Bounds

Grade 7 topic · Higher tier · Edexcel and AQA

How to use this pack
20 questions that get harder as you go. Questions 1–15 (60 marks) build up to the harder Grade 8–9 style questions at the end; aim to complete all 20. Show your working on the lines and write your final answer on the answer line, then mark yourself with the answers at the back. Diagrams are not drawn accurately. Total: 89 marks.

Warm-up

1 x = 5.1 correct to 1 decimal place. Write down the error interval for x. **[3 marks]**

Answer _____

2 x = 6 correct to 1 decimal place. Write down the error interval for x. **[3 marks]**

Answer _____

3 x = 2.3 correct to 1 decimal place. Write down the error interval for x. **[3 marks]**

Answer _____

4 A length is 30 cm to the nearest 10 cm. Write down the lower bound and upper bound. **[3 marks]**

Answer _____

5 n = 600 correct to the nearest 100. Write down the error interval for n. **[3 marks]**

Answer _____

Core

6 a = 6.7 and b = 9.2, both correct to 1 decimal place. Work out the upper bound of a + b. **[4 marks]**

Answer _____

7 a = 2.5 and b = 9.3, both correct to 1 decimal place. Work out the lower bound of a + b. **[4 marks]**

Answer _____

8 a = 9.0 and b = 5.0, both correct to 1 decimal place. Work out the upper bound of a − b. **[4 marks]**

Answer _____

9 a = 7.5 and b = 3.8, both correct to 1 decimal place. Work out the lower bound of a × b, to 4 significant figures. **[4 marks]**

Answer _____

10 a = 7.1 and b = 5.4, both correct to 1 decimal place. Work out the upper bound of a ÷ b, to 3 significant figures. **[4 marks]**

Answer _____

Stretch

11 A rectangle measures 8 cm by 3 cm, each correct to the nearest cm. Work out the upper bound of its area. **[5 marks]**

Answer _____

12 A rectangle measures 9 cm by 8 cm, each correct to the nearest cm. Work out the lower bound of its perimeter. **[5 marks]**

Answer _____

13 A cyclist travels 100 m, correct to the nearest metre, in 12 seconds, correct to the nearest second. Work out the upper bound of her average speed, to 3 significant figures. **[5 marks]**

Answer _____

14 A block has mass 240 g and volume 60 cm³, both correct to 2 significant figures. Work out the lower bound of its density, to 3 significant figures. **[5 marks]**

Answer _____

15 x = 3.5 correct to 1 decimal place. Write down the error interval for x, then the error interval for 2x. **[5 marks]**

Answer _____

Challenge

16 The length of a pencil is 14 cm to the nearest cm. The inside length of a case is 15.2 cm to 1 decimal place. Show that the pencil definitely fits in the case. **[6 marks]**

Answer _____

17 a = 8.4 and b = 2.6, both correct to 1 decimal place. Work out the upper bound of (a + b) ÷ (a − b), to 3 significant figures. **[6 marks]**

Answer _____

18 The area of a square is 50 cm², correct to 2 significant figures. Work out the upper bound for the side length of the square, to 3 significant figures. **[6 marks]**

Answer _____

19 A car uses 40 litres of fuel (to the nearest litre) to travel 520 km (to the nearest 10 km). Work out the upper bound of the distance travelled per litre, to 3 significant figures. **[6 marks]**

Answer _____

20 The mass of a 1 euro coin is 7.5 g, correct to 1 decimal place. 200 coins are weighed together. Work out the error interval for the total mass. **[5 marks]**

Answer _____