11 A solid metal sphere has radius 1.5 cm.
The mass of the sphere is 109.6 grams.

Work out the density of the sphere.
Give your answer correct to 3 significant figures.

..... g / cm^3

(Total for Question 11 is 3 marks)

12

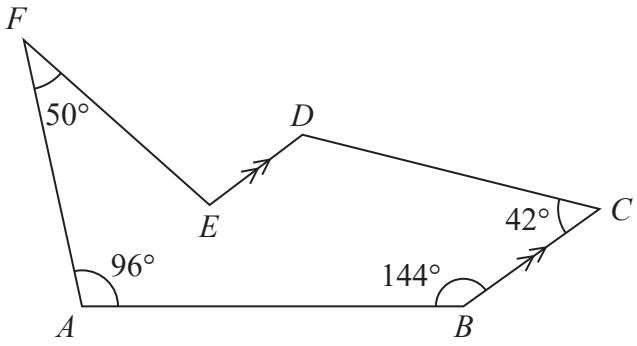


Diagram **NOT** accurately drawn

The diagram shows a hexagon *ABCDEF*.
BC is parallel to *ED*.

Work out the size of the obtuse angle *DEF*.

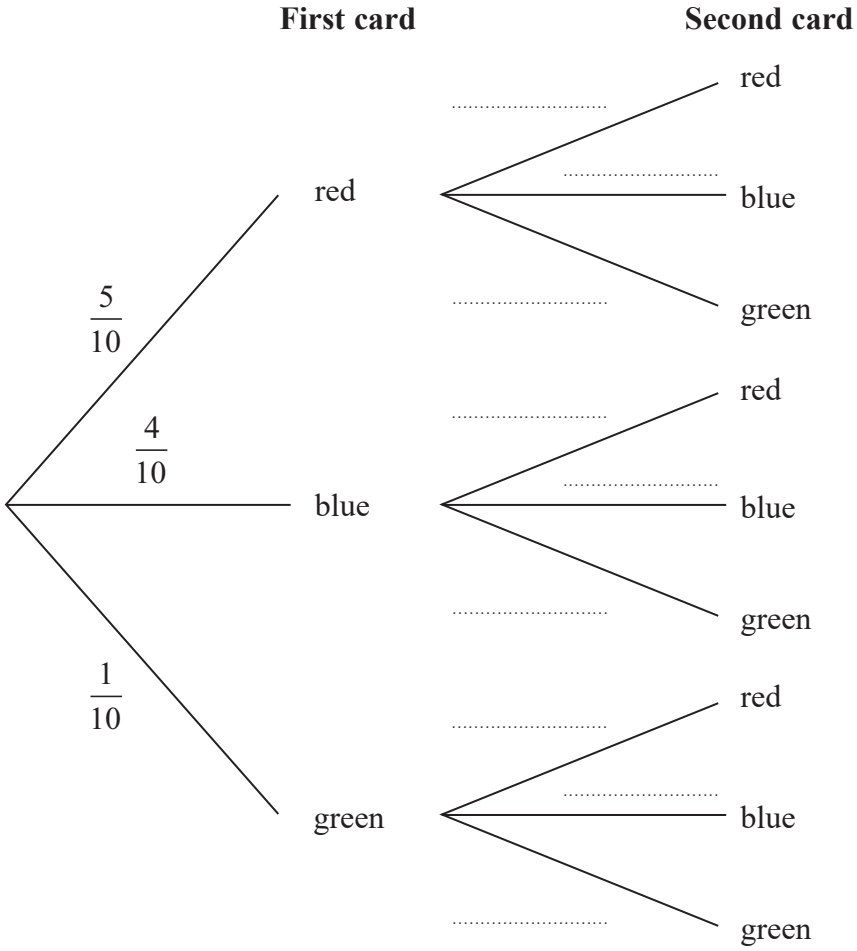
°

(Total for Question 12 is 5 marks)

13 Felix has 10 cards.
There are 5 red cards, 4 blue cards and 1 green card.

Felix takes at random one of the cards.
He does not replace the card.
Felix then takes at random a second card.

(a) Complete the probability tree diagram.



(2)

(b) Work out the probability that Felix takes at least one blue card and no green card.

.....

(3)

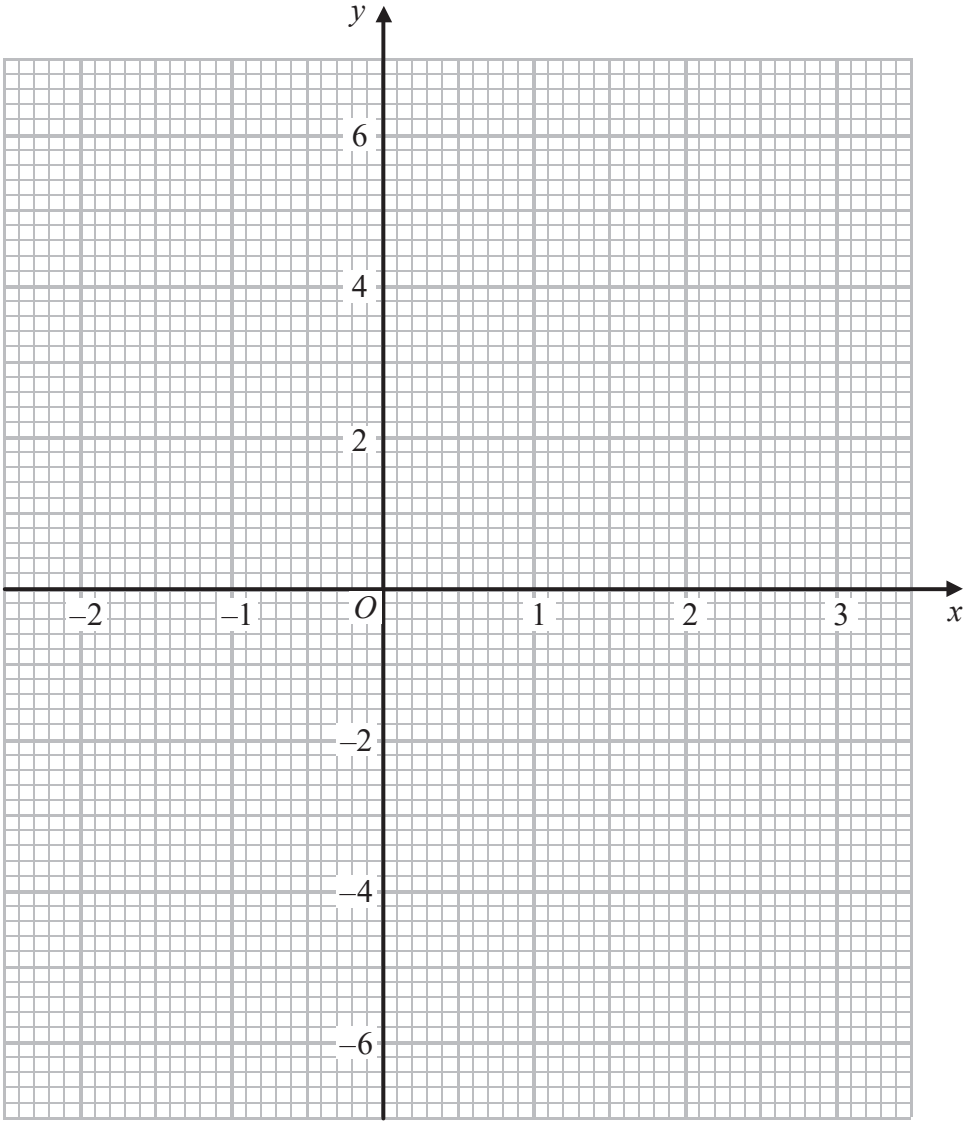
(Total for Question 13 is 5 marks)

14 (a) Complete the table of values for $y = x^3 - 2x^2 - 3x + 4$

x	–2	–1	–0.5	0	1	1.5	2	3
y			4.875	4		–1.625		

(2)

(b) On the grid, draw the graph of $y = x^3 - 2x^2 - 3x + 4$ for values of x from –2 to 3



(2)

(c) By drawing a suitable straight line on the grid,
find estimates for the solutions of the equation $x^3 - 2x^2 - x + 1 = 0$
Give your solutions correct to 1 decimal place.

.....

(4)

(Total for Question 14 is 8 marks)

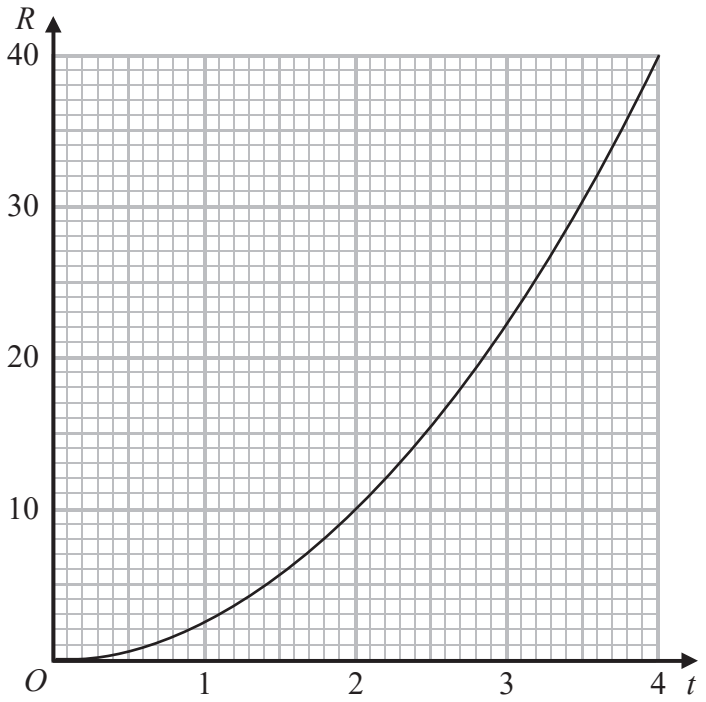
15 $e = 8.31$ correct to 2 decimal places
$f = 0.65$ correct to 2 decimal places

Work out the lower bound for the value of $e - f$
Show your working clearly.

.....

(Total for Question 15 is 2 marks)

16 R is proportional to t^2
The graph shows the relationship between R and t for $0 \leqslant t \leqslant 4$



(a) Find a formula for R in terms of t.

.....

(3)

Given also that $R = \dfrac{8}{5x}$

(b) show that t is inversely proportional to $\sqrt{x}$ for $t > 0$

(2)

(Total for Question 16 is 5 marks)