Name: _____

ASM Tuition Academy

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 you're 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 time.
- Try to answer every question.
- Check your answers if you have time at the end.

1. A rectangle has a length of 22cm, to the nearest cm, and a width of 5.5cm, 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

   -----------------cm^2

   (2)

   (Total for question 1 is 4 marks)

2. A circle has a radius of 8cm, 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.

    ----------------cm^2

    (2)

    _____

    (Total for question 2 is 4 marks)

3. A rectangular field has a length of 110 metres, to the nearest 5 metres, and a width of 5 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

    ----------------m^2

    (2)

    _____

    (Total for question 3 is 4 marks)

4. A circle has a radius of 6.36cm, 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

-----------------cm^2

(2)

_____

(Total for question 4 is 4 marks)

5.   **v = s/t**

    s = 4.14 correct to 2 decimal places

    t = 2.515 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
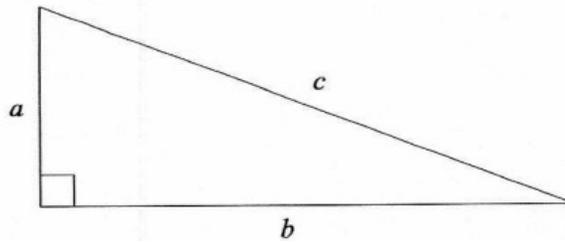
I = 5.95 correct to 2 decimal places R = 12.456 correct to 3 decimal places

Work out the upper bound for V.

Give your answer to 3 decimal places

_____

(Total for question 6 is 3 marks)

7.

a = 5.5 cm correct to the nearest mm

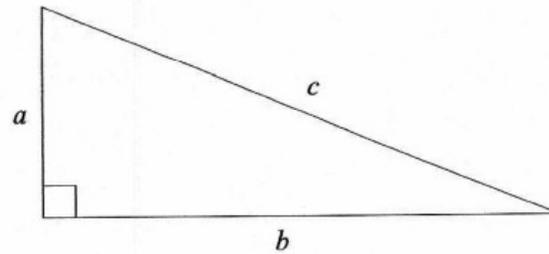b = 8.5 cm correct to the nearest mm

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 = 4.2 cm correct to the nearest mm
c = 11 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. $P = E / T$

E = 815 correct to 3 significant figures

T = 9.5 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. $f = \sqrt{g} / h$

g = 12.8 correct to 3 significant figures

h = 9.295 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 = 25.15 N correct to 2 decimal places
    A = 4.28 m² correct to 3 significant figures

P = 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 = 20.80 N correct to 2 decimal places**
P = 5.13 Nm⁻² correct to 3 significant figures

P = 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.

_____**m**^{2}

(Total for question 12 is 3 marks)

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

v = 35.3 correct to 1 decimal place

a = 9.8 correct to 1 decimal place

s = 60.45 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)