

Name: _____

GCSE (1 – 9)

Bounds

Instructions

- Use **black** ink or ball-point pen.
- Answer all questions.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

Information

- The marks for each question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end

1 A rectangle has a length of 21cm, to the nearest cm, and a width of 5.3cm, to the nearest mm.

(a) Work out the upper bound for the perimeter of the rectangle.

.....cm

(2)

(b) Work out the lower bound for the area of the rectangle.

.....cm²

(2)

(Total for question 1 is 4 marks)

2 A circle has a radius of 5cm, to the nearest cm.

(a) Work out the lower bound for the circumference of the circle.

Give your answer in terms of π .

.....cm

(2)

(b) Work out the upper bound for the area of the circle.

Give your answer in terms of π .

.....cm²

(2)

(Total for question 2 is 4 marks)

3 A rectangular field has a length of 105 metres, to the nearest 5 metres, and a width of 53 metres, to the nearest metre.

(a) Work out the lower bound for the perimeter of the field.

.....m

(2)

(b) Work out the upper bound for the area of the field.

.....m²

(2)

(Total for question 3 is 4 marks)

4 A circle has a radius of 5.36cm, correct to 2 decimal places.

(a) Work out the lower bound for the circumference of the circle.

Give your answer to 2 decimal places.

.....cm

(2)

(b) Work out the upper bound for the area of the circle.

Give your answer to 3 significant figures.

.....cm²

(2)

(Total for question 4 is 4 marks)

5

$$v = \frac{s}{t}$$

$s = 4.15$ correct to 2 decimal places
 $t = 2.516$ correct to 3 decimal places

Work out the upper bound for v .
Give your answer to 3 decimal places.

.....
(Total for question 5 is 3 marks)

6

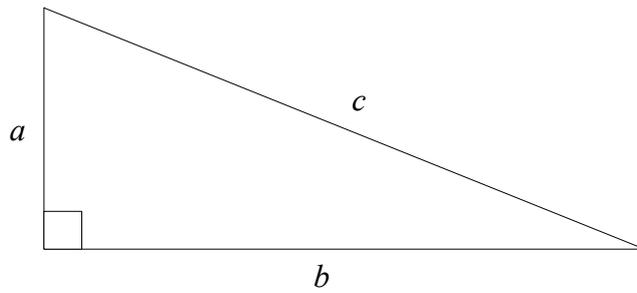
$$V = IR$$

$I = 5.92$ correct to 2 decimal places
 $R = 12.356$ correct to 3 decimal places

Work out the upper bound for V .
Give your answer to 3 decimal places.

.....
(Total for question 6 is 3 marks)

7



$a = 5.3$ cm correct to the nearest mm

$b = 8.2$ cm correct to the nearest mm

Calculate the lower bound for c .

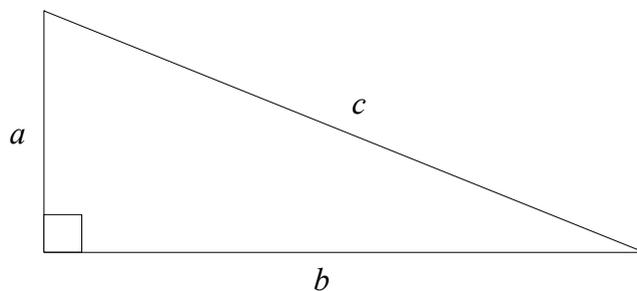
You must show all your working.

Give your answer to 3 significant figures.

.....cm

(Total for question 7 is 4 marks)

8



$a = 4.1$ cm correct to the nearest mm

$c = 10$ cm correct to the nearest cm

Calculate the lower bound for b .

You must show all your working.

Give your answer to 1 decimal place.

.....cm

(Total for question 8 is 4 marks)

9

$$P = \frac{E}{t}$$

$E = 812$ correct to 3 significant figures

$T = 9.2$ correct to 1 decimal place

By considering bounds, work out the value of P to a suitable degree of accuracy.
Give a reason for your answer.

.....
(Total for question 9 is 5 marks)

10

$$f = \frac{\sqrt{g}}{h}$$

$g = 12.7$ correct to 3 significant figures

$h = 9.294$ correct to 3 decimal places

By considering bounds, work out the value of f to a suitable degree of accuracy.
Give a reason for your answer.

.....
(Total for question 10 is 5 marks)

11

F = 25.14 N correct to 2 decimal places
A = 4.29 m² correct to 3 significant figures

$$p = \frac{F}{A}$$

p = pressure
F = force
A = area

By considering bounds, work out the value of *p* to a suitable degree of accuracy.
Give a reason for your answer.

.....Nm⁻²

(Total for question 11 is 3 marks)

12

F = 20.81 N correct to 2 decimal places
P = 5.12 Nm⁻² correct to 3 significant figures

$$p = \frac{F}{A}$$

p = pressure
F = force
A = area

By considering bounds, work out the value of *A* to a suitable degree of accuracy.
Give a reason for your answer.

.....m²

(Total for question 12 is 3 marks)

13

$$v^2 = u^2 + 2as$$

$v = 35.2$ correct to 1 decimal place
 $a = 9.8$ correct to 1 decimal place
 $s = 60.35$ correct to 2 decimal places

Work out the upper bound for u .
Give your answer to 3 significant figures.

.....
(Total for question 13 is 5 marks)