15 Make x the subject of $y = \dfrac{5 - 2x}{x + 3}$

....

(Total for Question 15 is 4 marks)

16 Solve the simultaneous equations

$$3xy - y^2 = 8$$
$$x - 2y = 1$$

Show clear algebraic working.

....

(Total for Question 16 is 5 marks)

17 The diagram shows a rectangle.

$$(2x - 4)\,\text{cm}$$

Diagram **NOT**
accurately drawn

$$(3x + 2)\,\text{cm}$$
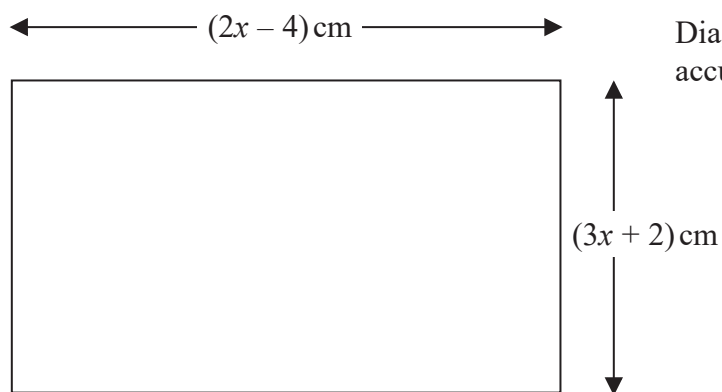
The area of the rectangle is $A\,\text{cm}^2$

Given that $A < 3x + 27$
find the range of possible values for x.

....

(Total for Question 17 is 5 marks)

18 The diagram shows cuboid *ABCDEFGH*.
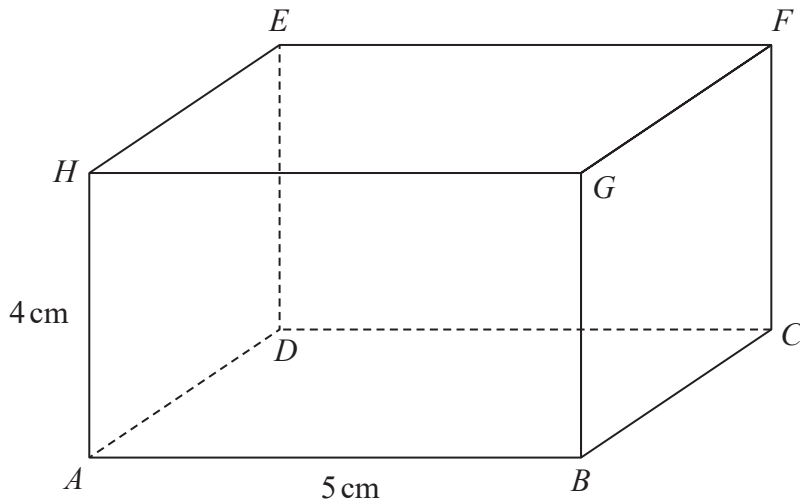

Diagram **NOT** accurately drawn

AB = 5 cm
AH = 4 cm
The size of the angle between *CH* and the plane *ABCD* is 35°

Calculate the volume of the cuboid.
Give your answer correct to 3 significant figures.

....cm³

(Total for Question 18 is 5 marks)

19 *OAB* is a triangle.

$\overrightarrow{OA} = \mathbf{a}$ $\qquad$ $\overrightarrow{OB} = \mathbf{b}$

The point *C* lies on *OA* such that *OC* : *CA* = 1 : 2
The point *D* lies on *OB* such that *OD* : *DB* = 1 : 2

Using a vector method, prove that *ABDC* is a trapezium.

(Total for Question 19 is 3 marks)

P 6 2 6 5 7 A 0 2 1 2 4

20 A bag contains X counters.

There are only red counters and blue counters in the bag.

There are 4 more blue counters than red counters in the bag.

Finty takes at random 2 counters from the bag.

The probability that Finty takes 2 blue counters from the bag is $\dfrac{3}{8}$

Work out the value of X.
Show clear algebraic working.

....

(Total for Question 20 is 5 marks)

21 The function f is such that $f(x) = 5 + 6x - x^2$ for $x \leqslant 3$

(a) Express $5 + 6x - x^2$ in the form $p - (x - q)^2$ where p and q are constants.

....
(2)

(b) Using your answer to part (a), find the range of values of x for which $f^{-1}(x)$ is positive.

....
(5)

(Total for Question 21 is 7 marks)

TOTAL FOR PAPER IS 100 MARKS