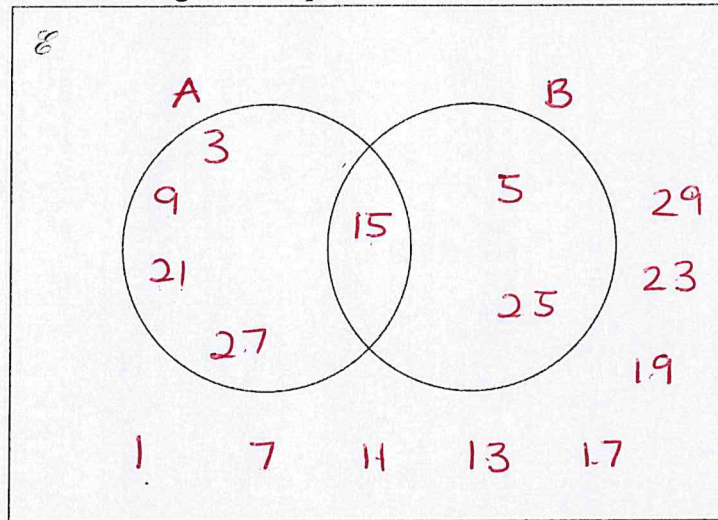


- 15/1 $\mathcal{E} = \{\text{odd numbers less than } 30\}$
 $A = \{3, 9, 15, 21, 27\}$
 $B = \{5, 15, 25\}$

(a) Complete the Venn diagram to represent this information.

- 1 17
- ~~3~~ 19
- ~~5~~ 21
- 7 23
- ~~9~~ 25
- 11 27
- 13 29
- ~~15~~



(4)

A number is chosen at random from the universal set, \mathcal{E} .

(b) What is the probability that the number is in the set $A \cup B$?

Union
Join both

$$\frac{7}{15}$$

(2)

16/2 Solve the simultaneous equations

$$\begin{array}{r} 3x + y = -4 \quad \times 4 \\ 3x - 4y = 6 \quad \times 1 \end{array}$$

$$\begin{array}{r} 12x + 4y = -16 \\ + 3x - 4y = 6 \\ \hline 15x = -10 \end{array}$$

$$x = \frac{-10}{15} = \frac{-2}{3}$$

$$\begin{array}{l} 3x + y = -4 \\ 3 \times \left(\frac{-2}{3}\right) + y = -4 \\ -2 + y = -4 \\ y = -2 \end{array}$$

$$x = \frac{-2}{3}$$

$$y = -2$$

(Total for Question 16/2 is 3 marks)

17/3

The table shows some information about the dress sizes of 25 women.

Dress size	Number of women
8	2
10	9
12	8
14	6



(a) Find the median dress size.

middle = 13th

$$\underline{12} \otimes \underline{12}$$

..... size 12

(1)

3 of the 25 women have a shoe size of 7

Zoe says that if you choose at random one of the 25 women, the probability that she has

Either a shoe size of 7 or a dress size of 14 is $\frac{9}{25}$ because

$$\frac{3}{25} + \frac{6}{25} = \frac{9}{25}$$

(b) Is Zoe correct?

You must give a reason for your answer.

..... No, because people could have size 7 shoes
 and wear dress size 14.

(1)

18/4

Daniel bakes 420 cakes.

He bakes only vanilla cakes, banana cakes, lemon cakes and chocolate cakes.

 $\frac{2}{7}$ of the cakes are vanilla cakes.

35% of the cakes are banana cakes.

The ratio of the number of lemon cakes to the number of chocolate cakes is 4:5

Work out the number of lemon cakes Daniel bakes.

$$\text{Vanilla} = \frac{2}{7} \text{ of } 420 = 120$$

$$\text{Banana} = \frac{35}{100} \times 420 = 147$$

$$\text{Lemon} + \text{choc} = 420 - 120 - 147 = 153$$

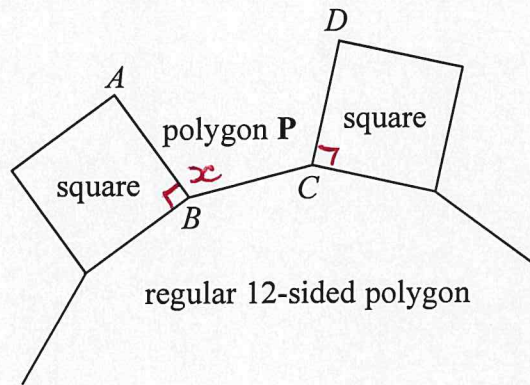
L:C	Total	
4:5	9	} x17
<u>68</u> : <u>85</u>	153	

..... 68 lemon

(Total for Question 18/4 is 5 marks)

19/5

In the diagram, AB , BC and CD are three sides of a regular polygon P .



Show that polygon P is a hexagon.
You must show your working.

12 sided polygon

$$\text{exterior} = \frac{360}{12} = \underline{30^\circ}$$

$$\text{interior} = 180 - 30 = \underline{150^\circ}$$

$$x = 360 - 90 - 150$$

$$\underline{x = 120^\circ} \text{ (interior angle)}$$

$$\text{exterior angle of } P = 180 - 120 = \underline{60^\circ}$$

$$\text{number of sides} = \frac{360}{60} = \underline{6 \text{ sides}}$$

$$= \underline{\underline{\text{hexagon}}}$$

(Total for Question 19/5 is 4 marks)

20/6

The density of apple juice is 1.05 grams per cm^3 .

The density of fruit syrup is 1.4 grams per cm^3 .

The density of carbonated water is 0.99 grams per cm^3 .

25 cm^3 of apple juice are mixed with 15 cm^3 of fruit syrup and 280 cm^3 of carbonated water to make a drink with a volume of 320 cm^3 .

Work out the density of the drink.

Give your answer correct to 2 decimal places.

	Apple juice	Fruit syrup	Water	Mixture
Density	1.05	1.4	0.99	
mass	1.05×25 = 26.25	1.4×15 = 21	0.99×280 = 277.2	324.45
Volume	25	15	280	320

$$D = \frac{M}{V} = \frac{324.45}{320} = 1.01390625$$

.....1.01..... g/cm^3

(Total for Question 20/6 is 4 marks)