



# EXAM PAPERS PRACTICE

GCSE OCR Math J560

Venn Diagrams & 2 way  
table

Answers

*"We will help you to  
achieve A Star "*



**Answer 1**

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

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

$$\begin{aligned} P(A \cup B) &= \frac{n(A \cup B)}{n(\mathcal{E})} \\ &= \frac{7}{15} \end{aligned}$$

**Answer 2**

One of the children is picked at random.

(b) Write down the probability that this child walked to school that day.

$$P(\text{WALK}) = \frac{37}{100}$$



**Answer 3**

One of the numbers in the diagram is chosen at random.

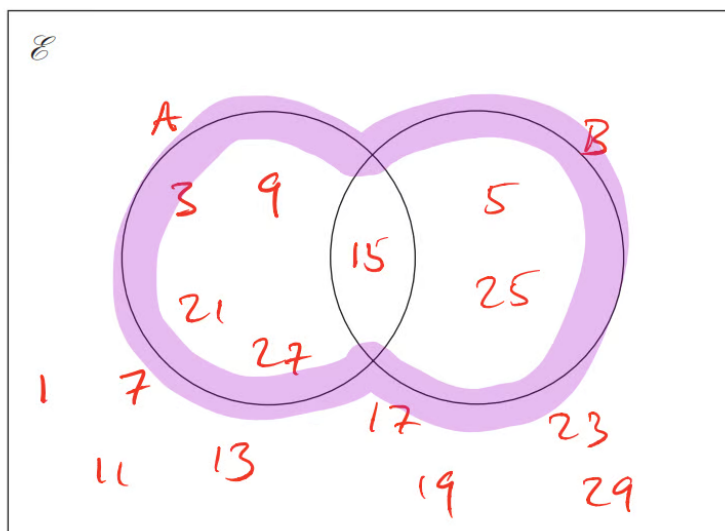
(b) Find the probability that the number is in set  $A'$

$$\left. \begin{array}{l} n(A') = 7 \\ n(\xi) = 10 \end{array} \right\} P(A') = \frac{7}{10}$$

**Answer 4**

$\mathcal{E} = \{\text{odd numbers less than } 30\} = \{1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29\}$   
 $A = \{3, 9, 15, 21, 27\}$   
 $B = \{5, 15, 25\}$

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





**Answer 5**

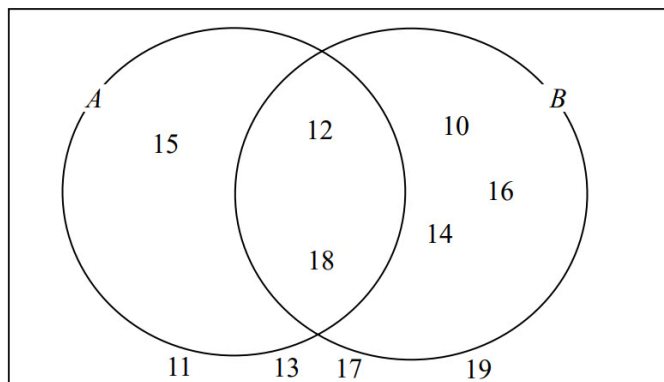
The two-way table gives some information about how 100 children travelled to school one day.

	Walk	Car	Other	Total
Boy	15	$33 - 8 = 25$	14	54
Girl	$37 - 15 = 22$	8	16	$22 + 8 + 16 = 46$
Total	37	$100 - 37 - 30 = 33$	30	100

(a) Complete the two-way table.

**Answer 6**

Here is a Venn diagram.



(a) Write down the numbers that are in set

(i)  $A \cup B$

$$A \cup B = \{15, 12, 18, 10, 16, 14\}$$

$$A \cup B = \{10, 12, 14, 15, 16, 18\}$$

(ii)  $A \cap B$

$$A \cap B = \{12, 18\}$$



**Answer 7**

Ali asked 200 students which sport they like best.

They could choose swimming or tennis or athletics.

The two-way table shows some information about their answers.

	Swimming	Tennis	Athletics	Total
Female	$79 - 36$ $= 43$	$67 - 42$ $= 25$	19	$200 - 113$ $= 87$
Male	36	42	$54 - 19$ $= 35$	$36 + 42 + 35$ $= 113$
Total	79	$200 - 79 - 54$ $= 67$	54	200

Complete the two-way table.



**Answer 8**

Milk is sold in  $\frac{1}{2}$  pint bottles, in 1 pint bottles and in 2 pint bottles.

One weekend a shop sold 100 bottles of milk.

46 of the bottles were sold on Sunday.

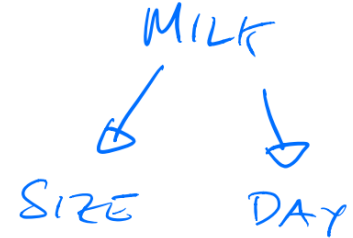
15 of the bottles sold on Sunday were 2 pint bottles.

31 of the bottles sold on Saturday were  $\frac{1}{2}$  pint bottles.

22 of the bottles sold were 2 pint bottles.

30 of the bottles sold were 1 pint bottles.

How many 1 pint bottles were sold on Sunday?



USE TWO WAY  
TABLE

	$\frac{1}{2}$	1	2	TOT
SAT	31	$54 - 38 = 16$	$22 - 15 = 7$	$100 - 46 = 54$
SUN		$30 - 16 = 14$	15	46
TOT		30	22	100

14 1 PINT BOTTLES WERE  
SOLD ON SUNDAY

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**Answer 9**

Sami asked 50 people which drinks they liked from tea, coffee and milk.

All 50 people like at least one of the drinks

19 people like all three drinks.

16 people like tea and coffee but do **not** like milk.

21 people like coffee and milk.

24 people like tea and milk.

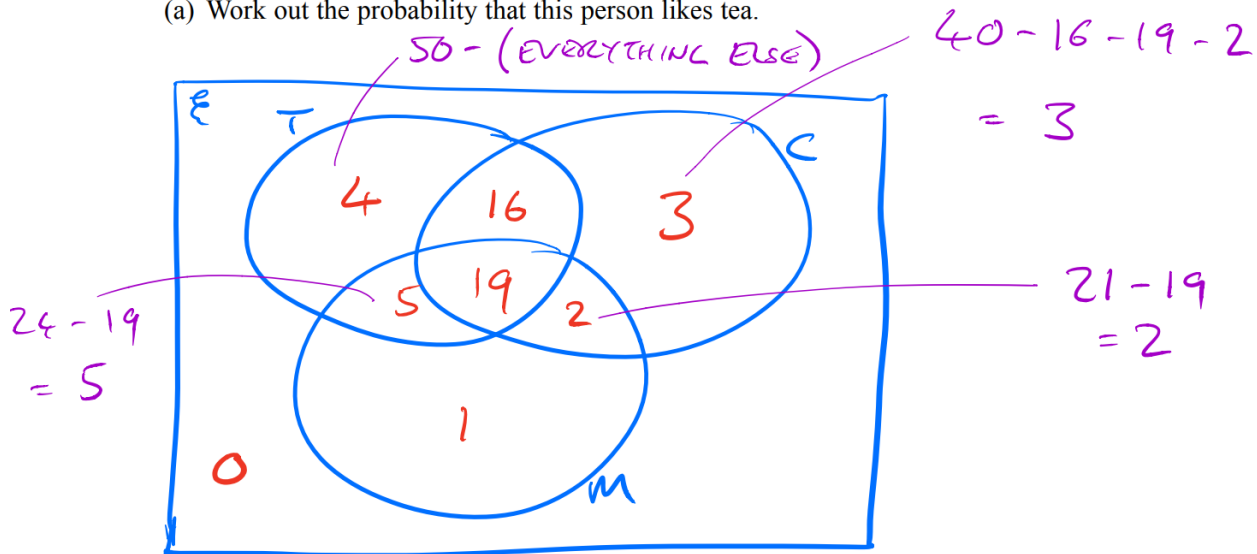
40 people like coffee.

1 person likes only milk.

VENN DIAGRAM

Sami selects at random one of the 50 people.

(a) Work out the probability that this person likes tea.



$$P(T) = \frac{4+5+19+16}{50} = \frac{44}{50}$$



**Answer 10**

60 people were asked if they prefer to go on holiday in Britain or in Spain or in Italy.

38 of the people were male.

11 of the 32 people who said Britain were female.

8 males said Italy.

12 people said Spain.

One of the females is chosen at random.

What is the probability that this female said Spain?

TWO CHARACTERISTICS  
(HOLIDAY AND GENDER)

SO TWO WAY TABLE

	BR	SP	IT	TOTAL
MALE			8	38
FEMALE	11	$22-11-8=3$	$16-8=8$	$60-38=22$
TOTAL	32	12	$60-32-12=16$	60

$$P = \frac{\text{purple square}}{\text{purple circle}}$$

$$P(\text{SP} | \text{F}) = \frac{3}{22}$$

↑  
"GIVEN THAT"





Answer 11

50 people each did one activity at a sports centre.

Some of the people went swimming.

Some of the people played squash.

The rest of the people used the gym.

21 of the people were female.

6 of the 8 people who played squash were male.

18 of the people used the gym.

9 males went swimming.

Work out the number of females who used the gym.

TWO THING ABOUT EACH PERSON  
SO USE TWO WAY TABLE

	Sw	SQ	G	TOTALS
M	9	6		29
F	$24-9=15$	$8-6=2$	4	21
TOTALS	24	8	18	50

$50-21$

$21-15-2$

$50-18-8$

4 FEMALES USED THE GYM



**Answer 12**

66 people went on a day trip.

Each person did only one activity on the trip.

Each person went skating or went to an art gallery or went bowling.

43 of the people are female.

4 of the 10 people who went skating are male.

20 of the people went to the art gallery.

10 males went bowling.

Work out the number of females who went to the art gallery.

	Sk	AG	Bo	TOT
M	4	$23 - 4 - 10$ $= 9$	10	$66 - 43$ $= 23$
F		$20 - 9$ $= 11$		43
TOT	10	20		66

11 FEMALES WENT TO THE  
ART GALLERY



**Answer 13**

- (b) Given that the person selected at random from the 50 people likes tea, find the probability that this person also likes exactly one other drink.

$$\begin{aligned} P(\text{EXACTLY ONE OTHER DRINK} \mid T) &= \frac{5 + 16}{44} \\ &= \frac{21}{44} \end{aligned}$$



**Answer 14**

50 people were asked if they speak French or German or Spanish.

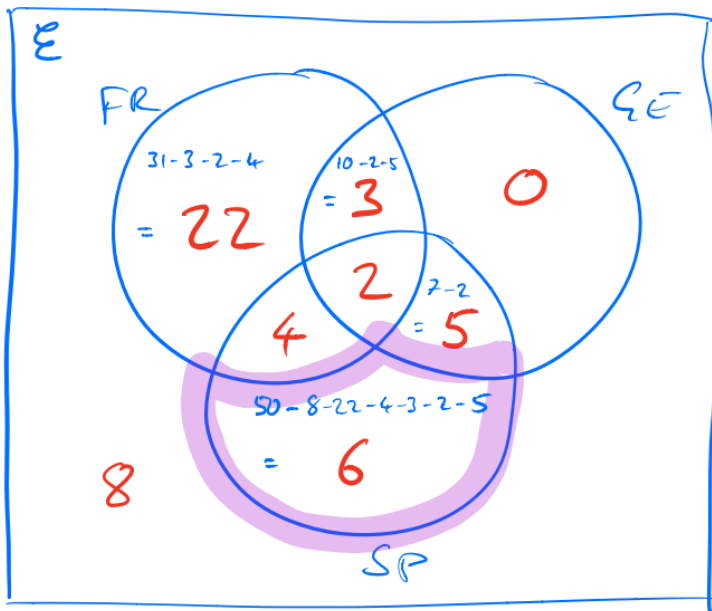
Of these people,

- 31 speak French
- 2 speak French, German and Spanish
- 4 speak French and Spanish but not German
- 7 speak German and Spanish
- 8 do not speak any of the languages
- all 10 people who speak German speak at least one other language

VENN  
DIAGRAM

Two of the 50 people are chosen at random.  $\rightarrow$  "WITHOUT REPLACEMENT"

Work out the probability that they both **only speak Spanish.**



$P(\text{SP ONLY AND SP ONLY})$

$$= \frac{6}{50} \overset{\substack{\text{1 fewer} \\ \downarrow}}{\times} \frac{5}{49} \underset{\substack{\text{1 fewer} \\ \downarrow}}{\times}$$

$$= \frac{3}{245}$$

COMBINED PROBABILITY  
"AND"  $\leftrightarrow$   $\times$   
"OR"  $\leftrightarrow$   $+$