

## BOUNDS – PRACTICE QUESTIONS



1.

Amanda weighs 45 kilograms, to the nearest kilogram.  
Find the lower and upper bounds of her weight.

2.

A skyscraper is 156 metres tall, to the nearest metre.  
Find the lower and upper bounds of its height.

3.

A sphere has a surface area of  $262 \text{ cm}^2$ , to the nearest  $\text{cm}^2$ .  
Find the lower and upper bounds of its surface area.

4.

A boat travelled for 47 minutes, to the nearest minute.  
Find the lower and upper bounds of the time the boat was travelling.

5.

Brian ran 5.7 kilometres, to the nearest 0.1 kilometres.  
Find the lower and upper bounds of the distance Brian ran.

6.

Cheryl weighs 60 kilograms, to the nearest 10 kilograms.  
Find the lower and upper bounds of Cheryl's weight.

7.

Donald's annual salary is £40,000, to the nearest £1,000.  
Find the lower and upper bounds of Donald's annual salary.

8.  
A company has 450 employees, to the nearest 10.  
Find the lower and upper bounds of the number of employees at the company.

9.  
A star is 150,000 lightyears from Earth, to the nearest 10,000 lightyears.  
Find the lower and upper bounds of the star's distance from Earth.

10.  
The population of Uruguay is 4 million, to the nearest million.  
Find the lower and upper bounds of the population of Uruguay.

11.  
The length of a football pitch is 87 metres, correct to 2 significant figures.  
Find the lower and upper bounds of the length of the football pitch.

12.  
The height of a building is 30.3 metres, correct to 1 decimal place.  
Find the lower and upper bounds of the height of the building.

13.  
The temperature in Barcelona yesterday was  $23.5^{\circ}\text{C}$ , correct to 3 significant figures.  
Find the lower and upper bounds of the temperature in Barcelona yesterday.

14.  
Last year, a company had a revenue of £450,000, correct to 2 significant figures.  
Find the lower and upper bounds of the company's revenue.

15.

The volume of a box is  $175 \text{ cm}^3$ , to the nearest  $\text{cm}^3$ .

Find an error interval for the volume of the box.

16.

The population of a town is 65,000, to the nearest 1,000.

Find an error interval for the population of the town.

17.

Erica is 1.35 metres tall, to the nearest centimetre.

Find an error interval for Erica's height.

18.

The density of a liquid is  $1.34 \text{ g/cm}^3$ , correct to 3 significant figures.

Find an error interval for the liquid's density.

19.

A car has a maximum speed of 150 miles per hour, correct to 2 significant figures.

Find an error interval for the maximum speed of the car.

20.

A plane is flying at a height of 33,000 feet, correct to 2 significant figures.

Find an error interval for the height of the plane.

21.

There are 54,600 households in a town, correct to 3 significant figures.

Find an error interval for the number of households in the town.

22.

A circle has a radius of 4.3 cm, correct to 1 decimal place.

(a) Find the upper and lower bounds of the circle's area, to 1 decimal place.

(b) Find the upper and lower bounds of the circle's circumference, to 1 decimal place.

23.

A piece of card is 11.5 centimetres wide to one decimal place and 10.1 centimetres long, both to 1 decimal place.

Find the lower and upper bounds of the area of the piece of card, to 1 decimal place.

24.

$$c = a \times b$$

$a = 12.2$  to 1 decimal place.

$b = 30$  to the nearest whole number.

Find the lower and upper bounds of  $c$ , to 3 significant figures.

25.

$$x = y - z$$

$y = 123$  to 3 significant figures.

$z = 12.3$  to 3 significant figures.

Find the lower and upper bounds of  $x$ , to 2 decimal places.

26.

$$f = \frac{d}{e}$$

$d = 140$  to the nearest whole number.

$e = 6.78$  to 3 significant figures.

Find the lower and upper bounds of  $f$ , to 2 decimal places.

27.

Emma ran 150 metres, to the nearest metre.

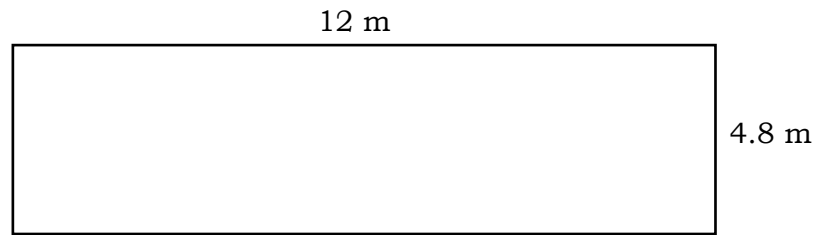
It took her 45 seconds, to the nearest second.

Find the lower and upper bounds of Emma's speed, in metres per second. Give your answers to 2 decimal places.

28.

The picture below shows the measurements of a garden.

All measurements are rounded to 2 significant figures.



(a) Find an error interval for the area of the garden.

(b) Find an error interval for the perimeter of the garden.

29.

Body Mass Index (BMI) is calculated using the formula below.

$$BMI = \frac{\text{Weight (in kilograms)}}{[\text{Height (in metres)}]^2}$$

Fatima weighs 39 kilograms (to the nearest kilogram) and is 1.45 metres tall (to 3 significant figures).

Find an error interval for Fatima's Body Mass Index, to 2 decimal places.

30.

Population density is calculated using the formula below.

$$\text{Population Density} = \frac{\text{Population}}{\text{Area (in square kilometres)}}$$

Hungary has a population of 9,750,000, correct to 3 significant figures.  
Hungary has an area of 93,500 km<sup>2</sup>, correct to 3 significant figures.

By using upper and lower bounds, find the population density of Hungary to 3 significant figures.

31.

A microwave weighs 11 kilograms, to the nearest kilogram.  
A warehouse contains 550 microwaves, to 2 significant figures.

By using upper and lower bounds, find the total mass of the microwaves in the warehouse to the nearest 1,000 kilograms.

32.

The maximum capacity of a bridge is 14,000 tonnes, correct to 2 significant figures.

The average mass of a vehicle is 2.7 tonnes, correct to 2 significant figures.

Mark says "The bridge can hold 5,500 at a time".

Do you agree with Mark's statement? Explain your reasoning.

33.

A barrel contains 160 litres of water, correct to 2 significant figures.

Water is leaking out of the barrel at a rate of 21.4 millilitres per second, correct to 3 significant figures.

Chris says "It will take more than 2 hours for the barrel to be emptied".

Do you agree with Chris's statement? Explain your reasoning.