18 The diagram shows a solid cuboid.

Diagram **NOT** accurately drawn

$(12 - 3x)$ cm

x cm

x cm
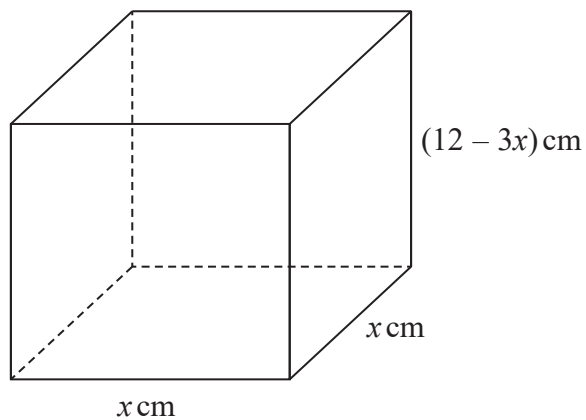
The total surface area of the cuboid is A cm^2

Find the maximum value of A.

....

(Total for Question 18 is 5 marks)
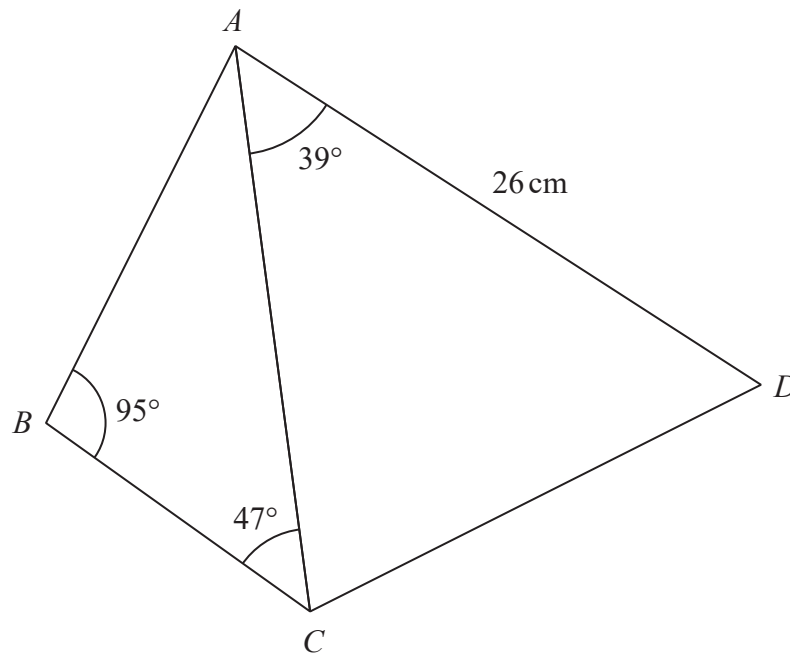
19 *ABCD* is a quadrilateral.

Diagram **NOT** accurately drawn

The area of triangle *ACD* is 250 cm²

Calculate the area of the quadrilateral *ABCD*.
Show your working clearly.
Give your answer correct to 3 significant figures.

....cm^2

(Total for Question 19 is 6 marks)

20 The equation of the line **L** is $y = 9 - x$

The equation of the curve **C** is $x^2 - 3xy + 2y^2 = 0$

L and **C** intersect at two points.

Find the coordinates of these two points.
Show clear algebraic working.

(.........................., ...) and (.........................., ...)

(Total for Question 20 is 5 marks)
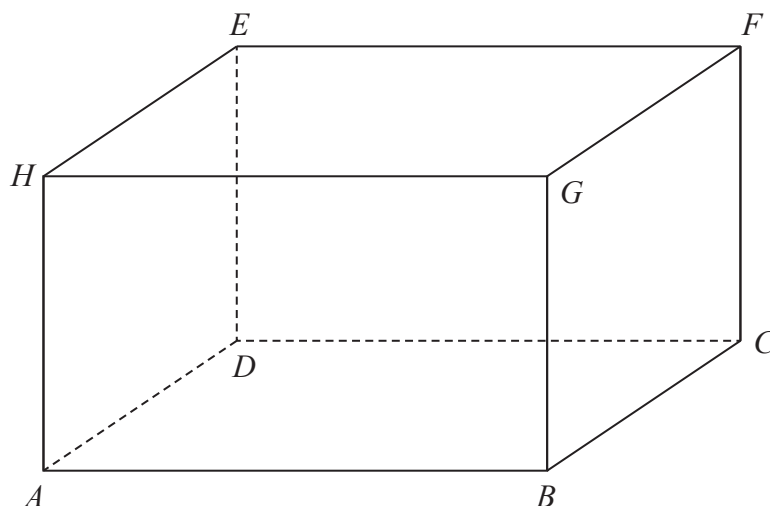
21 The diagram shows cuboid *ABCDEFGH*.

Diagram **NOT** accurately drawn

For this cuboid

the length of *AB* : the length of *BC* : the length of *CF* = 4 : 2 : 3

Calculate the size of the angle between *AF* and the plane *ABCD*.
Give your answer correct to one decimal place.

.... °

(Total for Question 21 is 3 marks)

22 Simplify fully $\dfrac{6x^3 + 13x^2 - 5x}{4x^2 - 25}$

....

(Total for Question 22 is 3 marks)

23 Boris has a bag that only contains red sweets and green sweets.

Boris takes at random 2 sweets from the bag.

The probability that Boris takes exactly 1 red sweet from the bag is $\dfrac{12}{35}$

Originally there were 3 red sweets in the bag.

Work out how many green sweets there were originally in the bag.
Show your working clearly.

....

(Total for Question 23 is 5 marks)

24 The function f is such that $f(x) = 3x - 2$

(a) Find $f(5)$

....
(1)

The function g is such that $g(x) = 2x^2 - 20x + 9$ where $x \geqslant 5$

(b) Express the inverse function g^{-1} in the form $g^{-1}(x) = ...$

$g^{-1}(x) = $ ....
(4)

(Total for Question 24 is 5 marks)

TOTAL FOR PAPER IS 100 MARKS