discover

- 1 Which garden is larger?



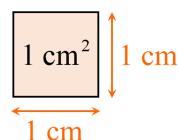
A



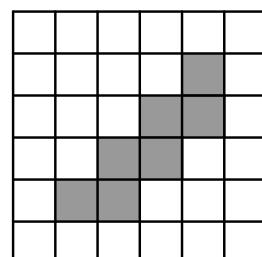
B

- A. A B. B C. They are the same size.

- 2 The area of a square with sides that measure 1 centimetre is 1 square centimetre. You can write this as 1 cm^2 .



The area of each square in the picture below is 1 cm^2 . What is the area of the shaded shape?

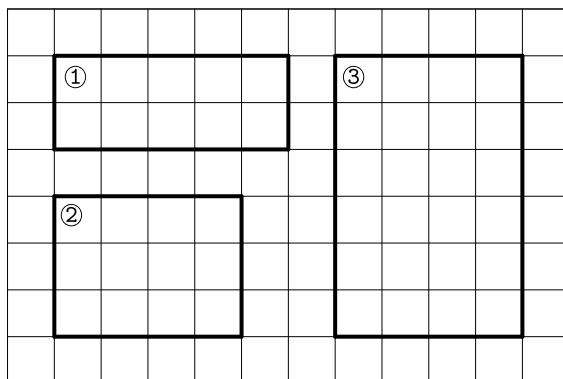


- A. 7 cm^2 B. 8 cm^2 C. 9 cm^2

• • • •

Learn and Discover

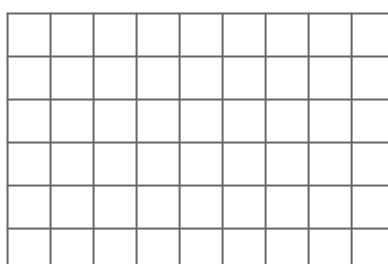
- 1 Each small square in the picture below is 1cm in length. The area of each square is 1cm². Try to find out the area of the 3 rectangles.



	①	②	③
Length/cm			
Width/cm			
Area/cm ²			

Using the sheet above, we can calculate the area of a rectangle by: _____ × _____ .

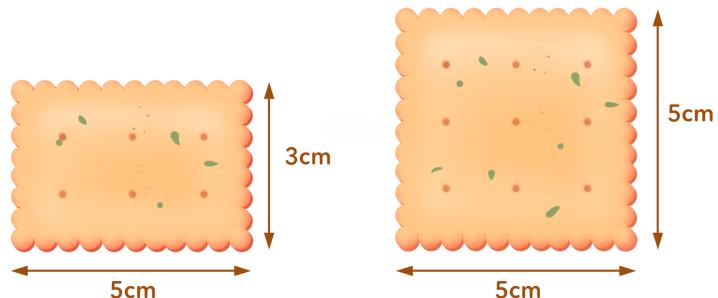
- 2 Every block in the picture below is 1 square centimetre in area. Draw a square whose side length is 3cm and find the area of the square.



We can calculate the area of a square by: _____ × _____ .

Exploration 1

Pip and Bud were baking cookies at home. Pip baked a rectangular one and Bud baked a square one. The lengths of the cookies are shown below. The area of Pip's cookie is _____, and the area of Bud's cookie is _____.



Complete the table as quickly as you can!

$1 \times 1 =$ _____	$4 \times 4 =$ _____	$7 \times 7 =$ _____	$10 \times 10 =$ _____
$2 \times 2 =$ _____	$5 \times 5 =$ _____	$8 \times 8 =$ _____	$11 \times 11 =$ _____
$3 \times 3 =$ _____	$6 \times 6 =$ _____	$9 \times 9 =$ _____	$12 \times 12 =$ _____



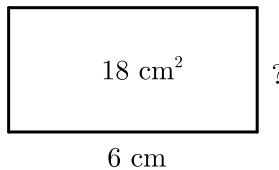
Exploration 2

Fill in the blanks.

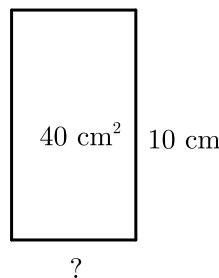
- (1) The area of a rectangle is 40cm^2 . Given that the length is 8cm, then the width is _____ cm.
- (2) The area of a rectangle is 48cm^2 . Given that the width is 4cm, then the length is _____ cm.
- (3) The area of a square is 16cm^2 . The length of each side is _____ cm.

Practice

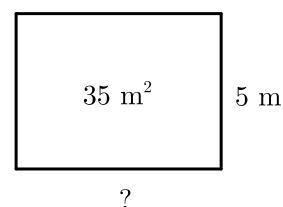
- 1 Find the missing length of each rectangle.



_____ cm



_____ cm



_____ m

- 2 If the area of a square is 36 m^2 , then the side length of this square is _____ m.

A. 4

B. 6

C. 9

Reasoning

Is Pip correct? If not, please correct his answer!

The area of a square is 64 cm^2 , then the length of each side is _____ cm.

Pip's answer:

$$64 \div 4 = 16 \text{ cm}$$

Exploration 3

- 1 A square has area 100 cm^2 . What is the perimeter of the square? _____ cm
- 2 The perimeter of a square is 44 cm. Find its area.
A. 11 cm^2 B. 32 cm^2 C. 91 cm^2 D. 121 cm^2 E. 150 cm^2

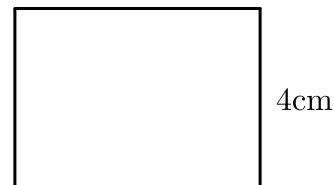
Practice

Lily has a square pond in her backyard. The perimeter of the pond is 40 metres. The length of each side is _____ m. The area is _____ m^2 .

Exploration 4

- 1 The area of this rectangle is 24cm^2 . What is its perimeter in cm?

_____ cm



- 2 The perimeter of this rectangle is 30cm. What is its area in cm^2 ?

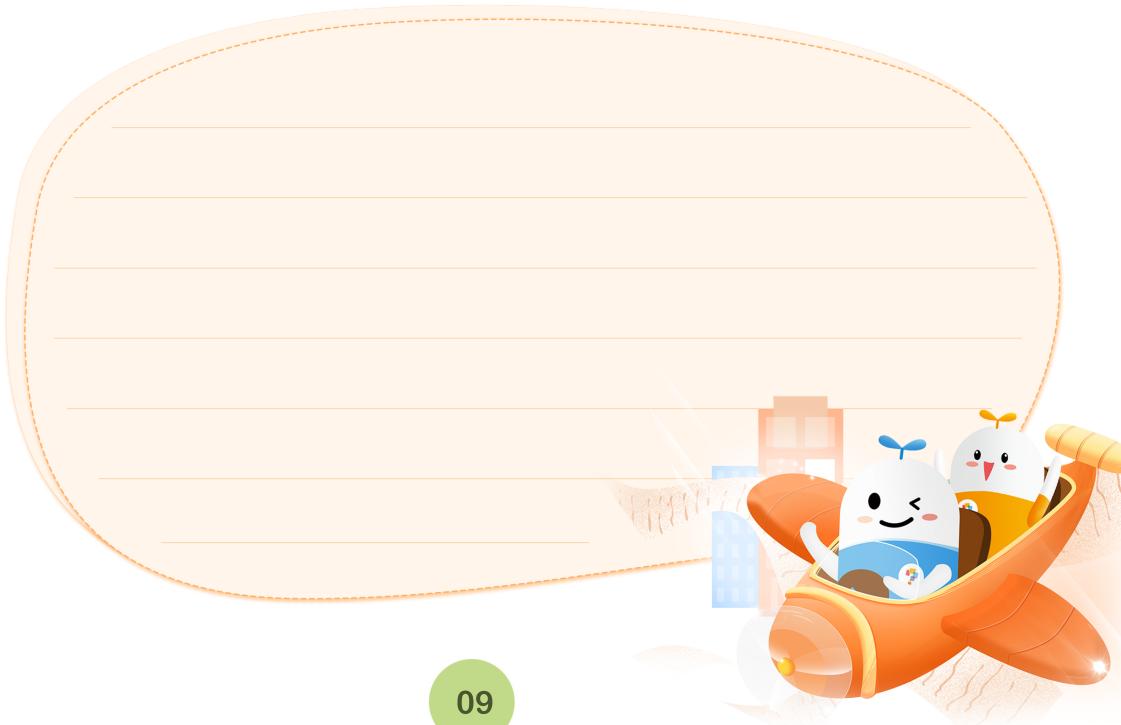
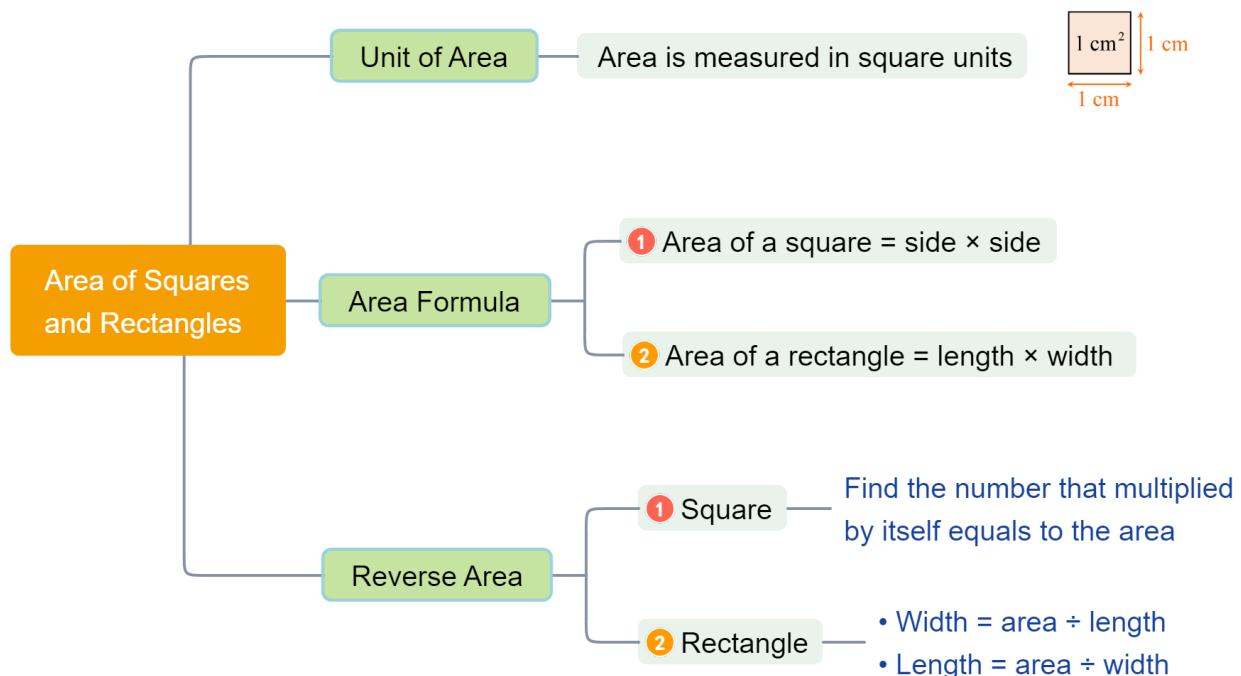
_____ cm^2



Challenge

How much smaller is the area of a 60 cm by 40 cm rectangle than that of a square with the same perimeter?

Knowledge Map

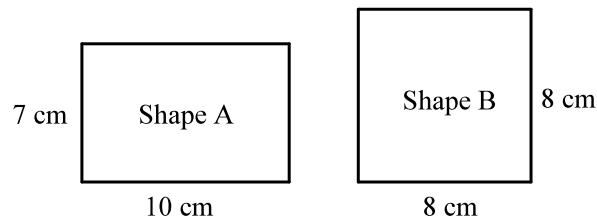


Homework

Teaching Time

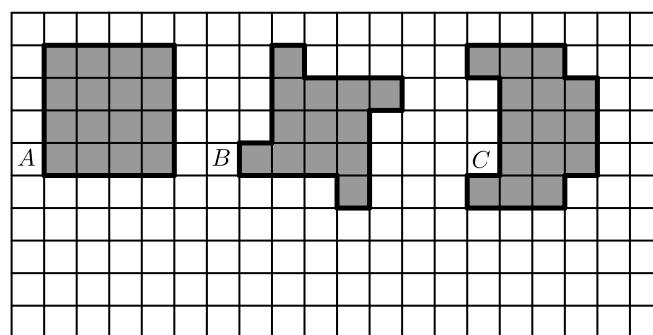
Have you learnt everything from the class? Share your thoughts with your family on how to solve the question below.

Which shape is larger?



Day 1

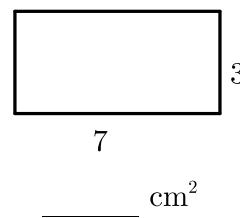
- 1 Shapes A, B and C are drawn on the grid below.



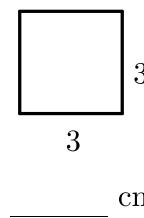
Which shape has the largest area?

Answer: _____ .

- 2 What is the area of the shapes below (the length and width are marked in cm)?



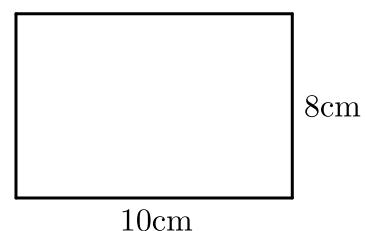
_____ cm^2



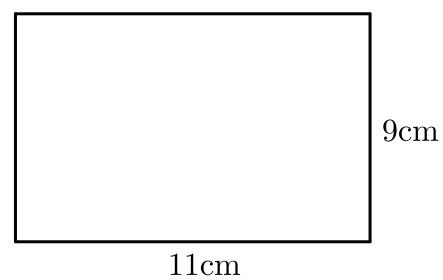
_____ cm^2

- 3 In this question the shapes are NOT drawn to scale.

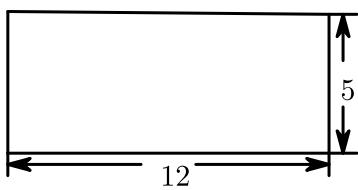
(1) Find the area of the rectangle below. _____ cm^2



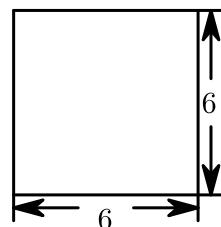
(2) Find the area of the rectangle below. _____ cm^2



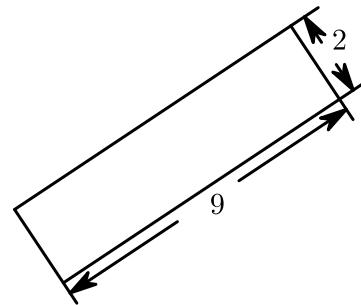
4 Calculate the area. (unit: cm)



$$\underline{\hspace{2cm}} \text{ cm}^2$$

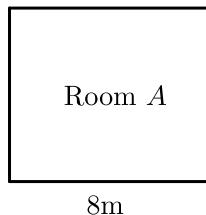


$$\underline{\hspace{2cm}} \text{ cm}^2$$

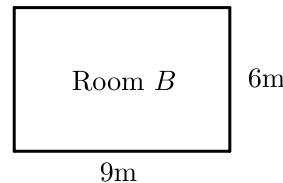


$$\underline{\hspace{2cm}} \text{ cm}^2$$

5



7m



6m

(1) Which has the larger area, Room A or Room B? Room

(2) Which has the longer perimeter? Underline the statement that is true.

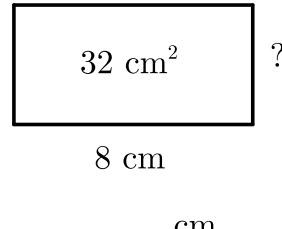
- A. Room A has the longer perimeter.
- B. Room B has the longer perimeter.
- C. The perimeters of Room A and B are the same.



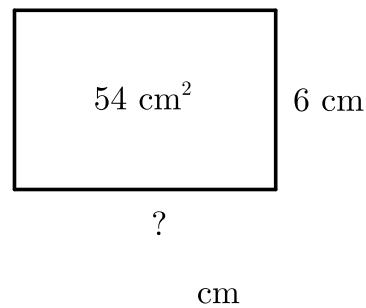
Day 2

1 The area of a square garden is 4 m^2 . The length of each side is _____ m.

2 Find the missing length of each rectangle.



_____ cm



_____ cm

3 A rectangle has an area of 72cm^2 . If two of the sides are each 6cm long, what is the length of each of the other two sides? _____ cm

4 Fill in the blanks below:

(a) The area of a square is 49 m^2 . The length of each side is _____ m.

(b) The area of a rectangle is 36 m^2 . If the length of the rectangle is 9 m, the width is _____ m.

5 The perimeter of this square is 36cm.

(1) What is the length of one of its sides? _____ cm

(2) What is its area? _____ cm^2





Day 3

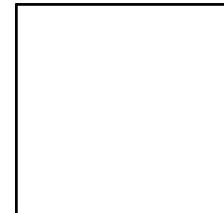
- 1 This is Bud's cake, it's a square. The area of the square is 81 cm^2 , the length of each side is _____ cm. The perimeter of this square is _____ cm.



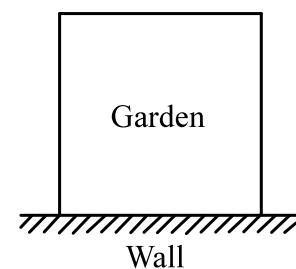
- 2 The perimeter of a square is 32cm. What is its area? _____

- 3 A square has area 49cm^2 . What is the perimeter of the square? _____ cm

- 4 A square has a perimeter of 80cm. Find its area. _____ cm²



- 5 A square garden is built against a wall. 3 sides of the garden are surrounded by a fence. The total length of the fence is 24m. What is the area of this garden?





Day 4

- 1 The area of Pip's rectangular garden is 32 m^2 , the length is 8 m, and the width is _____ m. The perimeter of this garden is _____ m.
- 2 The area of a rectangle is 30m^2 , its width is 3m. The perimeter is _____ m .
- 3 The perimeter of a rectangle is 24cm. Given that its length is 10cm. What is its area?

Step 1

Find the width:

$$\begin{aligned}\text{Length} + \text{width} &= \text{Perimeter} \div \boxed{\quad} \\ &= \boxed{\quad} \div \boxed{\quad} \\ &= \boxed{\quad} \text{ cm}\end{aligned}$$

$$\text{Width} = \boxed{\quad} - \boxed{\quad} = \boxed{\quad} \text{ cm}$$

Step 2

Find the area:

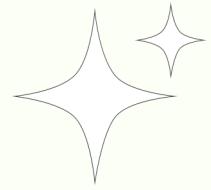
$$\text{Area} = \text{Length} \times \text{Width}$$

$$= \boxed{\quad} \times \boxed{\quad} = \boxed{\quad} \text{ cm}^2$$

- 4 The perimeter of a rectangle is 50cm. If the length is 20cm, what is the area of the rectangle?
A. 40cm^2 B. 70cm^2 C. 60cm^2 D. 250cm^2 E. 100cm^2

- 5 Complete the following chart.

	Length	Width	Perimeter	Area
Rectangle 1	29m	_____	60m	_____
Rectangle 2	28m	_____	60m	_____
Rectangle 3	_____	5m	60m	_____
Rectangle 4	_____	10m	60m	_____
Rectangle 5	15m	_____	60m	_____



Lesson 2

Carroll Diagrams



Let's Look Back

Statistical Tables

About this Lesson

Carroll Diagrams

Let's Look Ahead

Inclusion and
Exclusion

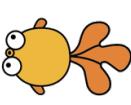
Objectives

Learn to sort data into a Carroll diagram

Learn to complete a Carroll diagram to solve word problems

Let's Get Ready

- 1 Look at the chart below. How many more rabbits than ducklings are there? _____

What animal?				
How many?	4	11	7	5

- 2 The chart below shows the number of votes for the survey “My Favorite Fruit” in Justin’s class. Which kind of fruit is the most popular one? ()

	Grape	Orange	Watermelon	Strawberry
# of Votes	5	10	4	11

- A. Grape B. Orange C. Watermelon D. Strawberry

In Class

Learn and Discover

- 1 Class A has 5 students: Adam, Bob, Cathy, David, and Eva.

	I'm 8 years old	I'm 9 years old
I have no pet	Adam, Bob	David
I have one pet at least	Cathy	Eva

(1) How old is David?

- A. 8 B. 9 C. 10

(2) Who has more pets? Eva or Bob?

- A. Eva B. Bob C. Cannot be sure

(3) Who is 8 years old and has one pet at least?

- A. Adam B. Eva C. Cathy

2 There is a list of numbers:

2, 3, 4, 6, 7, 8, 9, 10, 12, 24

	A multiple of 3	Not a multiple of 3
Even	6, 12, 24	2, 4, 8, 10
Odd	3, 9	7

(1) How many numbers are not only even but also multiples of 3 in the list?

- A. 1 B. 2 C. 3 D. 4

(2) How many numbers are odd but not multiples of 3 in the list?

- A. 1 B. 2 C. 3 D. 4



Exploration 1

Use a Carroll diagram to sort the numbers below.

44, 28, 53, 35, 72, 36, 45, 63

	A multiple of 4	Not a multiple of 4
A multiple of 9		
Not a multiple of 9		

Step 1

Check if each number is a multiple of 4 or 9, the first one is done.

	44	28	53	35	72	36	45	63
4?	✓							
9?	✗							

Step 2

Fill in each number in the correct position.

44 is a multiple of 4, it could be in box _____ or _____ .

44 is not a multiple of 9, it could be in box _____ or _____ .

Therefore, 44 should be in box _____ .

	A multiple of 4	Not a multiple of 4
A multiple of 9	A	C
Not a multiple of 9	B	D

Fill in other numbers in the diagram.

Practice

Place these numbers into the Carroll diagram. 3, 5, 7, 12, 30, 35, 42, 56

	A multiple of 7	Not a multiple of 7
A multiple of 6		
Not a multiple of 6		

How many numbers are multiples of 6 but not multiples of 7?

A. 1

B. 2

C. 3