18 In an arithmetic series, the 6th term is 39
In the same arithmetic series, the 19th term is 7.8

Work out the sum of the first 25 terms of the arithmetic series.

.....

(Total for Question 18 is 4 marks)

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19 The diagram shows rectangle *ABCD* with rectangle *EFGH* cut out to form the shaded region.

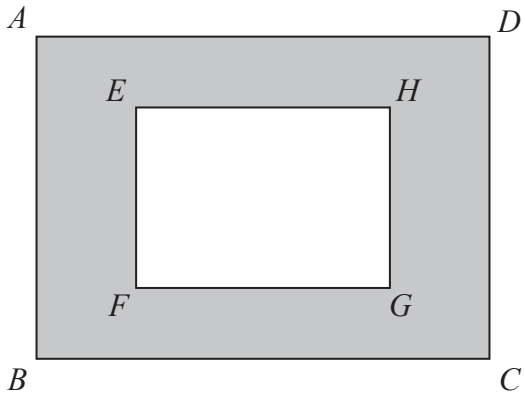

Diagram **NOT** accurately drawn

AD = 8.3 cm correct to one decimal place
DC = 7.2 cm correct to one decimal place
EH = 6.2 cm correct to one decimal place
HG = 5.3 cm correct to one decimal place

Work out the upper bound of the area of the shaded region.
Show your working clearly.

..... cm^2

(Total for Question 19 is 3 marks)

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20 A curve has equation $y = f(x)$
There is only one maximum point on the curve.
The coordinates of this maximum point are $(-3, 4)$

Write down the coordinates of the maximum point on the curve with equation

(i) $y = f(x) - 6$

(..... , ...)

(ii) $y = f(2x)$

(..... , ...)

(Total for Question 20 is 2 marks)

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21 Given that $M = \dfrac{18^{4n} \times 2^{3(n^2-6n)} \times 3^{2(1-4n)}}{12^2}$

find the values of n for which $M = 2$

.....

(Total for Question 21 is 5 marks)

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22 The diagram shows a regular octagon *ABCDEFGH*.

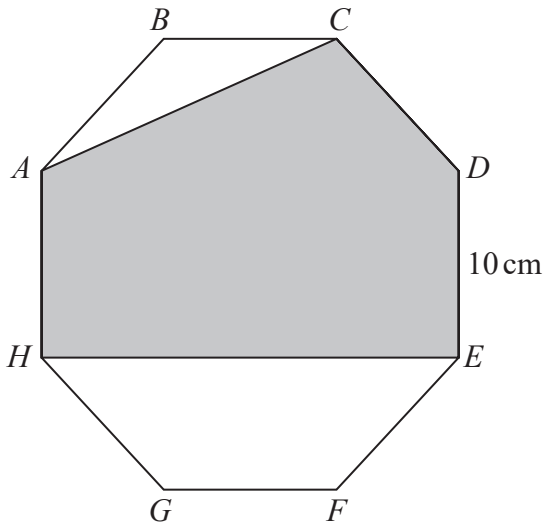

Diagram **NOT** accurately drawn

Each side of the octagon has length 10 cm.

Find the area of the shaded region *ACDEH*.
Give your answer correct to the nearest cm^2

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..... cm^2

(Total for Question 22 is 6 marks)

Turn over for Question 23

23 In a bag, there are only

3 blue beads
4 white beads
and x orange beads.

Jean is going to take at random two beads from the bag.

The probability that Jean will take two beads of the same colour is $\frac{3}{8}$

Find the total number of beads in the bag.
Show clear algebraic working.

.....

(Total for Question 23 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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