

1. Question | 0580 Feb-March 2016 P2 V2 Q21

21 Dan either walks or cycles to school.
The probability that he cycles to school is $\frac{1}{3}$.

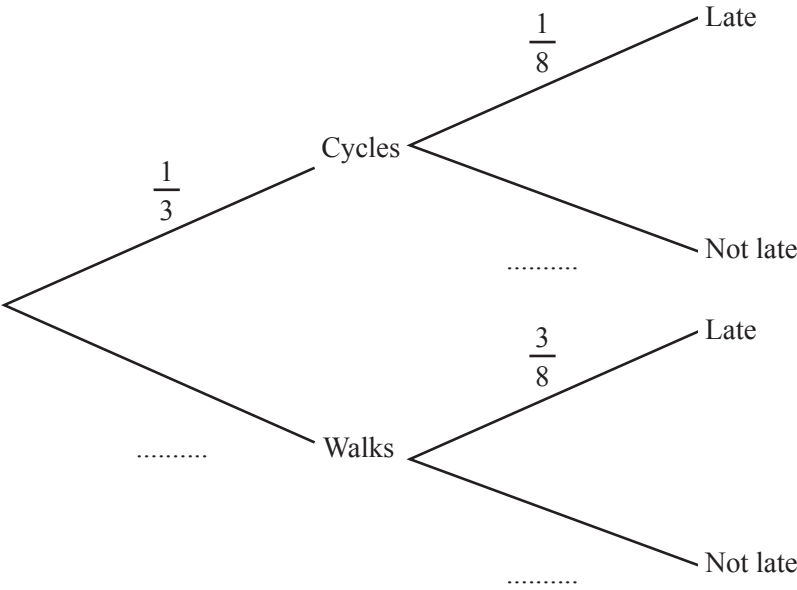
(a) Write down the probability that Dan walks to school.

..... [1]

(b) When Dan cycles to school the probability that he is late is $\frac{1}{8}$.

When Dan walks to school the probability that he is late is $\frac{3}{8}$.

Complete the tree diagram.



[2]

(c) Calculate the probability that

(i) Dan cycles to school and is late,

..... [2]

(ii) Dan is not late.

..... [3]

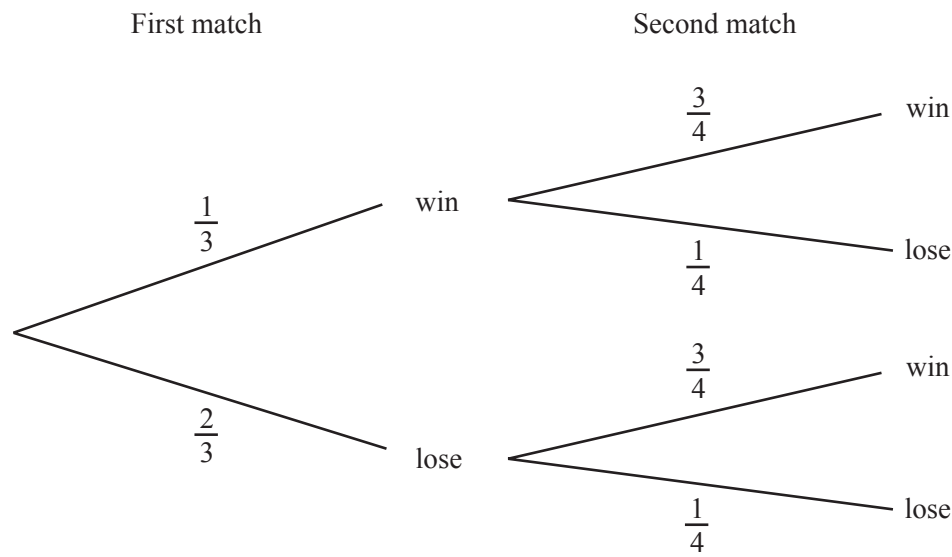
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2. Question | 0580 May-June 2016 P2 V1 Q19

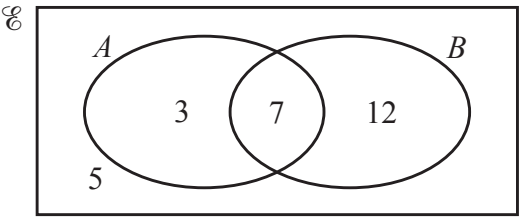
19 The probability of a cricket team winning or losing in their first two matches is shown in the tree diagram.



Find the probability that the cricket team wins at least one match.

..... [3]

22



The Venn diagram shows the numbers of elements in each region.

- (a) Find $n(A \cap B')$.

..... [1]
- (b) An element is chosen at random.

Find the probability that this element is in set B .

..... [1]
- (c) An element is chosen at random from set A .

Find the probability that this element is also a member of set B .

..... [1]
- (d) On the Venn diagram, shade the region $(A \cup B)'$.

[1]

11 Hattie has a box of coloured pens.
She takes a pen at random from the box.
The probability that she takes a red pen is 0.4 .

- (a) Work out the probability that she does not take a red pen.

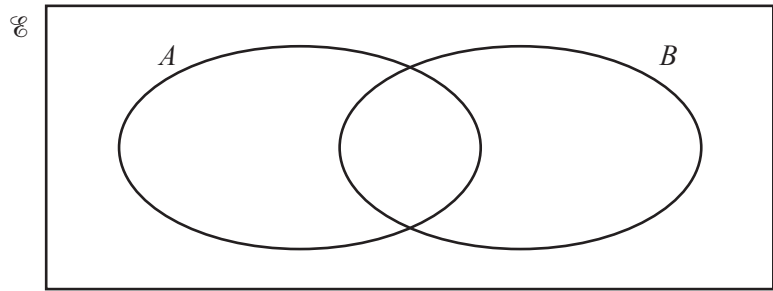
..... [1]
- (b) The box contains only blue, red and green pens.
There are 15 blue pens and 15 green pens.

Complete the table.

Colour of pen	Blue	Red	Green
Number of pens	15		15
Probability		0.4	

5. Question | 0580 Oct-Nov 2016 P2 V1 Q22

22 (a) $n(\mathcal{E}) = 10$, $n(A) = 7$, $n(B) = 6$, $n(A \cup B)' = 1$.



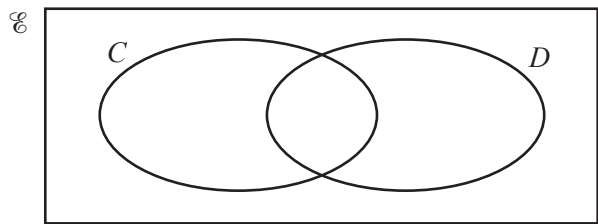
(i) Complete the Venn diagram by writing the number of elements in each subset. [2]

(ii) An element of $\mathcal{E}$ is chosen at random.

Find the probability that this element is an element of $A' \cap B$.

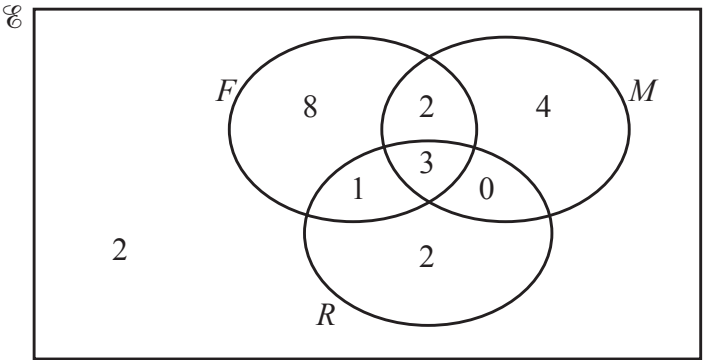
..... [1]

(b) On the Venn diagram below, shade the region $C' \cap D'$.



[1]

15



The Venn diagram shows the number of people who like films (F), music (M) and reading (R).

(a) Find

(i) $n(M)$,

..... [1]

(ii) $n(R \cup M)$.

..... [1]

(b) A person is chosen at random from the people who like films.

Write down the probability that this person also likes music.

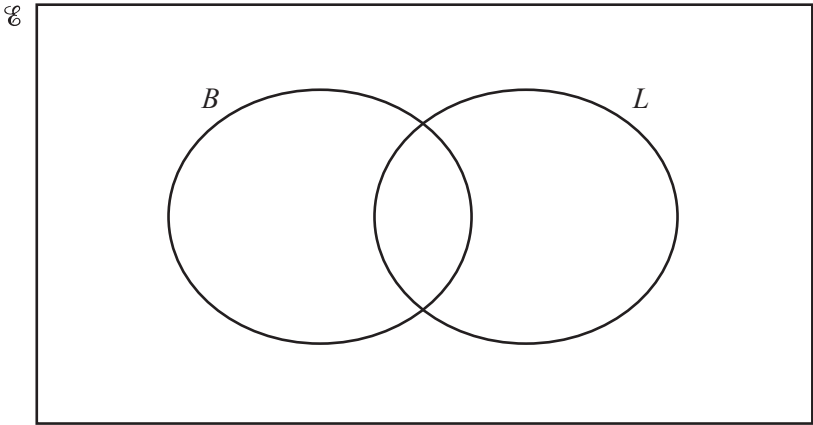
..... [1]

(c) On the Venn diagram, shade $M' \cap (F \cup R)$.

[1]

17 (a) A total of 20 trucks were tested at a checkpoint.

- 6 trucks failed the test for brakes (B)
- 7 trucks failed the test for lights (L)
- 9 trucks passed the tests for both brakes and lights.

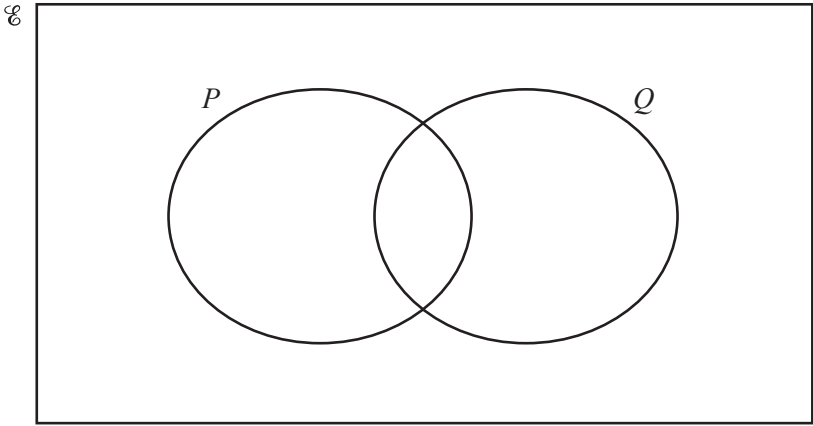


(i) Complete the Venn diagram. [2]

(ii) Find $n(B' \cap L')$.

..... [1]

(b) In the Venn diagram below, shade the region $(P \cup Q) \cap Q'$.



[1]

- 8 Simon has two boxes of cards.
In one box, each card has one shape drawn on it that is either a triangle or a square.
In the other box, each card is coloured either red or blue.

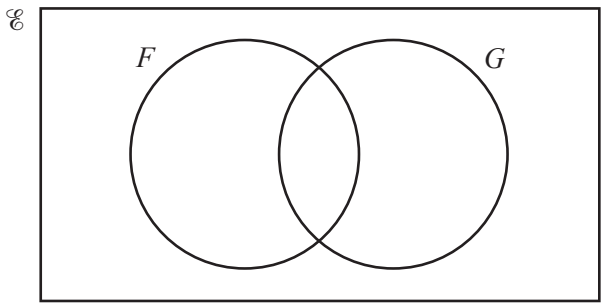
Simon picks a card from each box at random.
The probability of picking a triangle card is t .
The probability of picking a red card is r .

Complete the table for the cards that Simon picks, writing each probability in terms of r and t .

Event	Probability
Triangle and red	
Square and red	$(1 - t)r$
Triangle and blue	
Square and blue	

9. Question | 0580 May-June 2017 P2 V1 Q17

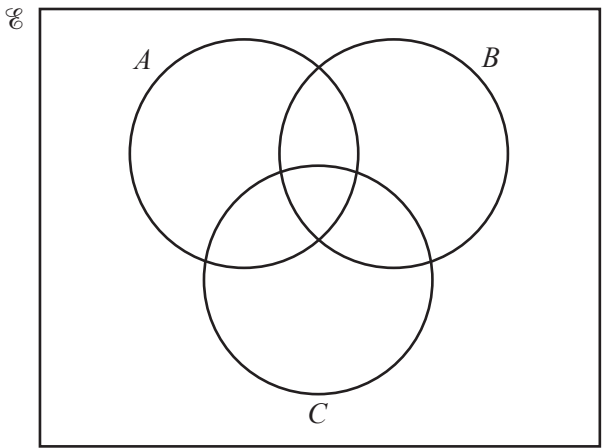
17 (a) In this Venn diagram, shade the region $F \cup G'$.



[1]

- (b) $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$
 $A = \{x: x \text{ is an odd number}\}$
 $B = \{x: x \text{ is a square number}\}$
 $C = \{x: x \text{ is a multiple of } 3\}$

(i) Write all the elements of $\mathcal{E}$ in the Venn diagram below.



[2]

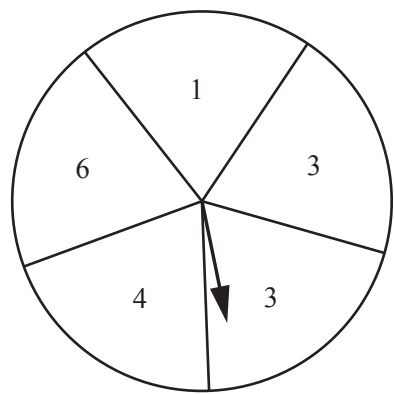
- (ii) Another number is included in the set $\mathcal{E}$.
This number is in the region $A' \cap B \cap C$.

Write down a possible value for this number.

..... [1]

10. Question | 0580 May-June 2017 P2 V1 Q20

20 The diagram shows a fair spinner.



Anna spins it twice and adds the scores.

(a) Complete the table for the total scores.

		Score on first spin				
		1	3	3	4	6
Score on second spin	1	2	4	4	5	7
	3	4	6	6	7	9
	3	4	6	6	7	9
	4					
	6					

[1]

(b) Write down the most likely total score.

..... [1]

(c) Find the probability that Anna scores

(i) a total less than 6,

..... [2]

(ii) a total of 3.

..... [1]

11. Question | 0580 May-June 2017 P2 V2 Q2

2 The probability that Stephanie wins her next tennis match is 0.85 .

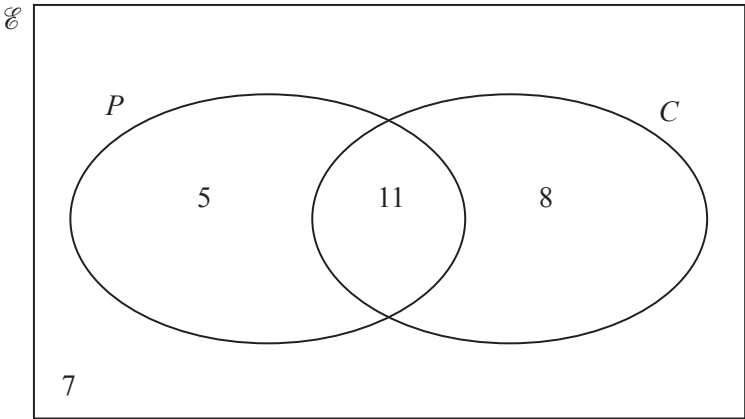
Find the probability that Stephanie does not win her next tennis match.

..... [1]

12. Question | 0580 May-June 2017 P2 V2 Q23

- 23 (a) $\mathcal{C} = \{\text{students in a class}\}$
 $P = \{\text{students who study physics}\}$
 $C = \{\text{students who study chemistry}\}$

The Venn diagram shows numbers of students.



- (i) Find the number of students who study physics or chemistry.

..... [1]

- (ii) Find $n(P \cap C')$.

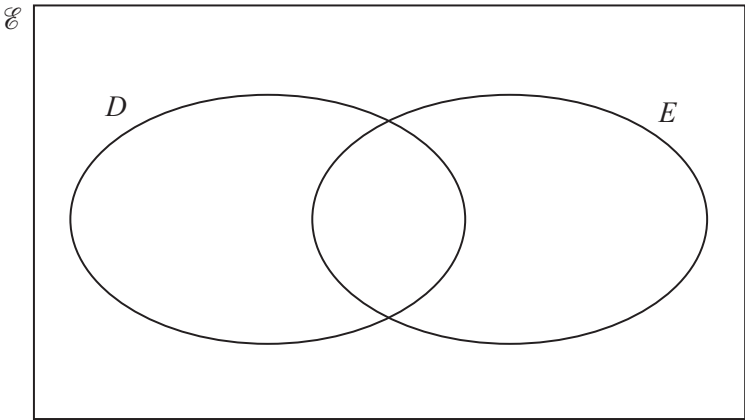
..... [1]

- (iii) A student who does not study chemistry is chosen at random.

Find the probability that this student does not study physics.

..... [1]

- (b) On the Venn diagram below, shade the region $D \cup E'$.



[1]

13. Question | 0580 May-June 2017 P2 V3 Q6

6 The probability that Pedro scores a goal in any match is $\frac{2}{5}$.

Calculate the probability that Pedro scores a goal in each of the next two matches.

.....[2]

14. Question | 0580 May-June 2018 P2 V1 Q20

20 (a) A box contains 3 blue pens, 4 red pens and 8 green pens only.
A pen is chosen at random from the box.

Find the probability that this pen is green.

.....[1]

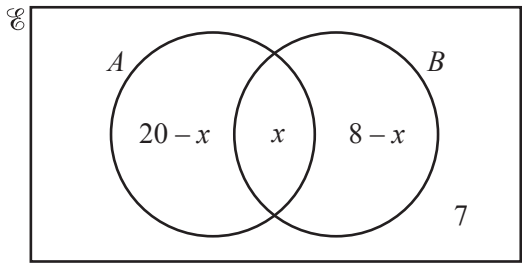
(b) Another box contains 7 black pens and 8 orange pens only.
Two pens are chosen at random from this box without replacement.

Calculate the probability that at least one orange pen is chosen.

.....[3]

15. Question | 0580 May-June 2018 P2 V2 Q23

23 The Venn diagram shows information about the number of elements in sets A , B and $\mathcal{C}$.



(a) $n(A \cup B) = 23$

Find the value of x .

$x = \dots\dots\dots [3]$

(b) An element is chosen at random from $\mathcal{C}$.

Find the probability that this element is in $(A \cup B)'$.

$\dots\dots\dots [2]$

16. Question | 0580 May-June 2018 P2 V2 Q24

24 Box A and box B each contain blue and green pens only.
Raphael picks a pen at random from box A and Paulo picks a pen at random from box B .
The probability that Raphael picks a blue pen is $\frac{2}{3}$.
The probability that both Raphael and Paulo pick a blue pen is $\frac{8}{15}$.

(a) Find the probability that Paulo picks a blue pen.

..... [2]

(b) Find the probability that both Raphael and Paulo pick a green pen.

..... [3]

17. Question | 0580 May-June 2018 P2 V3 Q7

- 7 The probability that Kim wins a game is 0.72 .
In one year Kim will play 225 games.

Work out an estimate of the number of games Kim will win.

..... [2]

22 A group of 200 people were asked which city they would like to visit next.
The table shows the results.

City	London	Paris	New York	Tokyo
Number of people	50	48	56	46

(a) A person from the group is chosen at random.

Write down the probability that this person would like to visit either Paris or Tokyo next.

..... [2]

(b) Two people are chosen at random from the group of 200.

Find the probability that one person would like to visit London next and the other person would like to visit New York next.
Give your answer as a percentage.

..... % [3]

19. Question | 0580 Feb-March 2019 P2 V2 Q6

- 6
- The probability that a sweet made in a factory is the wrong shape is 0.0028 .
One day, the factory makes 25 000 sweets.

Calculate the number of sweets that are expected to be the wrong shape.

..... [2]

20. Question | 0580 May-June 2019 P2 V1 Q11

11

1

2

3

4

5

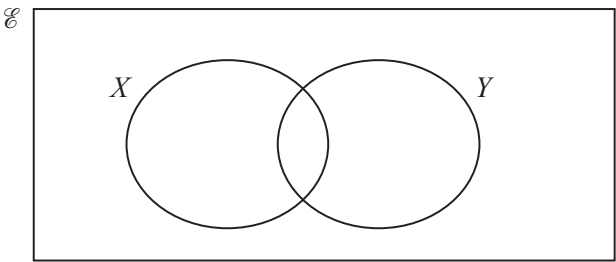
The diagram shows five cards.
Two of the cards are taken at random, without replacement.

Find the probability that both cards show an even number.

..... [2]

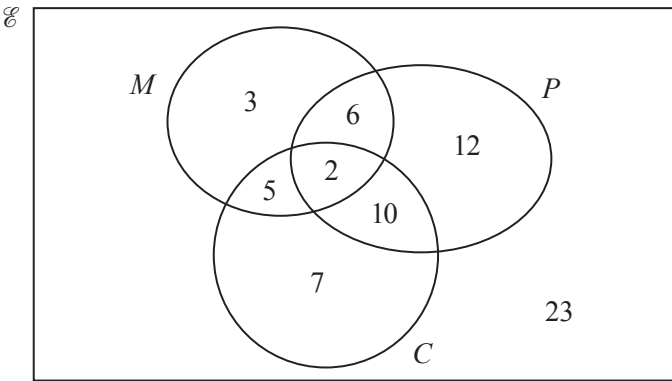
21. Question | 0580 May-June 2019 P2 V2 Q21

21 (a) In the Venn diagram, shade $X' \cap Y$.



[1]

(b) The Venn diagram below shows information about the number of gardeners who grow melons (M), potatoes (P) and carrots (C).



(i) A gardener is chosen at random from the gardeners who grow melons.
Find the probability that this gardener does not grow carrots.

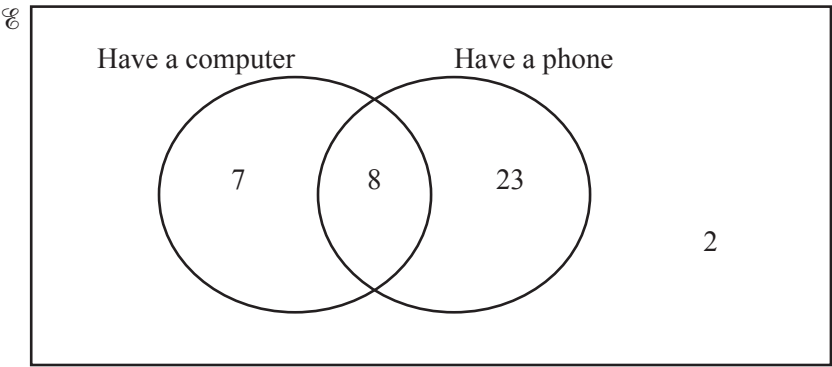
..... [2]

(ii) Find $n((M \cap P) \cup C')$.

..... [1]

22. Question | 0580 May-June 2019 P2 V3 Q20

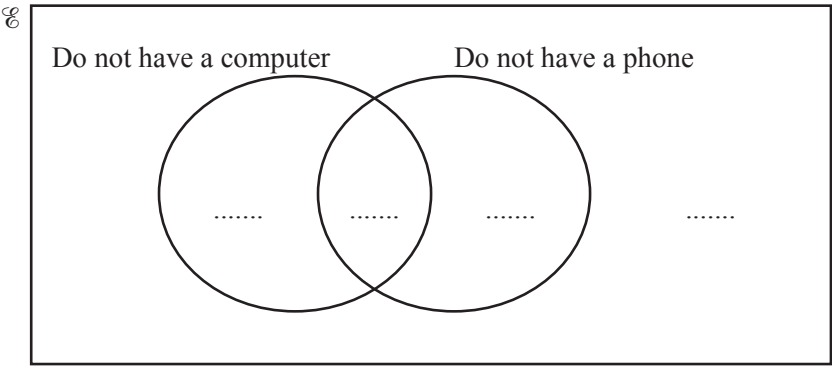
- 20 (a) 40 children were asked if they have a computer or a phone or both.
The Venn diagram shows the results.



- (i) A child is chosen at random from the children who have a computer.
Write down the probability that this child also has a phone.

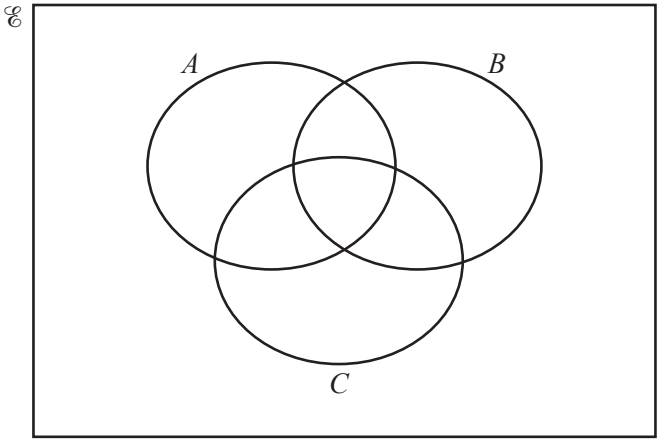
..... [1]

- (ii) Complete the Venn diagram.



[2]

- (b) In this Venn diagram, shade the region $(A \cup B') \cap C$.



[1]

0580 Mathematics Paper 2 - Probability

Topical questions | 74 questions

23. Question | 0580 Oct-Nov 2019 P2 V1 Q20

20 The probability that the school bus is late is $\frac{9}{10}$.

If the school bus is late, the probability that Seb travels on the bus is $\frac{15}{16}$.

If the school bus is on time, the probability that Seb travels on the bus is $\frac{3}{4}$.

Find the probability that Seb travels on the bus.

..... [3]

24. Question | 0580 Oct-Nov 2019 P2 V1 Q23

23

$\mathcal{E} = \{0, 1, 2, 3, 4, 5, 6\}$

$A = \{0, 2, 4, 5, 6\}$

$B = \{1, 2, 5\}$

Complete each of the following statements.

$A \cap B = \{.....\}$

$n(B) = ...$

$\{0, 4, 6\} = ... \cap$

$\{2, 4\} A$

[4]

25. Question | 0580 Oct-Nov 2019 P2 V2 Q18

- 18
- Harris is taking a driving test.
The probability that he passes the driving test at the first attempt is 0.6 .
If he fails, the probability that he passes at any further attempt is 0.75 .

Calculate the probability that Harris

- (a)
- passes the driving test at the second attempt,

.....

[2]

- (b)
- takes no more than three attempts to pass the driving test.

.....

[2]

26. Question | 0580 May-June 2020 P2 V1 Q4

- 4 A bag contains blue, red, yellow and green balls only.
A ball is taken from the bag at random.
The table shows some information about the probabilities.

Colour	Blue	Red	Yellow	Green
Probability	0.15	0.2		0.43

(a) Complete the table.

[2]

- (b) Abdul takes a ball at random and replaces it in the bag.
He does this 200 times.

Find how many times he expects to take a red ball.

..... [1]

27. Question | 0580 May-June 2020 P2 V3 Q5

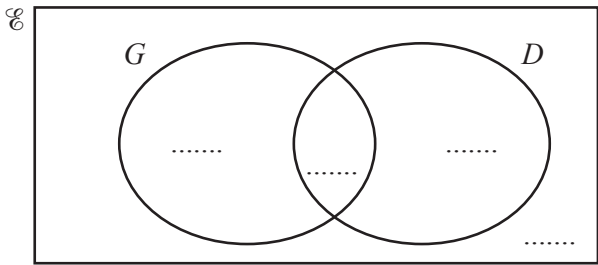
- 5 Sofia has a bag containing 8 blue beads and 7 red beads only.
She takes one bead out of the bag at random and replaces it.
She does this 90 times.

Find the number of times she expects to take a red bead.

..... [2]

19 (a) In a class of 40 students:

- 28 wear glasses (G)
- 13 have driving lessons (D)
- 4 do not wear glasses and do not have driving lessons.

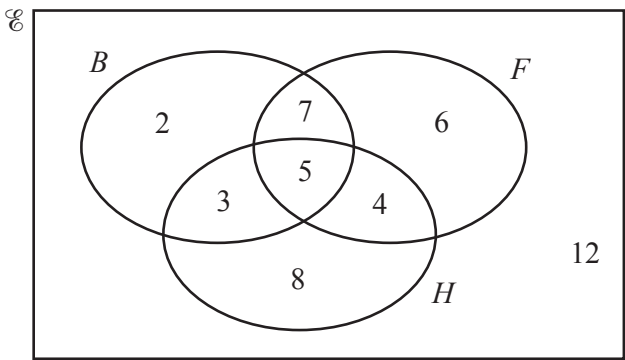


(i) Complete the Venn diagram. [2]

(ii) Use set notation to describe the region that contains a total of 32 students.

..... [1]

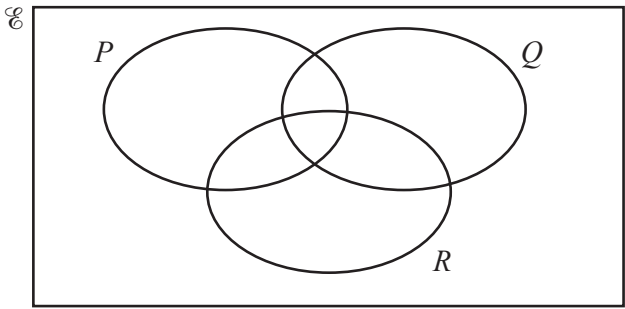
(b) This Venn diagram shows information about the number of students who play basketball (B), football (F) and hockey (H).



Find $n((B \cup F) \cap H')$.

..... [1]

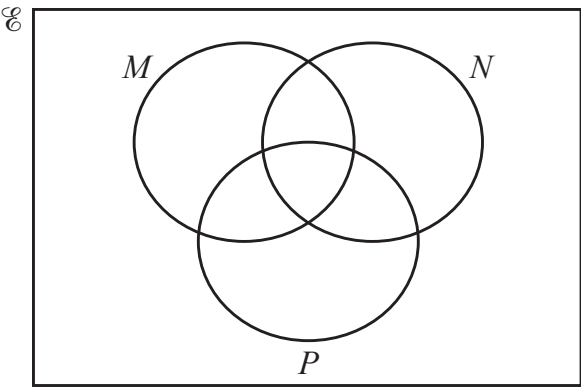
(c)



Shade the region $P \cup (Q \cap R)'$. [1]

29. Question | 0580 Oct-Nov 2020 P2 V1 Q19

19 In this Venn diagram, shade the region $M' \cup N \cup P$.



[1]

30. Question | 0580 Oct-Nov 2020 P2 V3 Q11

11 A bag contains 7 red discs, 5 green discs and 2 pink discs.

- (a) Helen takes one disc at random, records the colour and replaces it in the bag. She does this 140 times.

Find how many times she expects to take a green disc.

..... [2]

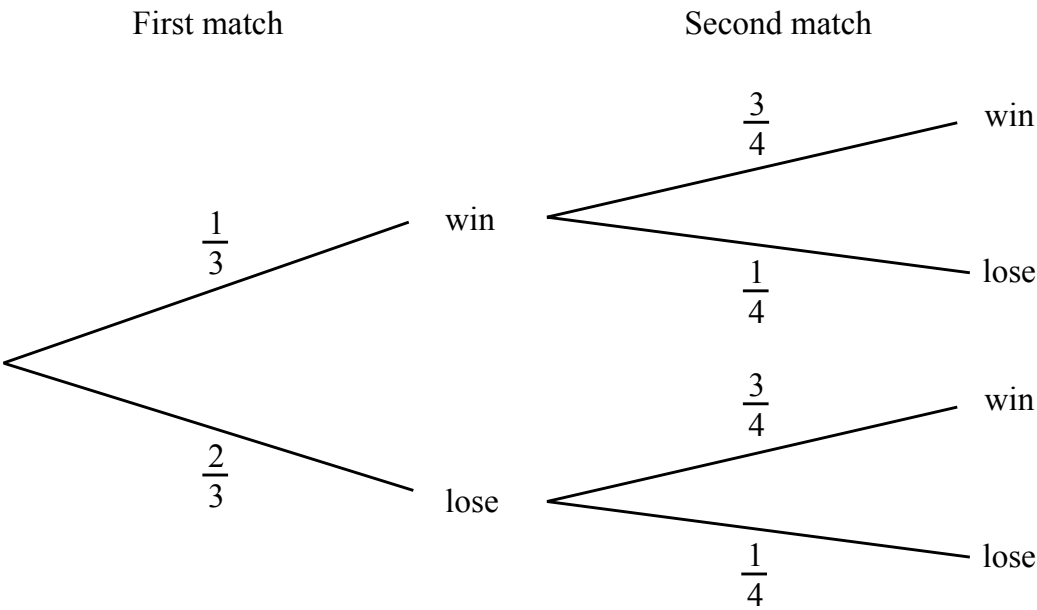
- (b) Helen adds 9 green discs and some pink discs to the discs already in the bag. The probability of taking a green disc is now $\frac{2}{7}$.

Find the number of pink discs that Helen added to the bag.

..... [2]

31. Question | 0580 Specimen 2020 P2 Q22

- 22** A soccer team plays two matches.
The tree diagram shows the probability of the team winning or losing the matches.



Find the probability that the soccer team wins at least one of the two matches.

..... [3]

32. Question | 0580 May-June 2021 P2 V1 Q2

- 2** The probability that a train is late is 0.15 .

Write down the probability that the train is not late.

..... [1]

33. Question | 0580 May-June 2021 P2 V1 Q17

- 17** A bag contains 3 blue buttons, 8 white buttons and 5 red buttons.
Two buttons are picked at random from the bag, without replacement.
- Work out the probability that the two buttons are either both red or both white.

..... [3]

34. Question | 0580 May-June 2021 P2 V2 Q1

- 1** The probability that Jane wins a game is $\frac{7}{10}$.
- (a)** Find the probability that Jane does not win the game.

..... [1]

- (b)** Jane plays this game 50 times.
- Find the number of times she is expected to win the game.

..... [1]

26 Malik goes to a shop every day to buy bread.

On any day, the probability that Malik goes to the shop in the morning is 0.7 .

If he goes in the morning, the probability that there is bread for Malik to buy is 0.95 .

If he goes later, the probability that there is bread for Malik to buy is 0.6 .

Calculate the probability that, on any day, there is bread for Malik to buy.

..... [3]

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36. Question | 0580 Oct-Nov 2021 P2 V1 Q5

5 The table shows the relative frequency of the games won by a football team.

Result of game	won	lost	drawn
Relative frequency	0.1		

The number of games lost is twice the number of games drawn.

Complete the table.

[3]

37. Question | 0580 Oct-Nov 2021 P2 V2 Q7

7 Katy has 5 white flowers, x red flowers and $(2x + 1)$ yellow flowers.
She picks a flower at random.

The probability that it is white is $\frac{1}{12}$.

Find the probability that it is yellow.

..... [4]

38. Question | 0580 Oct-Nov 2021 P2 V2 Q16

- 16 Sachin picks a number at random from the first three multiples of 3.
He then picks a number at random from the first three prime numbers.
He adds the two numbers to find a score.

(a) Complete the table.

		Multiples of 3		
		3		9
Prime numbers	2	5		11
	3	6		

[2]

- (b) Given that the score is even, find the probability that one of the numbers he picks is 9.

..... [2]

39. Question | 0580 May-June 2022 P2 V2 Q6

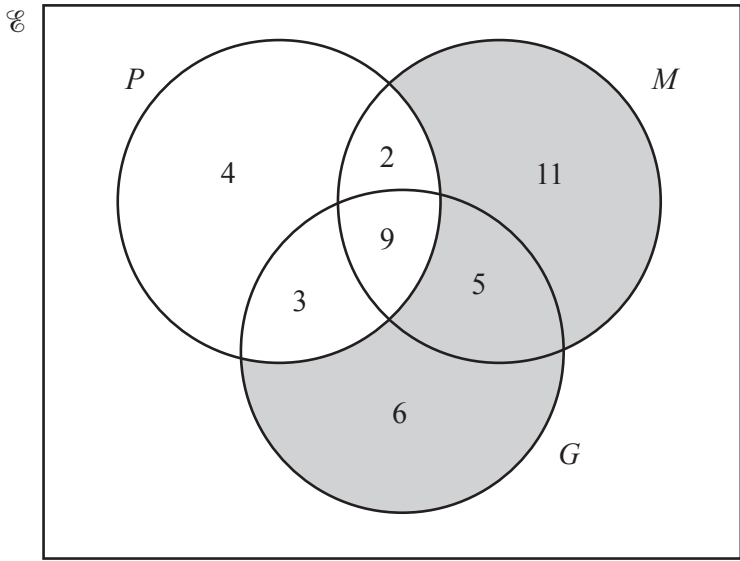
- 6 Some cards have either a square, a circle or a triangle drawn on them.
Piet chooses one of the cards at random.

Complete the table to show the probability of choosing a card with each shape.

Shape	Square	Circle	Triangle
Probability	0.2	0.32	

[2]

16 The Venn diagram shows the number of students in a class of 40 who study physics (P), mathematics (M) and geography (G).



(a) Use set notation to describe the shaded region.

..... [1]

(b) Find $n((P \cap G) \cup M')$.

..... [1]

(c) A student is chosen at random from those studying geography.

Find the probability that this student also studies physics or mathematics but not both.

..... [2]

41. Question | 0580 May-June 2022 P2 V3 Q1

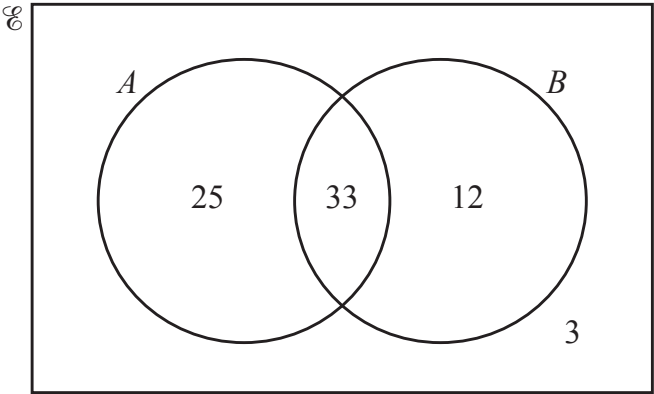
1 The probability of picking a red sweet from a bag is 0.05 .

Find the probability of not picking a red sweet.

..... [1]

42. Question | 0580 May-June 2022 P2 V3 Q10

10



Find $n(A \cap B)'$.

..... [1]

25 A bag contains 5 red balls, 4 blue balls and 3 green balls.

- (a) (i)** Megan picks a ball at random.

Write down the probability that the ball is red or blue.

..... [1]

- (ii)** Megan replaces the ball.
She picks a ball at random, notes the colour and replaces the ball.
She repeats this 60 times.

Calculate the number of times the ball is expected to be red or blue.

..... [1]

- (b)** Mick picks 2 of the 12 balls at random, without replacement.

Calculate the probability that the balls are different colours.

..... [4]

- (c)** Marie picks balls at random, without replacement, from the 12 balls.
When she picks a green ball she stops.

The probability that she picks a green ball on pick n is $\frac{21}{220}$.

Find the value of n .

$n =$ [2]

- 19** Katy picks a number at random from the numbers 2, 3 and 5.
She then picks a number at random from the numbers 5, 6, 7 and 9.
When she adds the two numbers the answer is even.

Find the probability that **exactly one** of the numbers picked is a 5.

..... [3]

- 6
- A spinner can land on the colours green, black or red.
The table shows the probabilities of the spinner landing on green or black.

Colour	Green	Black	Red
Probability	$\frac{2}{5}$	$\frac{1}{4}$	

(a) Complete the table.

[2]

- (b) Chang spins the spinner 120 times.

Find the expected number of times it lands on green.

.....

[1]

46. Question | 0580 Feb-March 2023 P2 V2 Q24

- 24
- The probability of Jamie hitting a target is $\frac{1}{3}$.
The probability that he hits the target for the first time on his n th attempt is $\frac{64}{2187}$.
Find the value of n .

$n =$ [2]

Question 25 is printed on the next page.

47. Question | 0580 May-June 2023 P2 V1 Q5

- 5
- Eric has four colours of paint.
The table shows the probability that he uses each colour.

Colour	Red	Blue	Green	Yellow
Probability	0.3	0.35	0.13	x

Find the value of x .

$x =$ [2]

48. Question | 0580 May-June 2023 P2 V1 Q15

- 15
- A bag contains 5 green buttons, 2 blue buttons and 6 white buttons.
Maya takes two buttons at random from the bag, without replacement.

Calculate the probability that one button is green and the other button is not green.

..... [3]

49. Question | 0580 May-June 2023 P2 V2 Q5

- 5
- A spinner is spun.
The possible outcomes are A, B, C or D.
The probability of spinning A, C or D is shown in the table.

Letter on spinner	A	B	C	D
Probability	0.2		0.05	0.35

Complete the table.

[2]

- 23** Bag A and bag B each contain red sweets and yellow sweets.
Anna picks a sweet at random from bag A .
Ben picks a sweet at random from bag B .
The probability that Anna picks a red sweet is $\frac{2}{5}$.
The probability Anna and Ben both pick a yellow sweet is $\frac{1}{10}$.
- Find the probability that Anna and Ben both pick a red sweet.

..... [3]

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- 7
- A spinner has five sides.

Each side is painted red, blue, green, yellow or orange.

The table shows some of the probabilities of the spinner landing on each colour.

Colour	Red	Blue	Green	Yellow	Orange
Probability	0.3	0.16	0.18	0.25	

(a)

Complete the table.

[2]

(b)

Dan spins the spinner once.

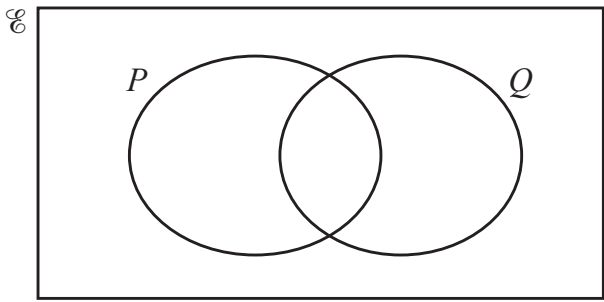
Find the probability that the spinner lands on red or blue.

.....

[2]

52. Question | 0580 Oct-Nov 2023 P2 V2 Q15

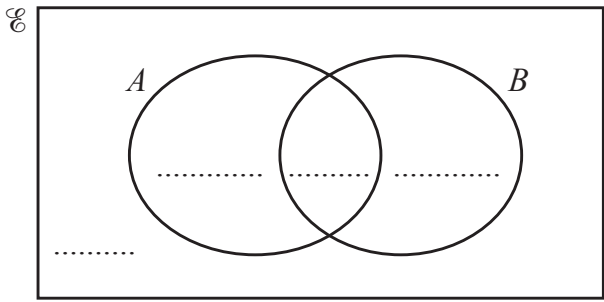
15 (a) On the Venn diagram, shade the region $P \cup Q'$.



[1]

(b) $n(U) = 20$ $n(A \cup B)' = 1$ $n(A) = 12$ $n(B) = 10$

Complete the Venn diagram.



[2]

53. Question | 0580 Oct-Nov 2023 P2 V3 Q6

6 Rama asks a group of students how they travel to school.
The table shows the probability of how a student, chosen at random, travels to school.

	Bus	Walk	Car	Other
Probability	0.4	0.32	0.17	

(a) Complete the table.

[2]

(b) There are 1800 students at the school.

Find the expected number of students that walk to school.

..... [1]

54. Question | 0580 Feb-March 2024 P2 V2 Q12

- 12** Farid spins a three-sided spinner with sides labelled A , B and C .
The probability that the spinner lands on C is 0.35 .
Farid spins the spinner 40 times.

Calculate the number of times he expects the spinner to land on C .

..... [1]

55. Question | 0580 Feb-March 2024 P2 V2 Q25

- 25** A bag contains 2 green buttons, 5 red buttons and 6 blue buttons.
Two buttons are taken at random from the bag without replacement.

Calculate the probability that the two buttons are different colours.

..... [4]

2 Geetha has a box of toys.
She picks a toy at random from the box.
The probability that she picks a wooden toy is 0.6 .

(a) Work out the probability that she does not pick a wooden toy.

..... [1]

(b) The box contains three types of toys, wooden, plastic or metal.

Type of toy	Wooden	Plastic	Metal
Number of toys		14	14
Probability	0.6		

Complete the table.

[2]

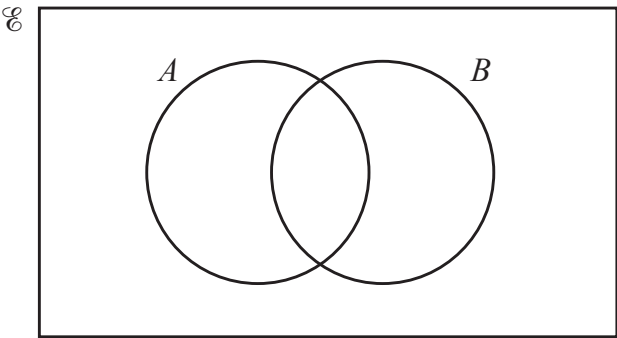
22 Bag A and bag B each contain red counters and blue counters only.
Stephan picks a counter at random from bag A and Jen picks a counter at random from bag B .

The probability that Stephan picks a red counter is 0.4 .
The probability that Stephan and Jen both pick a red counter is 0.25 .

Find the probability that Stephan and Jen both pick a blue counter.

..... [4]

7



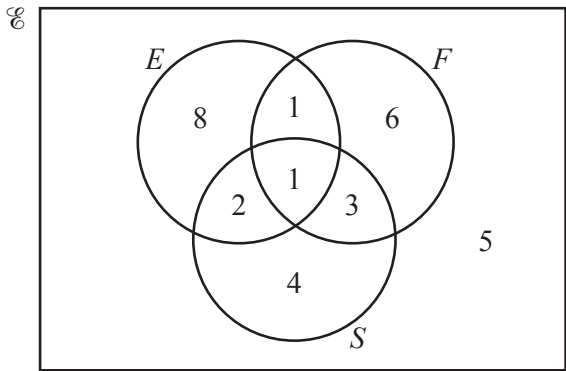
On the Venn diagram, shade the region $A \cup B$. [1]

- 11 A company surveys 40 of its employees.
In the survey, 3 employees say they walk to work.
The company has a total of 1240 employees.

Find the expected number of employees in the company who walk to work.

..... [2]

23



The Venn diagram shows information about the number of students in a class.
Some study English (E), some study French (F), some study Spanish (S) and some do not study any of these languages.

(a) Find $n((E \cup F)' \cup S)$.
..... [1]

(b) One student is picked at random from those who study Spanish.
Find the probability that this student studies exactly two languages.

..... [2]

61. Question | 0580 May-June 2024 P2 V3 Q5

5 In a city, the probability that it will rain today is 0.15 .

Find the probability that it will not rain today in this city.

..... [1]

62. Question | 0580 Oct-Nov 2024 P2 V1 Q10

10 Jacinda plays a game with her friend.
She can win, lose or draw the game.
The probability that she wins the game is 0.28 .

(a) Jacinda is twice as likely to draw the game as to lose the game.

Work out the probability that she loses the game.

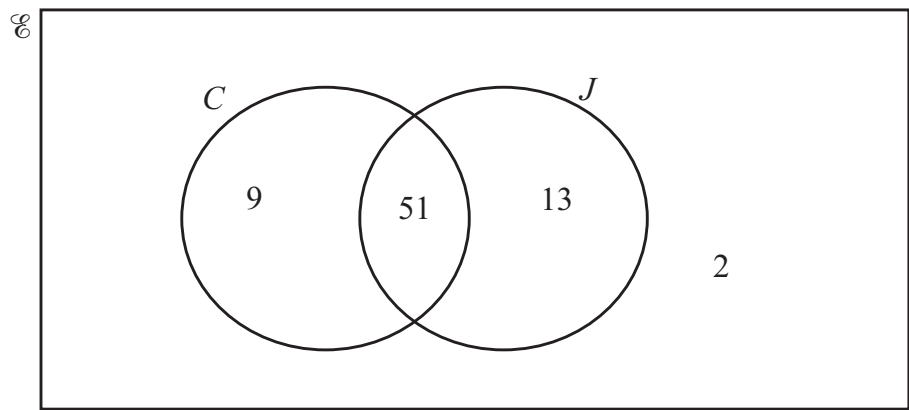
..... [2]

(b) Jacinda plays the game 150 times.

Find the expected number of times that **she wins**.

..... [1]

16 75 people are asked if they have a car, C , and if they have a job, J .
The Venn diagram shows the results.

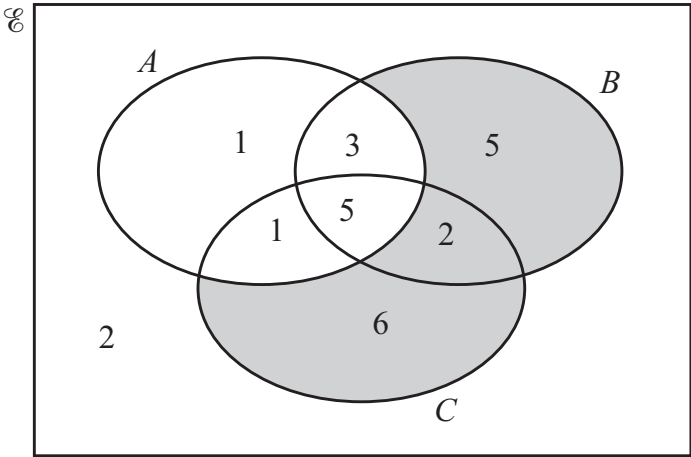


A person is chosen at random from those who have a car.

Find the probability that this person also has a job.

..... [1]

21



The Venn diagram shows the number of elements in each region.

- (a) Use set notation to describe the shaded region. [1]
- (b) Find $n(A \cap B \cap C)$ [1]

65. Question | 0580 Feb-March 2025 P2 V2 Q8

- 8 Pryanka plays a game in which she can win, lose or draw.
The table shows the probability of her winning or losing a game.

Result of game	win	lose	draw
Probability	0.3	0.25	

(a) Complete the table. [2]

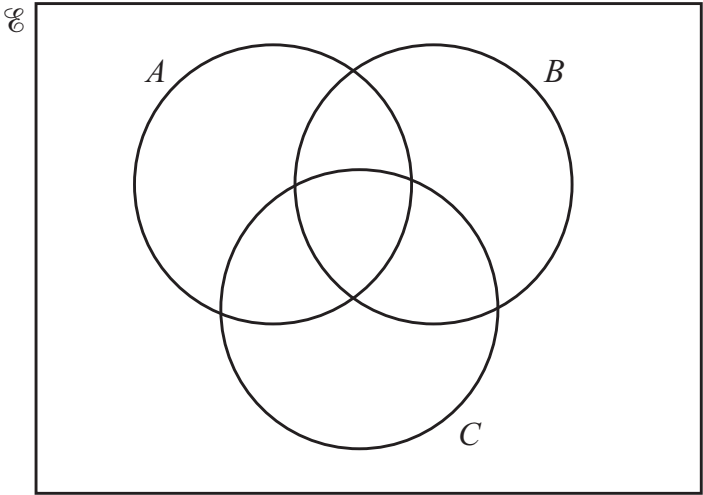
- (b) Pryanka plays this game 120 times.

Work out the expected number of games she wins.

..... [1]

66. Question | 0580 Feb-March 2025 P2 V2 Q19

19



In the Venn diagram, shade the region $(A \cup B \cup C)'$. [1]

67. Question | 0580 May-June 2025 P2 V1 Q17

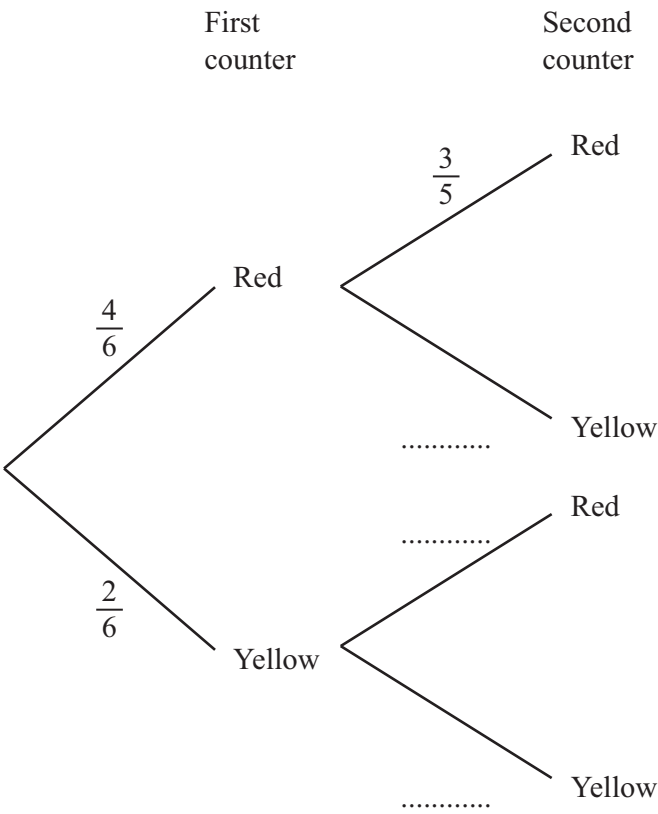
- 17 (a) A bag contains 6 red marbles, 3 green marbles and 1 blue marble.
Two marbles are picked at random from the bag **with replacement**.

Find the probability that both marbles are green.

..... [2]

- (b) Another bag contains 4 red counters and 2 yellow counters.
Two counters are picked at random from this bag **without replacement**.

(i) Complete the tree diagram.



[2]

- (ii) Find the probability that one of the two counters is yellow.

..... [3]

68. Question | 0580 May-June 2025 P2 V2 Q4

4

1

2

3

4

5

6

7

Samira picks one of these cards at random and replaces it.

(a) Find the probability that she picks an odd number.

..... [1]

(b) Samira repeats this 35 times.

Calculate the number of times Samira is expected to pick an odd number.

..... [1]

69. Question | 0580 May-June 2025 P2 V3 Q1

1 The probability of picking a green pen from a box is 0.17 .

Find the probability of not picking a green pen from the box.

..... [1]

70. Question | 0580 May-June 2025 P2 V3 Q11

11 Angela picks a number at random from the numbers 1, 2 and 3.
She then picks a number at random from the numbers 4, 5 and 6.
She adds the two numbers to find the total.

(a) Complete the table to show the possible outcomes.

		First number		
		1	2	3
Second number	4	5	6	7
	5			
	6			

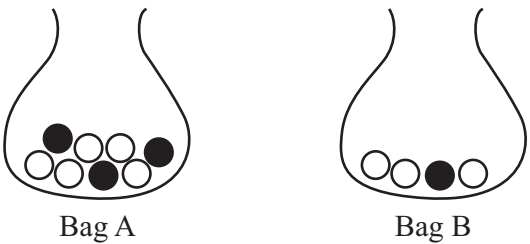
[2]

(b) Given that the total is odd, find the probability that one of the numbers Angela picks is 3.

..... [2]

71. Question part 1/2 | 0580 Oct-Nov 2025 P2 V1 Q20

20

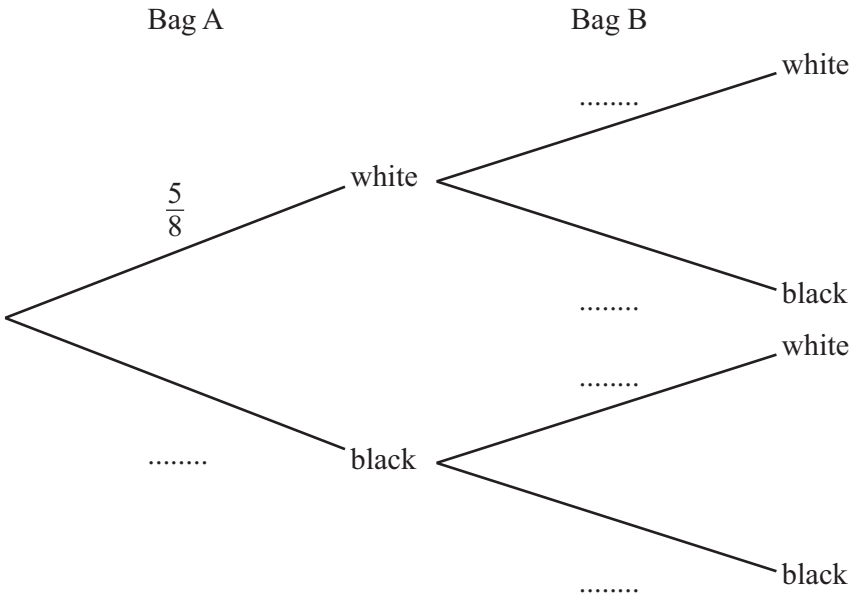


Bag A contains 5 white balls and 3 black balls.
Bag B contains 3 white balls and 1 black ball.

- (a) Two balls are picked at random from bag B without replacement.
- Find the probability that both balls are black.

..... [1]

- (b) The balls are replaced into bag B.
Kyle picks a ball at random from each bag.
- (i) Complete the tree diagram.



[2]

- (ii) Find the probability that the two balls are the same colour.

..... [3]

71. Question part 2/2 | 0580 Oct-Nov 2025 P2 V1 Q20



- (c) The balls are replaced into their bags.
Jo picks a ball at random from bag A and places it into bag B.
She then picks a ball at random from bag B.

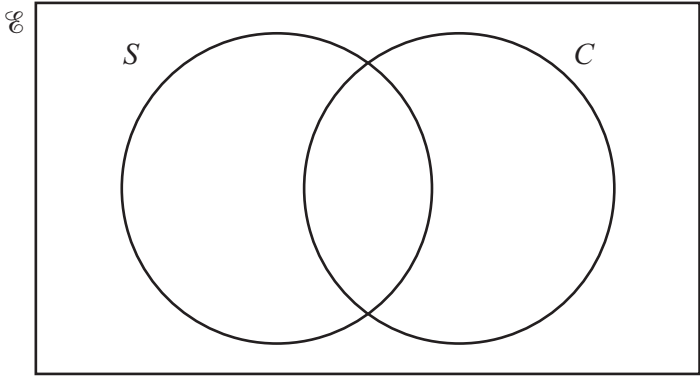
Find the probability that she picks a black ball from bag B.

..... [3]

72. Question | 0580 Oct-Nov 2025 P2 V2 Q12

12 A fitness club has 100 members.

- 60 swim (S).
- 70 cycle (C).
- 25 do not swim or cycle.



(a) Complete the Venn diagram.

[3]

(b) One member of the fitness club is chosen at random.

For this member, find

(i) $P(C)$

..... [1]

(ii) $P(S \cap C)$

..... [1]

(iii) $P(S \cup C')$.

..... [1]

73. Question | 0580 Oct-Nov 2025 P2 V3 Q11

11 Sarah rolls a fair 6-sided dice twice.

Find the probability she rolls a number greater than 4 both times.

..... [2]

74. Question | 0580 Oct-Nov 2025 P2 V3 Q25

25 Mahir picks one number at random from the numbers 5, 10 and 15.
He then picks one number at random from the numbers 4, 5 and 6.
He adds the two numbers.

The sample space diagram shows some of the possible outcomes.

		First number		
		5	10	15
Second number	4		14	19
	5		15	20
	6		16	21

(a) Complete the sample space diagram. [1]

(b) Given that the total of the two numbers is odd, find the probability that one of the numbers added is 15.

..... [2]