

Upper & Lower Bounds

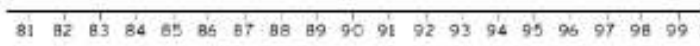

Discrete Measurements

Number of people, shoe size, money, cookies in a jar, ..

There were an estimated 90 trolls in the field, to the nearest 10.

What was the lowest possible number of trolls ?

What was the highest possible number of trolls ?

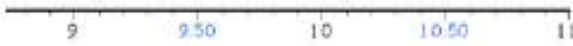




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This pile of coins is worth £10 to the nearest £1.

What is the lowest possible value of the coins ?

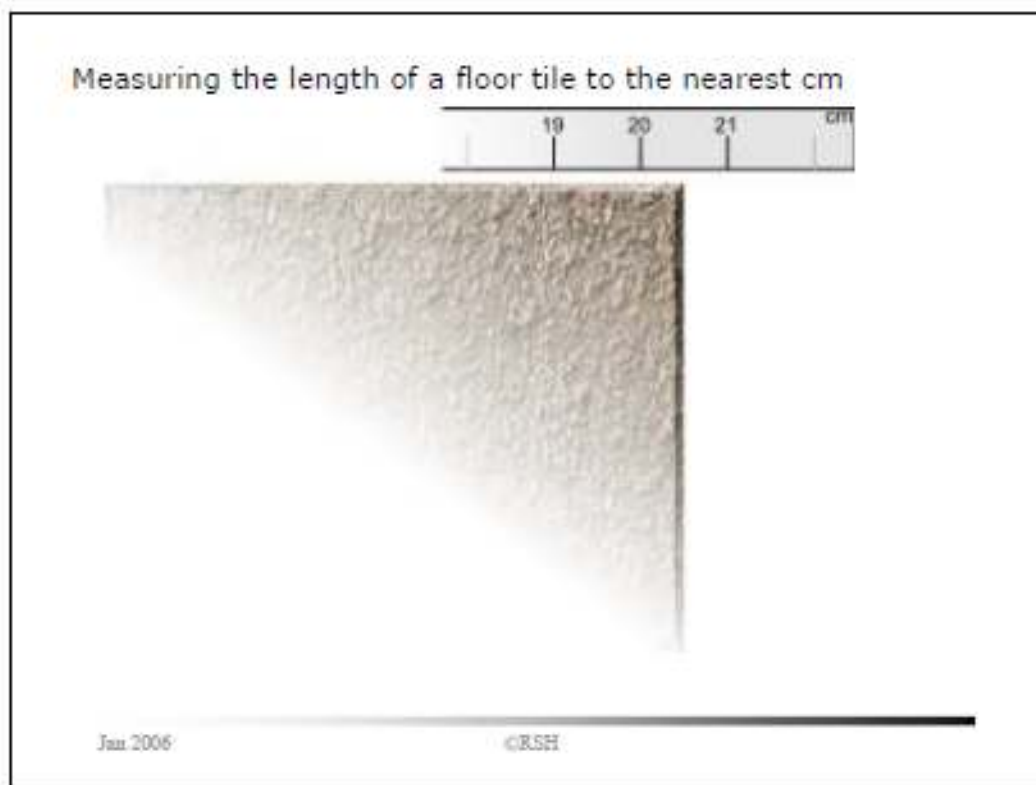
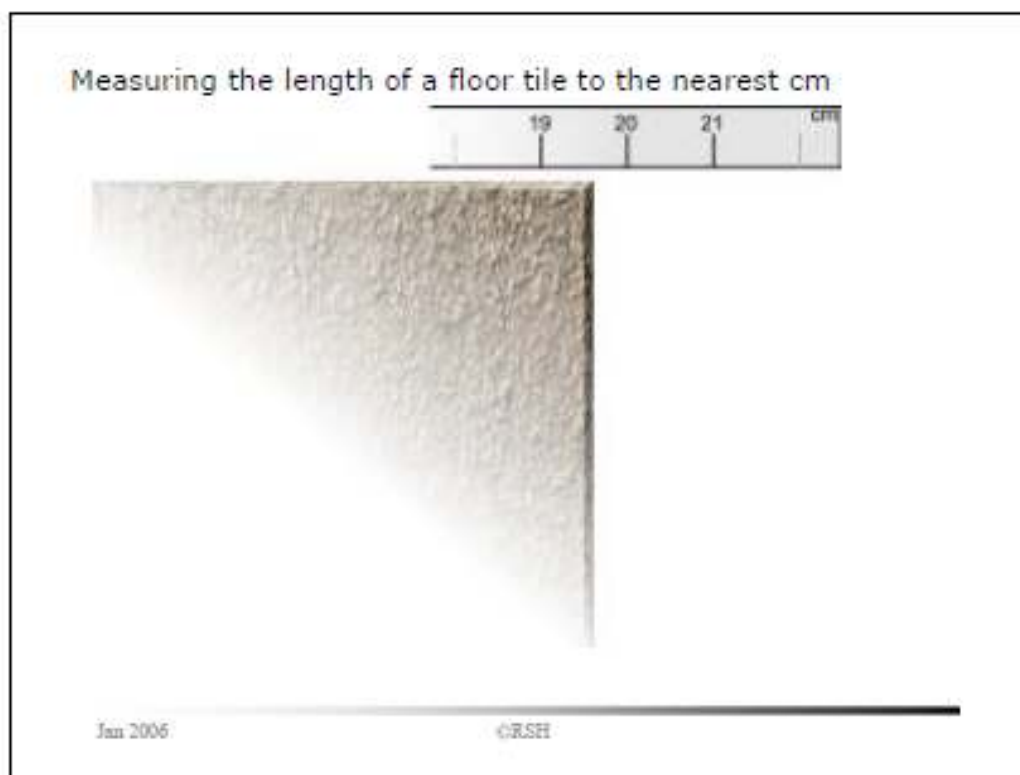
What is the highest possible value of the coins ?

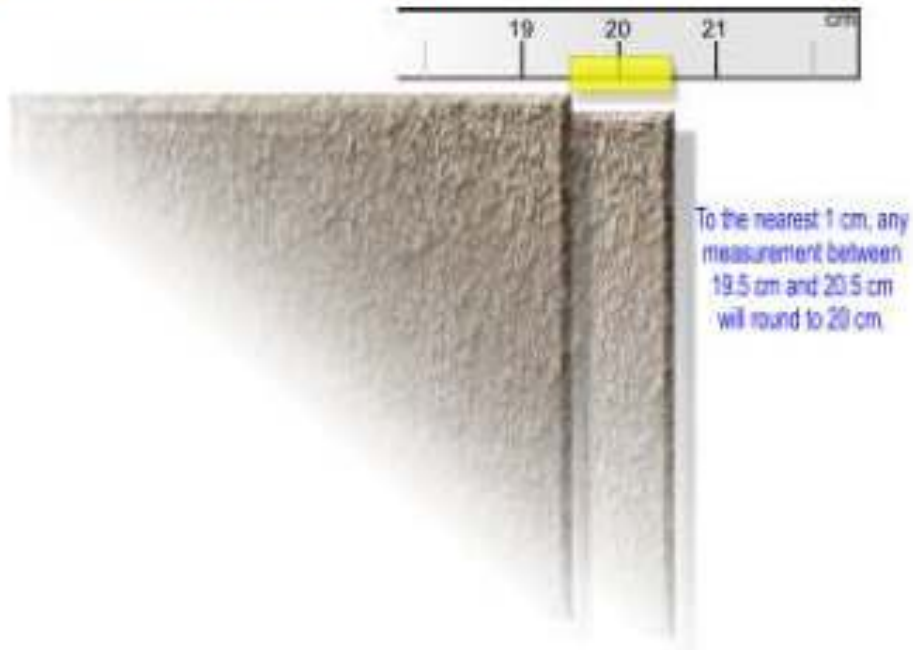
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Continuous Measurements

Height, Weight, Temperature, ...



Measuring the length of a floor tile to the nearest cm



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Jake Dirdleburger caught a large trout. He weighed and found it to be 14 kg measured to the nearest kg.

What is the least possible weight?

What is the largest possible weight?

He wants to sell this trout to a fishmonger.

What weight would Jake like to use?

What weight would the fishmonger use?

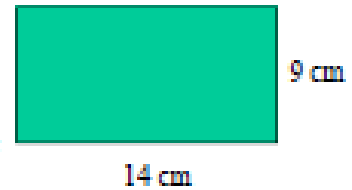


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Exam Questions**Q1**

A rectangular piece of cardboard measures 14 cm by 9 cm, each measurement being correct to the nearest cm.



- a) Write down the least possible values of the length and the width of the rectangle. [1]
- b) Write down the greatest possible values of the length and the width of the rectangle. [1]

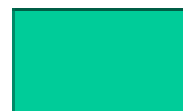
Q1

- c) Write down the least and greatest possible values of the perimeter of the rectangle. [2]
- d) Write down the least and greatest possible values of the area of the rectangle. [2]



Q1

e) Four of these pieces of cardboard are placed, in a row, with their shorter sides joined. Calculate the least and greatest possible values of the length of the four pieces of cardboard. [3]



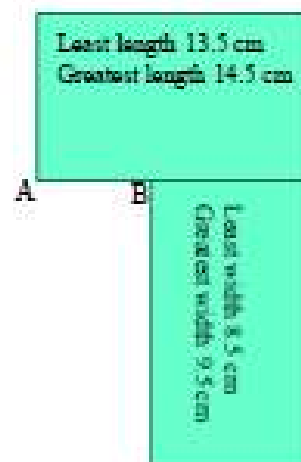
Least 8.5 cm
Greatest 9.5 cm

Least 13.5 cm
Greatest 14.5 cm



Q1

f) Two pieces of cardboard are placed as shown in the diagram. Calculate the least and greatest possible values of the length of the AB. [3]

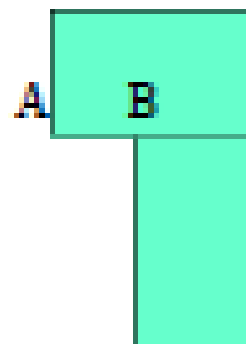


Q2

A rectangular piece of cardboard have lengths of 28 cm and widths of 16 cm, each measurement being correct to the nearest cm.



- a) Write down the least possible values of the length and the width of the rectangle. [1]
- b) Four of these pieces of cardboard are placed in a row, with their shorter sides joined. Calculate the least and greatest possible values of the length of the four pieces of cardboard. [3]
- c) Two pieces of cardboard are placed as shown in the diagram. Calculate the least and greatest possible values of the length AB. [3]



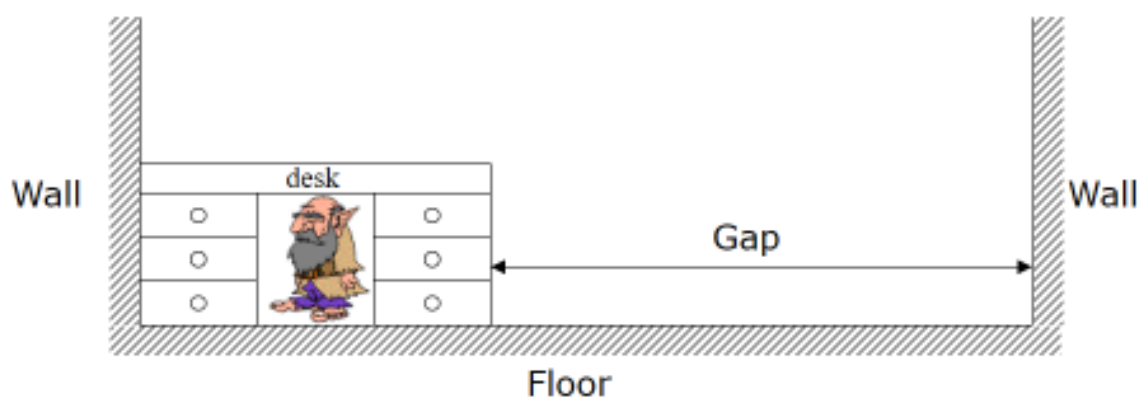
Q3

The length of a desk is measured as 180 cm, correct to the nearest cm.

- a) Write down the least and greatest values of the length of the desk. [2]
- b) Three of these desks are laid end to end along their lengths. What is the least value that the total length of the three desks can be ? [1]
- c) The distance between two walls is measured as 3 metres correct to the nearest centimetre.
- i. Write down, in centimetres, the least and greatest values of the distance between the two walls. [1]

- ii. One desk is placed lengthwise between two walls and in contact with the left hand wall, as shown in the diagram.

What is the greatest possible length of the gap between the desk and the right hand wall? [2]



Q4

A lump of plasticine has a mass of 500 g, correct to the nearest 10 g. A piece of the plasticine is removed and found to have a mass of 310 g, correct to the nearest 10 g.

Find the greatest possible value of the mass of the remaining lump of plasticine. [2]

Q5

A rectangle's measurements are given as 30 cm by 20 cm, correct to the nearest cm.

Find the least possible length of the perimeter of the rectangle. [2]