

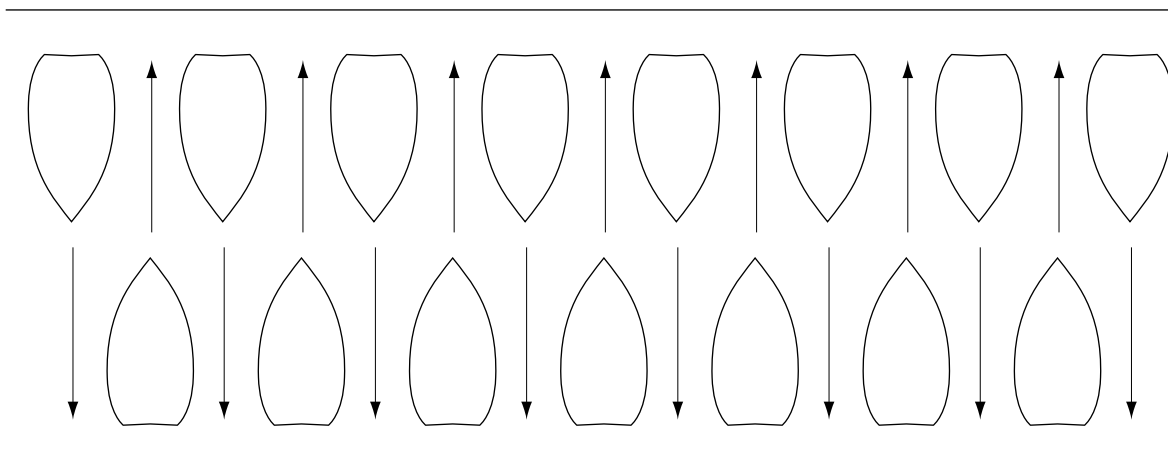
The soldiers problem

Two soldiers needed to cross a river. The river was too dangerous to swim and there was no bridge. Nearby, two small girls were rowing a small boat. The soldiers asked if they could borrow the boat. The girls agreed, but explained that the boat was so small that it could only carry one adult or two children.



Explain how the two soldiers and two girls reached the other side of the river. Use a pencil on the diagrams, then if you make a mistake you can rub it out.

Start
 Soldier
 Soldier
 Girl
 Girl



Finish
 Soldier
 Soldier
 Girl
 Girl

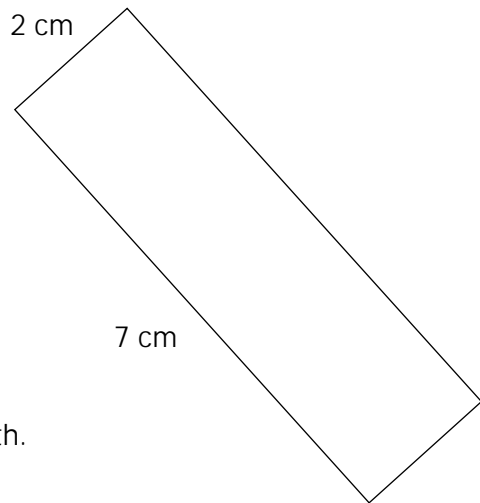
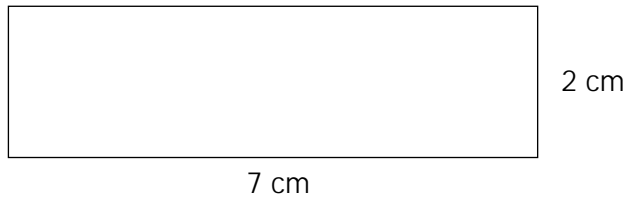
Now investigate what happens if there are 3 soldiers, 4 soldiers, 5 soldiers, etc.

What do you notice about the number of moves? How do they increase?

Can you find a rule?

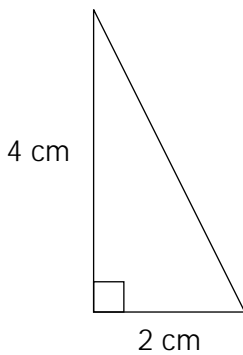
Congruent shapes

If two shapes are identical then they are congruent.
Look at these two rectangles:

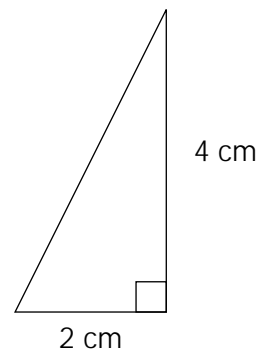


The rectangles have the same length and breadth.
Therefore the shapes are congruent.

Shapes are congruent if one shape can be cut out and fitted *exactly* onto the other shape. An easy way to check is to use tracing paper. Trace the first shape, and see if it will fit exactly onto the other shape. You can turn the shape or flip the shape.

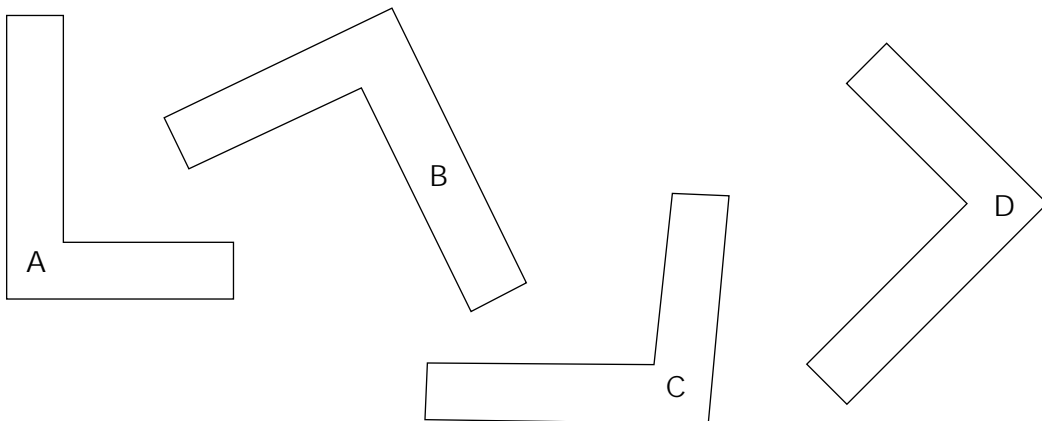


These triangles are congruent.
If you flip the left triangle it will fit onto the other triangle exactly.



Question

Here are four shapes. Which two are congruent? _____



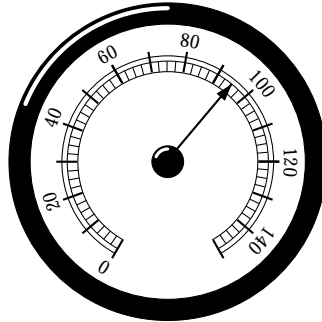
Answer

A and D are congruent. (If you trace shape A you will find that it fits onto shape D exactly.)

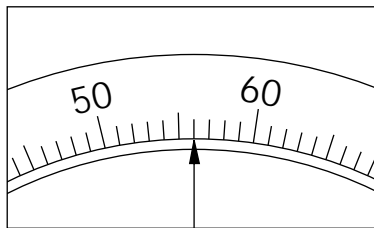
Measurement

Exercises

- 1 This is a car speedometer. It shows the speed in kilometres per hour.
What speed is shown? _____

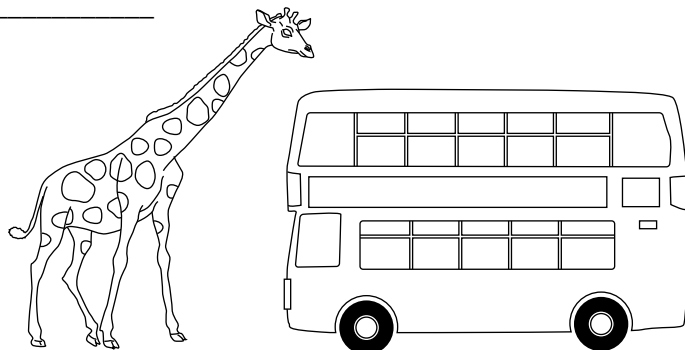


- 2 Mrs Morgan weighs herself on the bathroom scales. They show her weight in kilograms. How much does she weigh? _____

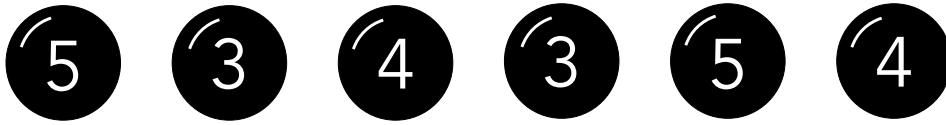


- 3 You have a 30 cm ruler, a metre rule, a stop watch and a clock. Which would you use to measure:
- the length of a room? _____
 - the length of a pencil? _____
 - the time taken to run 100 metres? _____
 - the time taken to run a marathon? _____
- 4 Would you measure the mass of a full suitcase in grams, kilograms or tonnes?

- 5 This is Lofty the giraffe. He is slightly taller than a double-decker bus.
Guess his height. _____



- 5 There were 7 children in a classroom. 6 of them were wearing badges showing their ages:

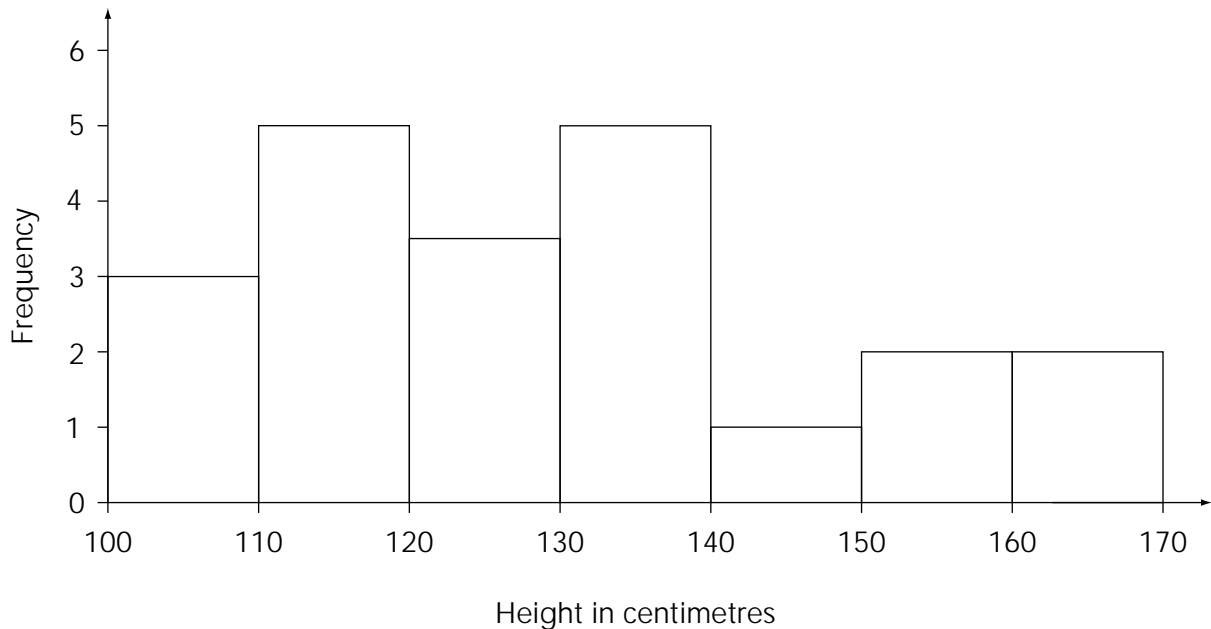


The mode of the group was 5.

The median of the group was 4.

What was the age of the seventh pupil? _____

- 6 This frequency diagram shows the heights of children in a room. There are 22 children altogether.



- a Look at the diagram carefully. There is a mistake. What is the mistake?

Correct the mistake.

- b How many children are between 130 cm and 140 cm tall? _____