



Bounds Exam Practice

Bounds with addition/subtraction

- Q1. Let a and b be such that a is 3 and $b = 7$ to the nearest whole number.
- (a) Work out a lower bound for $a + b$ (2 marks)
- (b) Work out an upper bound for $a + b$. (2 marks)
- Q2. Let a and b be such that a is 5.7 and $b = 14.2$ correct to 1 decimal place.
Work out a lower bound and an upper bound for $a + b$. (2 marks)
- Q3. Let a and b be such that a is 16.74 and $b = 9.23$ correct to 2 decimal places.
Work out a lower bound and an upper bound for $a - b$. (2 marks)

Bounds with Multiplication/Division

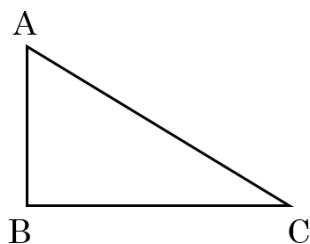
- Q4. Let a and b be such that a is 5.7 and $b = 14.2$ correct to 1 decimal place.
- (a) Work out a lower bound for ab (2 marks)
- (b) Work out an upper bound for ab . (2 marks)
- Q5. Let r and s be such that r is 5.7 and $s = 14.2$ correct to 1 decimal place.
Work out a lower bound and an upper bound for $\frac{r}{s}$. (4 marks)
- Q6. Let a and b be such that a is 24 and $b = 13$ to the nearest whole number.
Work out a lower bound and upper bound for $\frac{a}{b}$. (4 marks)

Applied Mixed Practice Problems

- Q7. A rectangle has a length of 34 cm, to the nearest cm, and a width of 10.3 cm, to the nearest mm.
- (a) Work out a lower bound for the area of the rectangle. (2 marks)
- (b) Work out an upper bound for the perimeter of the rectangle. (2 marks)



Q8.



ABC is a right-angled triangle with lengths $AB = 3.2$ and $BC = 7.8$ correct to 1 decimal place.

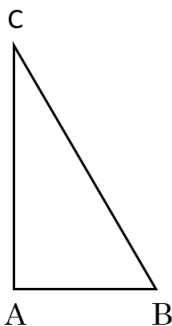
Work out a the length of AC to an appropriate degree of accuracy.

(4 marks)

- Q9. Rob wishes to stack a set of books into a box. Each book is a cuboid which has height 125 mm to the nearest mm. If the box measures 1.38 m in height to the nearest cm, show that it may not be possible to put 11 books in the box and close the lid.

(3 marks)

Q10.



ABC is a right-angled triangle with lengths $AB = 20$ cm and $BC = 48$ cm correct to the nearest cm.

Find the length of BC to an appropriate degree of accuracy.

(4 marks)

- Q11. Let $Q = \frac{m^2}{n}$ where m is 3.43 correct to 2 decimal places and n is 10.427 correct to 3 decimal places.

By considering upper and lower bounds, find the value of Q to a suitable degree of accuracy. You must justify your answer.

(5 marks)

- Q12. A garden consists of a square of grass which contains a pond in the shape of a circle. The lawn has side length 12 feet to the nearest foot and the pond has diameter 5 ft to the nearest foot.

Work out a lower bound for the area of the garden which is grass.

(5 marks)