

# WALT: measure lengths and angles of shapes.

## WILF:

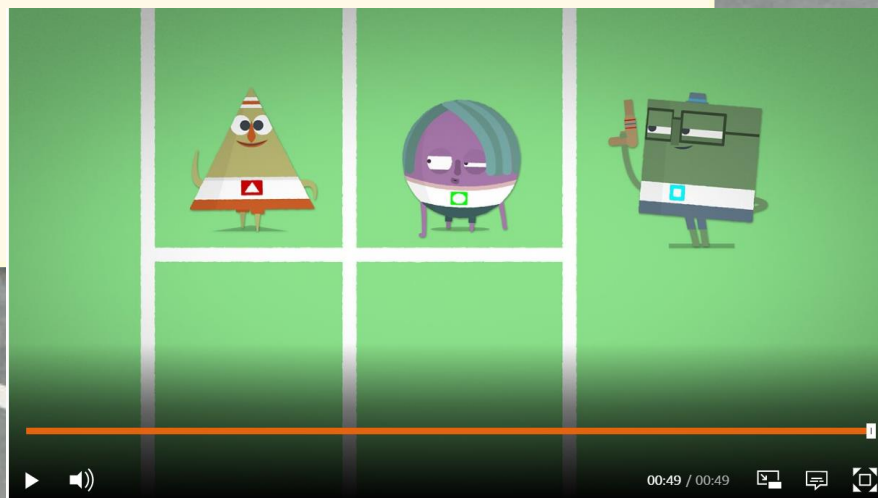
- Use your knowledge of rectangle properties to find missing lengths and angles.
- Identify different angles to help you.
- Use a protractor to check your work.

All shapes contain angles, some are different in what they equal to others.

Today we are going to focus on **rectangles**. You will need to use your knowledge of the properties of rectangles to help you with this.

What properties of rectangles can you remember?

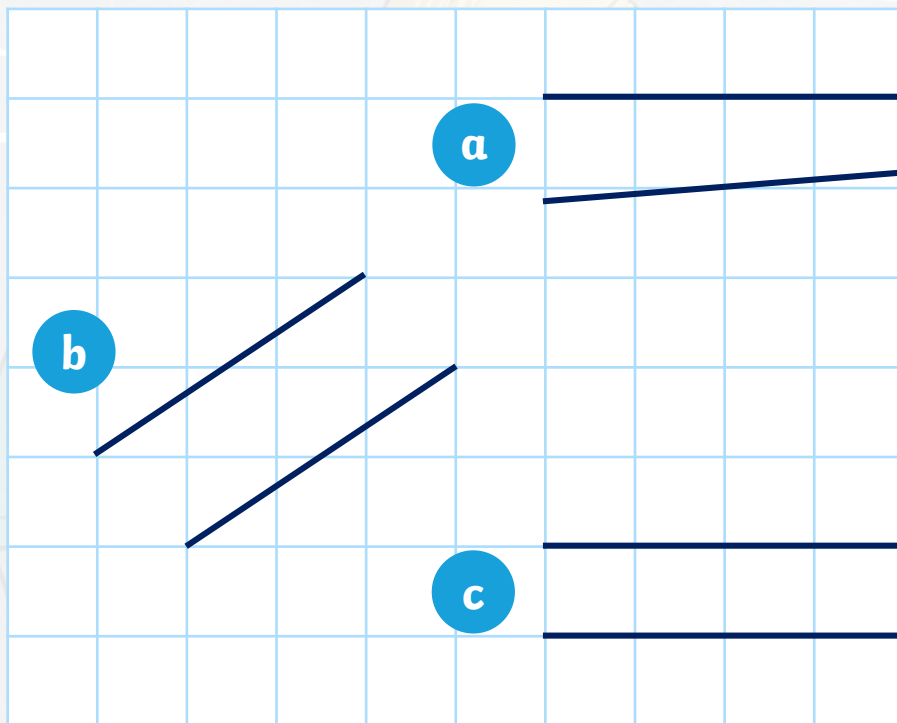
We will also need to think about perpendicular and parallel lines today. If you do not remember what those are, click on the image for a recap video.





Which pair of lines is not an example of parallel lines?

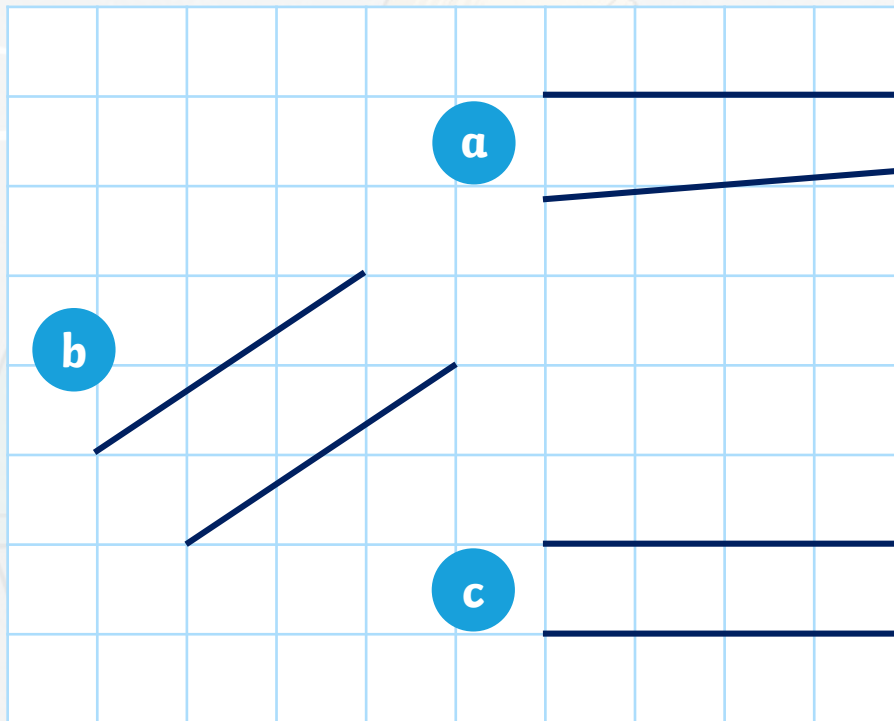
**Explain your answer.**





Which pair of lines is not an example of parallel lines?

**Explain your answer.**



### Answer

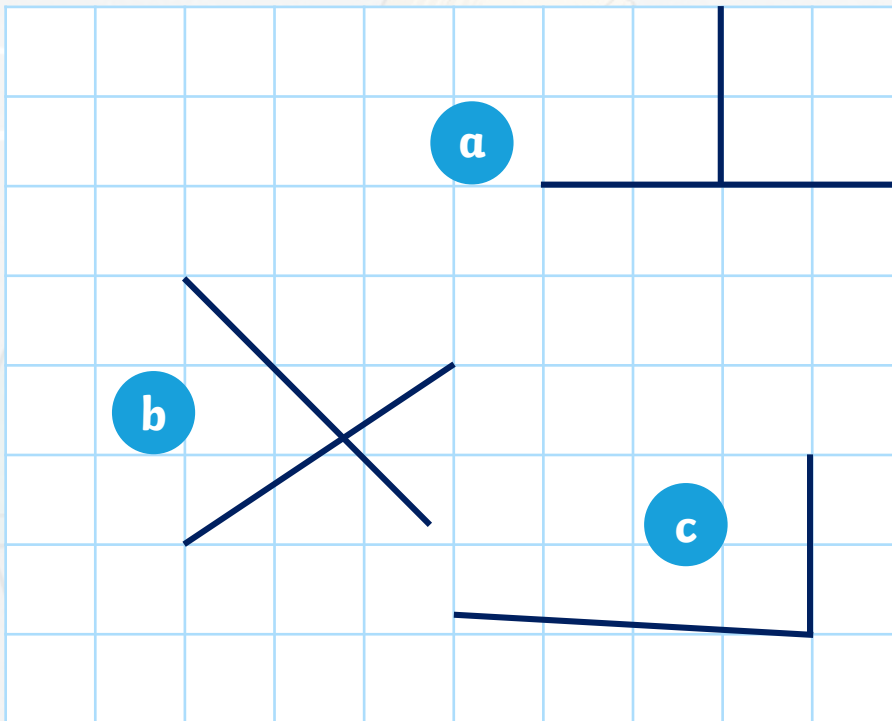
Diagram A does not show parallel lines. The lines would meet if they were extended. Parallel lines are always the same distance apart and will never meet.





Which pair of lines is not an example of perpendicular lines?

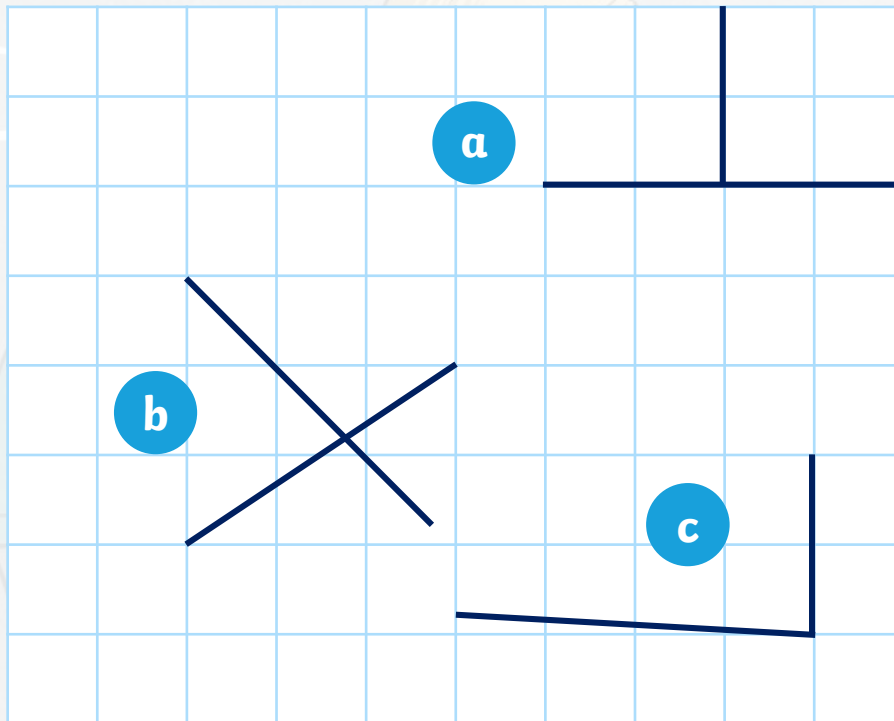
**Explain your answer.**





Which pair of lines is not an example of perpendicular lines?

**Explain your answer.**



### Answer

C is not an example of perpendicular lines. Perpendicular lines must meet/intersect at a right angle ( $90^\circ$ ).



## Calculating Lengths and Angles in Shapes - Rectangles



Find something small and rectangular in your room, or draw a rectangle with a ruler. Then, with a protractor and a ruler, measure the sides and angles of it.

**Don't forget to line the vertex up with the middle point of your protractor (with the vertical line and 180 degree angle).**



## Calculating Lengths and Angles in Shapes - Rectangles

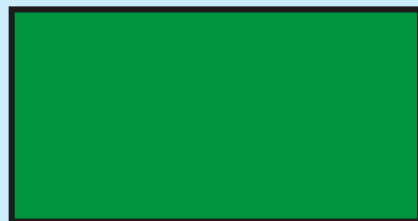


What are the missing lengths of these rectangles?



b

The perimeter  
is 8cm.  
The sides are  
whole centimetres.



b

The perimeter  
is 26m.  
Both sides are  
square numbers.

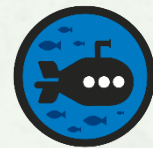


b

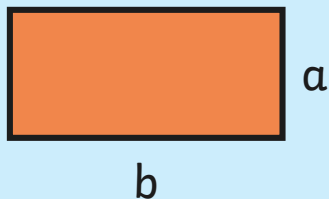
The perimeter  
is 18cm.  
Both sides are  
prime numbers.



## Calculating Lengths and Angles in Shapes - Rectangles

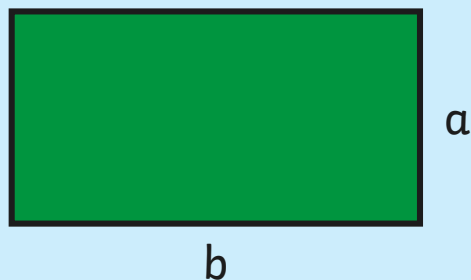


What are the missing lengths of these rectangles?



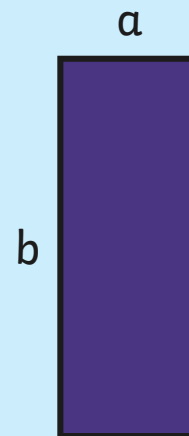
The perimeter  
is 8cm.  
The sides are  
whole centimetres.

$$a = 1\text{cm} \quad b = 3\text{cm}$$



The perimeter  
is 26m.  
Both sides are  
square numbers.

$$a = 4\text{m} \quad b = 9\text{m}$$



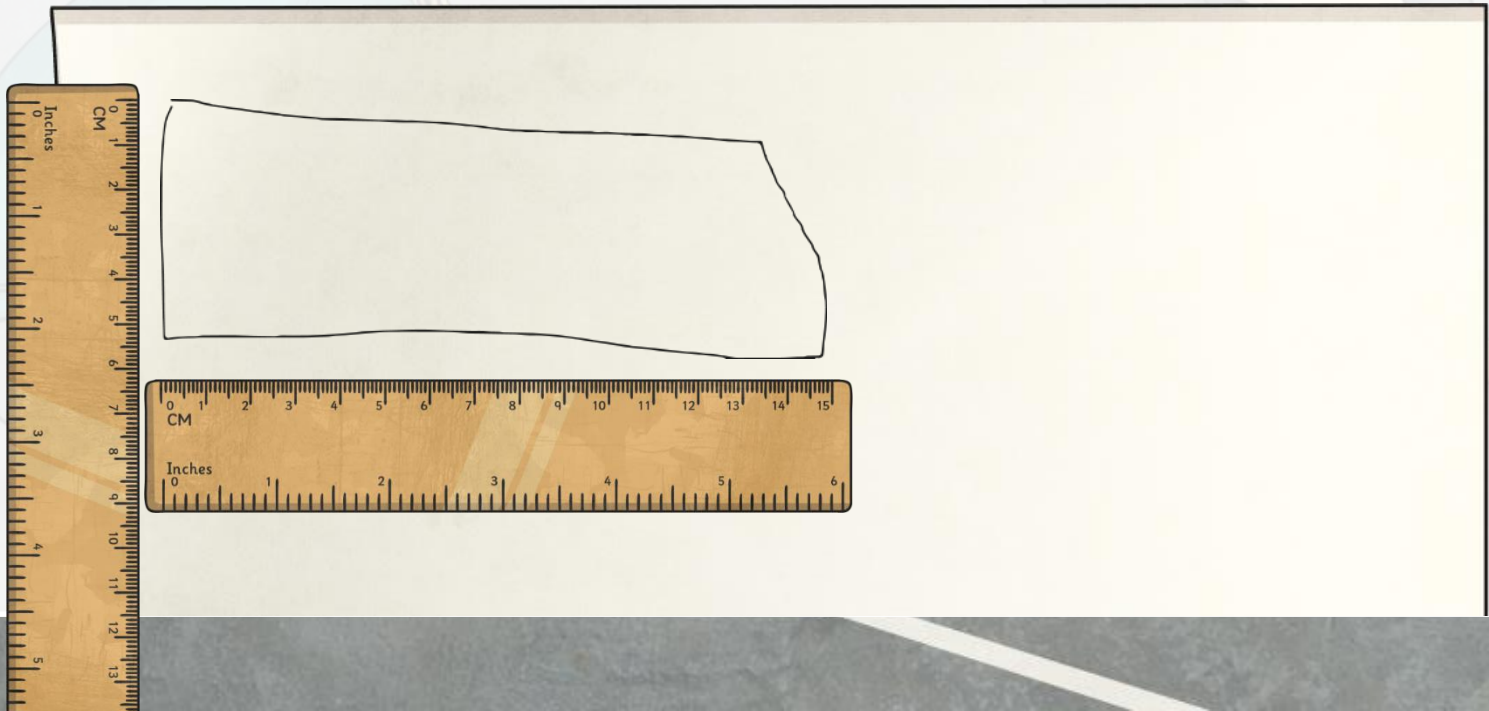
The perimeter  
is 18cm.  
Both sides are  
prime numbers.

$$a = 2\text{cm} \quad b = 7\text{cm}$$

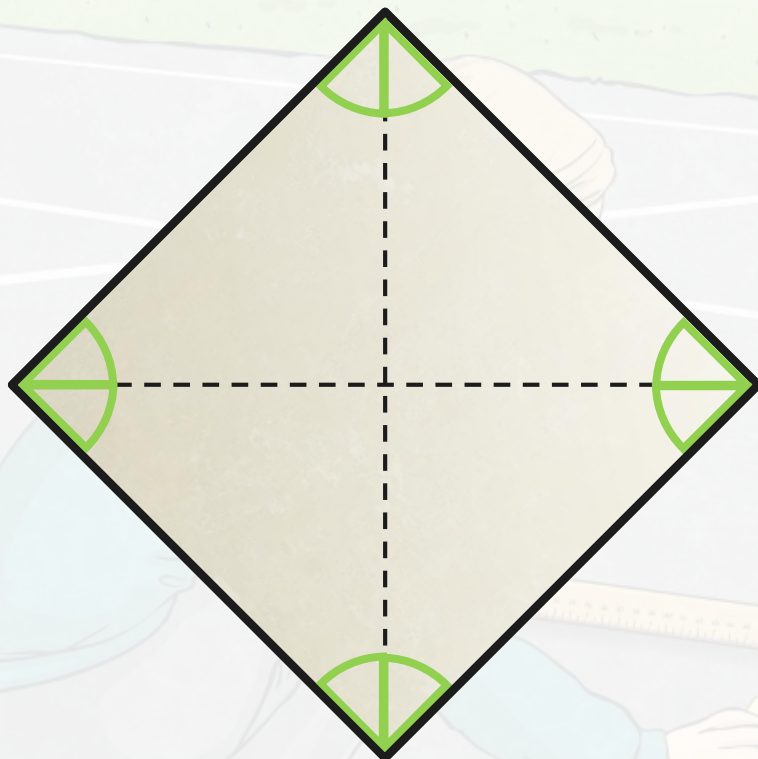


My rectangle is 15 centimetres long and 8 centimetres wide.

**What mistakes has Marcel made?**



Take a square piece of paper.  
Fold it into quarters along the diagonals as shown.



Look at the angles that have been created by the folds.

- What are the sizes of the angles?
- How do you know?
- Prove it by using your mathematical knowledge.

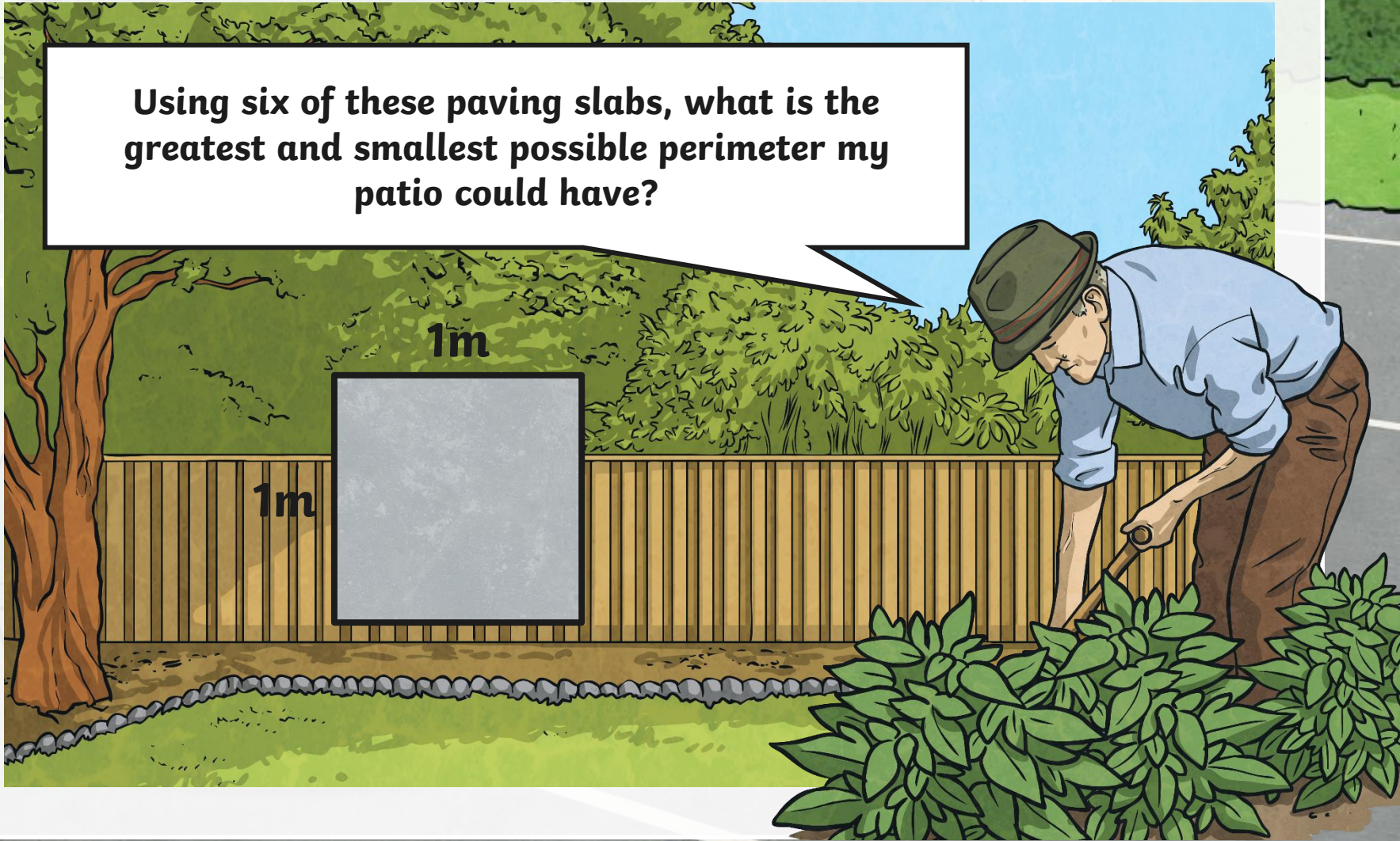
**How many right angles can you identify?** Show them on your piece of paper with the right angle symbol.



## Calculating Lengths and Angles in Shapes - Rectangles



Using six of these paving slabs, what is the greatest and smallest possible perimeter my patio could have?







**The smallest perimeter is 10m.**

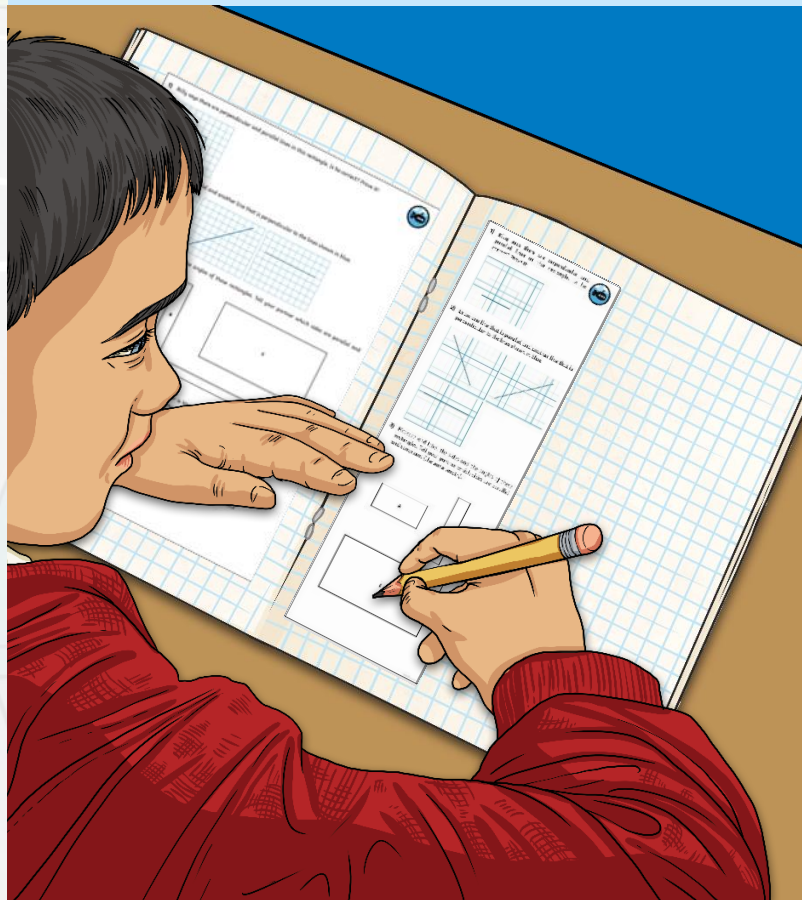


**The greatest perimeter is 14m.**

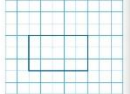


# Calculating Lengths and Angles in Shapes - Rectangles

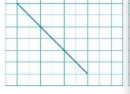
Complete your activity: Week 1. Maths. Friday Activity.




1) Billy says there are perpendicular lines in this rectangle. Is he correct? Prove it!



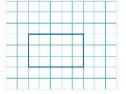
2) Draw one line that is parallel to the top side and another line that is perpendicular to the left side.



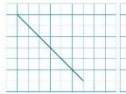
3) Measure and label the sides of this rectangle (the same length).





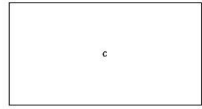
1) Billy says there are perpendicular and parallel lines in this rectangle. Is he correct? Prove it!



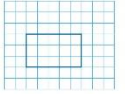
2) Draw one line that is parallel to the top side and another line that is perpendicular to the left side.



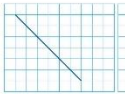
3) Measure and label the sides and the angles of these rectangles. Tell your partner which sides are parallel and congruent (the same length).



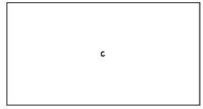
1) Billy says there are perpendicular and parallel lines in this rectangle. Is he correct? Prove it!



2) Draw one line that is parallel to the top side and another line that is perpendicular to the left side.

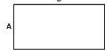


3) Measure and label the sides and the angles of these rectangles. Tell your partner which sides are parallel and congruent (the same length).

1) Work out the missing lengths of the rectangles.

- The perimeter is 12cm.
- A is 2cm shorter than B.



Length A: \_\_\_\_\_

Length B: \_\_\_\_\_

2) Accurately draw and label these rectangles on a grid.

- a) sides of 6.2cm and 2.7cm
- b) sides of 3.6cm and 72mm
- c) sides of 45mm and 6.8cm