

QUESTION NINE:

9.1. Given the following probabilities:

$$P(A) = 0,35 ; P(B) = 0,2 ; P(A \text{ or } B) = 0,48$$

9.1.1. Determine $P(A \text{ and } B)$ if events A and B are not mutually exclusive. (3)

9.1.2. Are events A and B mutually exclusive? Give a reason for your answer. (2)

9.1.3. Are events A and B independent? Give a reason for your answer. (3)

9.2. A blue bag and a green bag each contain marbles. The blue bag has 5 yellow and 10 red marbles while the green bag has 6 yellow and 4 red marbles.

If each bag has an equal chance of being selected,

determine the probability of selecting a yellow marble from the blue bag or a yellow marble from the green bag with the aid of a tree diagram. Show all outcomes. (5) [13]

QUESTION TEN:

250 people have been interviewed at a local flea market and asked their drink preference:

- 145 drink coffee
- 130 drink tea
- 90 drink milo
- 27 people indicated that they do not drink any of these
- 25 people drink all three
- 60 drink coffee and tea
- 35 drink milo and tea

Let x be the number of people that drink coffee and milo but not tea

10.1. Draw a Venn diagram representing this information and show that $x = 47$. (6)

10.2. Determine the probability that a person:

10.2.1. drinks only tea. (2)

10.2.2. drinks milo or tea. (3) [11]

TOTAL : 150

QUESTION 11

A survey was conducted among 100 boys and 60 girls to determine how many of them watched TV in the period during which examinations were written. Their responses are shown in the partially completed table below.

	WATCHED TV DURING EXAMINATIONS	DID NOT WATCH TV DURING EXAMINATIONS	TOTALS
Male	80	a	
Female	48	12	
Totals	b	32	160

- 11.1 Calculate the values of a and b . (2)
- 11.2 Are the events 'being a male' and 'did not watch TV during examinations' mutually exclusive? Give a reason for your answer. (2)
- 11.3 If a learner who participated in this survey is chosen at random, what is the probability that the learner:
- 11.3.1 Watched TV in the period during which the examinations were written? (2)
- 11.3.2 Is not a male and did not watch TV in the period during which examinations were written? (2)
- [8]**

QUESTION 12

The digits 1 to 7 are used to create a four-digit code to enter a locked room. How many different codes are possible if the digits may not be repeated and the code must be an even number bigger than 5 000?

[5]

QUESTION 8

- 8.1 A bag contains 3 blue marbles and 2 red marbles. A marble is taken from the bag, the colour is recorded and the marble is put aside. A second marble is taken from the bag, the colour is recorded and then put aside.
- 8.1.1 Draw a tree diagram to represent the information above. Show the probabilities associated with EACH branch, as well as the possible outcomes. (3)
- 8.1.2 Determine the probability of first taking a red marble and then taking a blue marble, in that order. (2)
- 8.2 A and B are two events. The probability that event A will occur is 0,4 and the probability that event B will occur is 0,3. The probability that either event A or event B will occur is 0,58.
- 8.2.1 Are events A and B mutually exclusive? Justify your answer with appropriate calculations. (3)
- 8.2.2 Are events A and B independent? Justify your answer with appropriate calculations. (3)
- [11]

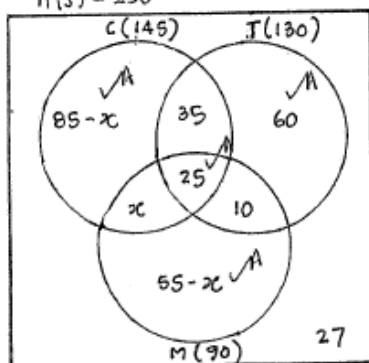
ANSWERS

QUESTION NINE:

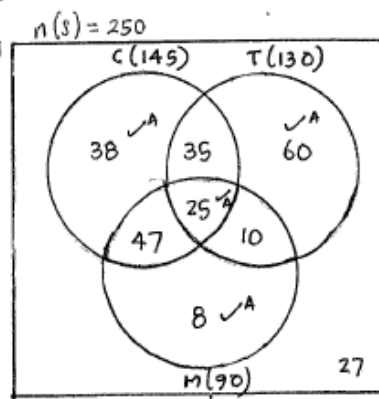
- 9.1.1. $P(A \text{ and } B)$
 $= P(A) + P(B) - P(A \text{ or } B) \checkmark$
 $= 0,35 + 0,2 - 0,48 \checkmark$
 $= 0,07 \checkmark$ (3)
- 9.1.2. NO \checkmark $P(A \text{ AND } B) = 0,07$
 $\neq 0$ (2)
- 9.1.3. YES \checkmark $P(A \text{ AND } B) = 0,07 \checkmark$
 $P(A) \times P(B) = 0,35 \times 0,2$
 $= 0,07 \checkmark$ (3)
- 9.2.
-
- $P = \left(\frac{1}{2} \times \frac{5}{15}\right) + \left(\frac{1}{2} \times \frac{6}{10}\right) \checkmark$
 $= \frac{7}{15} \checkmark$
- (5) [13]

QUESTION TEN :

10.1. $n(S) = 250$



N.B.
any one of
two
diagrams



$$85-x + x + 25 + 35 + 60 + 10 + 55-x + 27 = 250$$

$$-x = -47$$

$$x = 47$$

10.2. $P(\text{only tea}) = \frac{60}{250} = \frac{6}{25} = 0,24$ (6)

⊗ If answers are not simplified for give full credit ⊗

10.2 & 10.3

TOTAL : 150

10.3. $P(M \text{ or } T)$

$$= P(M) + P(T) - P(M \text{ and } T)$$

$$= \frac{90}{250} + \frac{130}{250} - \frac{35}{250}$$

$$= \frac{185}{250}$$

$$= \frac{37}{50} = 0,74$$

(3) [11]

QUESTION/VR44G 11

11.1	<table> <tr> <th></th> <th>Watches TV during exams</th> <th>Do not watch TV during exams</th> <th>Total</th> </tr> <tr> <td>Male</td> <td>80</td> <td>a</td> <td>$80+a$</td> </tr> <tr> <td>Female</td> <td>48</td> <td>12</td> <td>60</td> </tr> <tr> <td>Total</td> <td>b</td> <td>32</td> <td>160</td> </tr> </table> <p> $a+12=32$ $a=20$ $b=80+48$ $=128$ </p>		Watches TV during exams	Do not watch TV during exams	Total	Male	80	a	$80+a$	Female	48	12	60	Total	b	32	160	<p>✓ $a=20$</p> <p>✓ $b=128$</p> <p>(2)</p>
	Watches TV during exams	Do not watch TV during exams	Total															
Male	80	a	$80+a$															
Female	48	12	60															
Total	b	32	160															
11.2	<p>No</p> <p>$P(M \text{ and not watching TV}) = \frac{20}{160} \neq 0$</p>	<p>✓ No</p> <p>✓ reason</p> <p>(2)</p>																
11.3.1	<p>$P(\text{watching TV}) = \frac{128}{160} = \frac{4}{5} = 0,8 = 80\%$</p>	<p>✓ 128</p> <p>✓ 160</p> <p>(2)</p>																
11.3.2	<p>$P(\text{female and not watching TV}) = \frac{12}{160} = \frac{3}{40} = 0,075 = 7,5\%$</p>	<p>✓ 12</p> <p>✓ 160</p> <p>(2)</p> <p>[8]</p>																

QUESTION/VRAG 12

12.	<p>We want to create codes that are even numbers greater than 5000. The digit 6 can be used in one of two places in these codes and therefore this presents two scenarios.</p> <p><i>Ons wil kodes kry wat ewe getalle groter as 5000 is. Die syfer 6 kan in twee posisies in die kode gebruik word en twee opsies is moontlik:</i></p> <p>CASE 1: The first digit is a 6./Die eerste syfer is 'n 6.</p> $\begin{array}{ccccccc} & & & & & & 2 \\ & & & & & & 4 \\ 6 & & & & & & \\ \hline 1 & \times & 5 & \times & 4 & \times & 2 \\ \hline \end{array}$ <p>Number of codes starting with 6./Getal kodes wat met 6 begin. $= 1 \times 5 \times 4 \times 2 = 40$</p> <p>CASE 2: The first digit is a 5 or 7./Die eerste syfer is 'n 5 of 7.</p> $\begin{array}{ccccccc} & & & & & & 2 \\ & & & & & & 4 \\ 5 & & & & & & \\ 7 & & & & & & 6 \\ \hline 2 & \times & 5 & \times & 4 & \times & 3 \\ \hline \end{array}$ <p>Number of codes not starting with 6./Getal kodes wat nie met 6 begin $= 2 \times 5 \times 4 \times 3 = 120$</p> <p>Therefore total number of possible codes./Die totale getal moontlike kodes $= 40 + 120 = 160$.</p> <p>OR/OF</p> $\begin{aligned} & (3 \times 5 \times 4 \times 1) + (3 \times 5 \times 4 \times 1) + (2 \times 5 \times 4 \times 1) \\ & = 60 + 60 + 40 \\ & = 160 \end{aligned}$ <p>OR/OF</p> $\begin{aligned} & (3 \times 5 \times 4 \times 3) - (1 \times 5 \times 4 \times 1) \\ & = 180 - 20 \\ & = 160 \end{aligned}$	<p>✓ $1 \times 5 \times 4 \times 2$ ✓ 40</p> <p>✓ $2 \times 5 \times 4 \times 3$ ✓ 120 ✓ 160</p> <p>[5]</p> <p>✓ $(3 \times 5 \times 4 \times 1)$ ✓ $(3 \times 5 \times 4 \times 1)$ ✓ $(2 \times 5 \times 4 \times 1)$ ✓✓ 160</p> <p>[5]</p> <p>✓✓ $(3 \times 5 \times 4 \times 3)$ ✓✓ $(1 \times 5 \times 4 \times 1)$ ✓ 160</p> <p>[5]</p>
-----	--	--

QUESTION/VRAAG 8

8.1.1	<p> $\frac{3}{5}$ or 0,6 B $\frac{2}{4}$ or $\frac{1}{2}$ or 0,5 B (B ; B) $\frac{2}{4}$ or $\frac{1}{2}$ or 0,5 R (B ; R) $\frac{2}{5}$ or 0,4 R $\frac{3}{4}$ or 0,75 B (R ; B) $\frac{1}{4}$ or 0,25 R (R ; R) </p>	<p>✓ branches/takke</p> <p>✓ probabilities/waarskynlikhede</p> <p>✓ outcomes/uitkomst</p> <p>(3)</p>
8.1.2	<p> $P(R, B) = \frac{2}{5} \times \frac{3}{4}$ $= \frac{3}{10} = 0,3$ </p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>NOTE/ LET WEL: If answer only: award 2/2 marks Slegs antwoord : gee 2/2 punte</p> </div>	<p>✓ $\frac{2}{5} \times \frac{3}{4}$</p> <p>✓ answer/antwoord</p> <p>(2)</p>
8.2.1	<p> $P(A) = 0,4$ $P(B) = 0,3$ $P(A \text{ or } B) = 0,58$ $P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$ $0,58 = 0,4 + 0,3 - P(A \text{ and } B)$ $P(A \text{ and } B) = 0,12 \neq 0$ Events A and B are not mutually exclusive/<i>Gebeurtenis A en B is nie onderlinguitsluitend nie</i> </p>	<p>✓ $0,58 = 0,4 + 0,3 - P(A \text{ and } B)$</p> <p>✓ $P(A \text{ and } B) = 0,12 \neq 0$</p> <p>✓ Not mutually exclusive/ <i>nie onderling uitsluitend nie</i></p>

8.2.2	$P(A \text{ and } B) = 0,12$ $P(A) \times P(B) = 0,4 \times 0,3$ $= 0,12$ $\therefore P(A \text{ and } B) = P(A) \times P(B)$ A and B are independent events/is <i>onafhanklik</i>	$\checkmark P(A) \times P(B) = 0,4 \times 0,3$ $\checkmark P(A \text{ and } B) = P(A) \times P(B)$ $\checkmark A \text{ and } B \text{ are independent/is onafhanklik}$
		(3) [11]

Copyright reserved/Kopieregvoorbewou

Please turn over/Blaai om asseblief

Q WKW

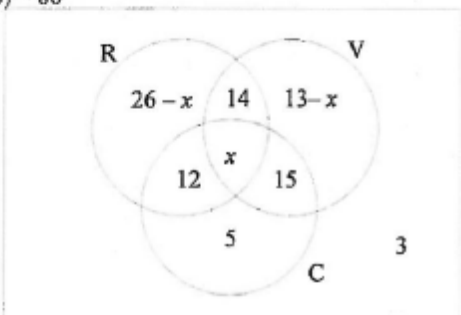
Mathematics/P1/Wiskunde V1

19

DBE/November 2017

CAPS/KABV – Grade/Graad 11 – Marking guidelines/Nasienriglyne

QUESTION/VRAAG 9

9.1	$n(S) = 80$ 	$\checkmark 14 \text{ or/of } 12 \text{ or/of } 15$ $\checkmark 26 - x$ $\checkmark 13 - x$ $\checkmark 5$ $\checkmark 3$
		(5)

9.2	$26 - x + 14 + x + 12 + 5 + 15 + 13 - x + 3 = 80$ $88 - 80 = x$ $x = 8$	✓ $26 - x + 14 + x + 12 + 5 + 15 + 13 - x + 3$ ✓equating to/gelyk aan 80 (2)
9.3	Number who chose Rugby only/aantal wat net rugby kies $= 26 - 8$ $= 18$	✓ answer/antw. (1)
9.4	P(At least 2 types of sports /ten minste 2 sportsoorte) $= \frac{12 + 14 + 15 + 8}{80}$ $= \frac{49}{80}$ <div style="border: 1px solid black; padding: 5px; margin: 5px 0;"> NOTE/ LET WEL: If answer only: award 3/3 marks Slegs antwoord : gee 3/3 punte </div> <p>OR/OF</p> P(at least 2 types of sport/ten minste 2 sportsoorte) $= 1 - \frac{18 + 5 + 5 + 3}{80}$ $= 1 - \frac{31}{80}$ $= \frac{49}{80}$	✓ numerator/Noemer ✓ denominator/Teller ✓ answer/antw. (3)
		✓ $\frac{18 + 5 + 5 + 3}{80}$ ✓ method/metode ✓ answer/antw. (3)
		[11]