COUNITNG AND PROBABILITY

2026 WORKSHEET

June 2025

QUESTION 10

10.1 A and B are mutually exclusive events.
If P(A) = 0,42 and P(A or B) = 0,79, calculate P(B). (2)

10.2 A game at a fun park requires a player to roll a six-sided dice and pick a card from a deck of 52 cards.

A player wins if an odd number appears on the uppermost face of the dice and the player also draws a picture card from the deck.

- A deck of cards has 4 suites (hearts, diamonds, spades and clubs).
- There are 4 picture cards (king, queen, jack and ace) in every suite.

A player pays R10 to play a game and in an hour, 260 people can each play one game. If the owner wants to make a 70% profit per hour, calculate the maximum amount that the owner must pay out to each winner. (6)
[8]

QUESTION 11

Consider the three-digit numbers from 501 up to 999.

11.1 How many of these three-digit numbers have exactly one 5 in them? (4)

11.2 Calculate the probability of a three-digit number not satisfying the condition given in QUESTION 11.1. (3)
[7]

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November 2024

QUESTION 11

A certain number of learners are sitting for examinations in Mathematics, Tourism and Geography.

- All these learners sit for at least one of these examinations.
- The total number of learners who sit for Mathematics (M), is 22.
- The total number of learners sitting for Tourism (T), is 16.
- The total number of learners sitting for Geography (G), is 18.
- 5 learners sit for Mathematics and Tourism, but not Geography.
- 4 learners sit for Mathematics and Geography, but not Tourism.
- 3 learners sit for Tourism and Geography, but not Mathematics.
- 6 learners sit for only Tourism.

11.1 Draw a Venn diagram to represent ALL the learners sitting for these examinations. (3)

11.2 Calculate the probability that a learner, chosen at random, will sit for examinations in at least TWO of the subjects. (2)

11.3 Determine if the events: sitting for examinations in Mathematics and sitting for examinations in Tourism are independent. Support your answer with the necessary calculations. (4)
[9]

QUESTION 12

A company generates a 4-character code using the 26 letters of the alphabet and the 10 digits, from 0 to 9.

The code is in the form:

letter	digit	letter	digit

12.1 Determine how many different codes can be formed if letters and digits may be repeated. (2)

12.2 Determine how many different codes can be formed if:

- The letters D, F, I, Q, U and V may NOT be used
- The code may NOT start with a W or a Z
- Letters or digits may NOT be repeated
- The code ends with an odd digit (4)

12.3 The company wishes to increase the number of 4-character codes formed in QUESTION 12.2 by allowing the letters D, F, I, Q, U and V to be used. Calculate the percentage increase in the number of different codes that can now be formed. (2)
[8]

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WORKSHEET SOLUTIONS

June 2025

QUESTION/*VRAAG* 10

10.1

$P(A \text{ or } B) = P(A) + P(B)$

$P(B) = P(A \text{ or } B) - P(A)$

$= 0,79 - 0,42$

$= 0,37$

10.2

People pay: R2 600

$0,7 \times R2\ 600 = R1\ 820$

Total value of pay-outs = R2 600 – R1 820

= R780

$$P(\text{someone to win}) = \frac{16}{52} \times \frac{1}{2}$$

$$= \frac{2}{13}$$

$$\text{Total number of people winning} = \frac{2}{13} \times 260$$

$$= 40$$

$$\therefore \text{Pay-out} = \frac{R780}{40}$$

= R19,50 per person winning

OR/*OF*

People pay: R2 600

Total value of pay-outs

$= 0,3 \times R2\ 600$

= R780

$$P(\text{someone to win}) = \frac{16}{52} \times \frac{1}{2}$$

$$= \frac{2}{13}$$

$$\text{Total number of people winning} = \frac{2}{13} \times 260$$

$$= 40$$

$$\therefore \text{Pay-out} = \frac{R780}{40}$$

= R19,50 per person winning

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QUESTION/*VRAAG* 11

11.1	$\underline{1}_{(5)} \times \underline{9} \times \underline{9} = 81$ 500 cannot be included ∴ 80 possibilities $\underline{4} \times \underline{1}_{(5)} \times \underline{9} = 36$ $\underline{4} \times \underline{9} \times \underline{1}_{(5)} = 36$ Total possibilities = 80 + 36 + 36 = 152 **OR** 501 to 599: 99 – 10 – 9 = 80 possibilities 601 to 699: 9 + 9 = 18 possibilities of having a 5 in the 10's digit or units digit. Thus 601 to 699 = 4 ×18 Total possibilities = 4 × 18 + 80 = 152
11.2	P(not having such a number) $= 1 - \frac{152}{499}$ $= \frac{347}{499}$ = 0,70

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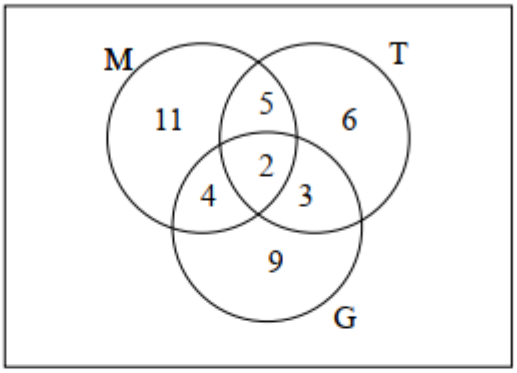
QUESTION/*VRAAG* 11

11.1	
11.2	$\text{P(at least two subjects)} = \frac{4+2+5+3}{40} = \frac{14}{40} = \frac{7}{20} = 0,35$
11.3	$\text{P(M)} \times \text{P(T)} = \frac{22}{40} \times \frac{16}{40} = \frac{11}{50} = 0,22$ $\text{P(M and T)} = \frac{7}{40} = 0,175$ $\text{P(M)} \times \text{P(T)} \neq \text{P(M and T)}$ Events M and T are not independent

QUESTION/*VRAAG* 12

12.1	$26 \times 10 \times 26 \times 10 = 67\ 600$
12.2	$18 \times 9 \times 19 \times 5 = 15\ 390$
12.3	$24 \times 9 \times 25 \times 5 = 27\ 000$ $\frac{27\ 000 - 15\ 390}{15\ 390} \times 100 = 75,44\%$

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