1 Rosie, Matilda and Ibrahim collect stickers.

$$\underset{\text{Rosie has}}{\text{number of stickers}} : \underset{\text{Matilda has}}{\text{number of stickers}} : \underset{\text{Ibrahim has}}{\text{number of stickers}} = 4:7:15$$

Ibrahim has 24 more stickers than Matilda.

Ibrahim has more stickers than Rosie.
How many more?

Difference between Ibrahim's part and Matilda's part : $15 - 7 = 8$ (1)

1 part $= \frac{24}{8} = 3$ stickers

Difference between Ibrahim and Rosie : $15 - 4 = 11$ (1)

11×3 stickers

$= 33$ stickers (1)

33

(Total for Question 1 is 3 marks)

2 In the Northern hemisphere the ratio of the area of land to the area of water is 2 : 3

(a) Work out what percentage of the area of the Northern hemisphere is land.

$\frac{\text{Area of land}}{\text{Area of water}} = \frac{2}{3}$

area of land

Percentage of land $= \frac{2}{5} \times 100\%$ (1)

Total area $= 2 + 3 = 5$

$= 40\%$ (1)

40 ..... %

(2)

20% of the area of the Southern hemisphere is land.

(b) Work out the ratio of the area of land to the area of water in the Southern hemisphere.

$\frac{\text{Area of land}}{\text{Area of water}} = \frac{20}{80}$ (1) $= 20 : 80$ (1)

$100\% - 20\% = 80\%$

20 : 80 .....

(2)

(Total for Question 2 is 4 marks)

3 Natalie makes potato cakes in a restaurant.

She mixes potato, cheese and onion so that

weight of potato : weight of cheese : weight of onion = 9 : 2 : 1

Natalie needs to make 6000 g of potato cakes.

Cheese costs £2.25 for 175 g.

Work out the cost of the cheese needed to make 6000 g of potato cakes.

Ratio of weight of potato, cheese and onion.

Total ratio = 9 + 2 + 1 = 12 (1)

Amount of cheese needed for 6000 g of cakes.

Cheese ratio for the cake = $\frac{2}{12} = \frac{1}{6}$

For 6000 g of cake = $\frac{1}{6} \times 6000\ g$

= 1000 g of cheese

Cost of cheese to make 6000 g of cakes

175 g = £ 2.25

1000 g = x

$x = \frac{1000\ g}{175\ g} \times £\ 2.25$ (1)

$= 5.71 \times £\ 2.25$ (1)

$= 12.86$ (1)

£ 12.86

(Total for Question 3 is 4 marks)

4 The points L, M and N are such that LMN is a straight line.

The coordinates of L are $(-3, 1)$

The coordinates of M are $(4, 9)$

Given that $LM : MN = 2 : 3$,

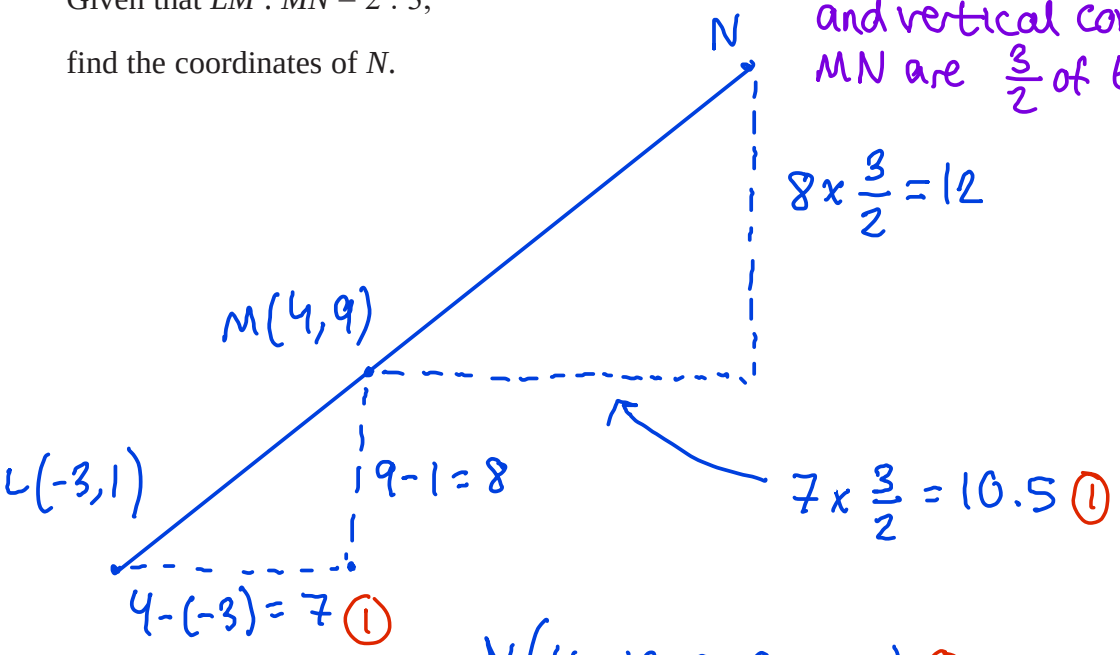
find the coordinates of N.

LM : MN

2 : 3 ÷2

1 : $\frac{3}{2}$ ÷2

this means the horizontal and vertical components of MN are $\frac{3}{2}$ of those of LM.



N(4 + 10.5, 9 + 12) (1)

N(14.5, 21)

(1)

(14.5 , 21)

(Total for Question 4 is 4 marks)

5 There are 240 cans of drink on a shelf.
Each can contains cola or lemonade or orange.

$$\begin{matrix}\text{the number of cans}\\ \text{of cola}\end{matrix} : \begin{matrix}\text{the number of cans}\\ \text{of lemonade}\end{matrix} : \begin{matrix}\text{the number of cans}\\ \text{of orange}\end{matrix} = 5:3:2$$

$\frac{1}{2}$ of the cans of lemonade and $\frac{1}{12}$ of the cans of orange are removed from the shelf.

Work out the number of cans of cola as a percentage of the total number of cans of drink remaining on the shelf.

Total ratio : 5 + 3 + 2 = 10 parts

Number of cans for each part : $\frac{240}{10}$ = 24 cans (1)

Finding number of cans for each drink :

Cola : 5 x 24 = 120

Lemonade : 3 x 24 = 72

Orange : 2 x 24 = 48 (1)

Finding number of cans removed :

Lemonade : $\frac{1}{2}$ x 72 = 36

Orange : $\frac{1}{12}$ x 48 = 4 (1)

Finding number of cans remaining :

Cola : 120 , Lemonade : 72 - 36 = 36 , Orange : 48 - 4 = 44

Total : 120 + 36 + 44 = 200

Finding percentage of cola :

$\frac{120}{200}$ x 100% = 60% (1)

(1)

60 ..... %

(Total for Question 5 is 5 marks)

6 Rizwan writes down three numbers a, b and c

$a : b = 1 : 3$ – (1)
$b : c = 6 : 5$ – (2)

(a) (i) Find $a : b : c$

Method to find common multiples of b

a : b	b : c
1 : 3	6 : 5
2 : 6 (×2)	6 : 5 (×2)

(1)

$2 : 6 : 5$

.....

(2)

(ii) Express a as a fraction of the total of the three numbers a, b and c

Total of a, b and c

$2 + 6 + 5 = 13$ (1)

$a = \frac{2}{13}$ (1)

$\frac{2}{13}$

.....

(2)

Emma writes down three numbers m, n and p

$n = 2m$ – (1)
$p = 5n$ – (2)

(b) Find $m : p$

Substitute (1) into (2)

$p = 5(2m) = 10m$ (1)

$p = 10m$

$\frac{p}{10} = \frac{m}{1}$

Ratio of $m : p = 1 : 10$ (1)

$1 : 10$

.....

(2)

(Total for Question 6 is 6 marks)