



PROBABILITY

MATHEMATICS
GRADE 10

REVISION PACK

PAST PAPERS

QUESTION 8 NOV 15

8.1 At a certain school there are 64 boys in Grade 10. Their sport preferences are indicated below:

- 24 boys play soccer
- 28 boys play rugby
- 10 boys play both soccer and rugby
- 22 boys do not play soccer or rugby

8.1.1 Represent the information above in a Venn diagram. (5)

8.1.2 Calculate the probability that a Grade 10 boy at the school, selected at random, plays:

(a) Soccer and rugby (1)

(b) Soccer or rugby (1)

8.1.3 Are the events a Grade 10 boy plays soccer at the school and a Grade 10 boy plays rugby at the school, mutually exclusive? Justify your answer. (2)

8.2 One morning Samuel conducted a survey in his residential area to establish how many passengers, excluding the driver, travel in a car. The results are shown in the table below:

Number of passengers, excluding the driver	0	1	2	3	4
Number of cars	7	11	6	5	1

Calculate the probability that, excluding the driver, there are more than two passengers in a car. (3)

8.3 If you throw two dice at the same time, the probability that a six will be shown on one of the dice is $\frac{10}{36}$ and the probability that a six will be shown on both the dice, is $\frac{1}{36}$. What is the probability that a six will NOT show on either of the dice when you throw two dice at the same time? (3)

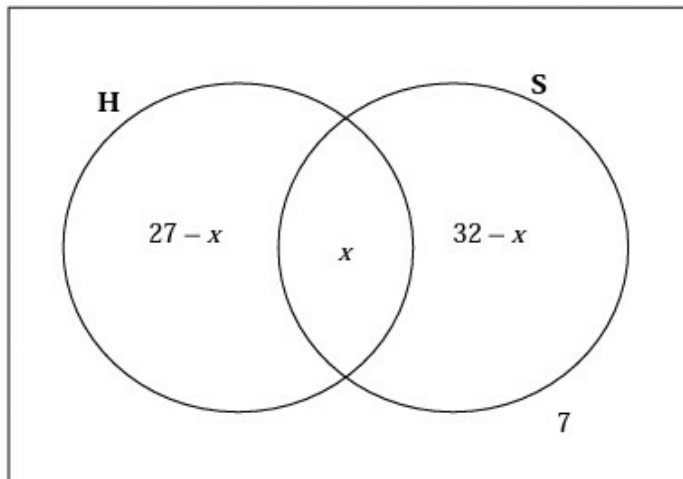
[15]

QUESTION 8 NOV 16

8.1 In a certain class of 42 boys:

- 27 play hockey (H)
- 32 play soccer (S)
- 7 do not play hockey or soccer
- An unknown number (x) play both hockey and soccer

The information is represented in the Venn diagram below.



8.1.1 Calculate the value of x . (2)

8.1.2 If a boy from the class is chosen at random, calculate the probability that he:

(a) Does not play hockey or soccer (1)

(b) Plays only soccer (2)

8.2 A bag contains 3 blue balls and x yellow balls.

8.2.1 Write down the total number of balls in the bag. (1)

8.2.2 If a ball is drawn from the bag, write down the probability that it is blue. (2)

8.3 8.3.1 Complete the following statement:

If A and B are two mutually exclusive events, then $P(A \text{ and } B) = \dots$ (1)

8.3.2 Given that A and B are mutually exclusive events. The probability that event A occurs is 0,55. The probability that event B does not occur is 0,7.

Calculate $P(A \text{ or } B)$. (3) [12]

QUESTION 11 EXEMPLAR 13

Given: $P(W) = 0,4$
 $P(T) = 0,35$
 $P(T \text{ and } W) = 0,14$

- 11.1 Are the events W and T mutually exclusive? Give reasons for your answer. (2)
- 11.2 Are the events W and T independent? Give reasons for your answer. (3)
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QUESTION 7 NOV 17

7.1 Two events, A and B , are complementary and make up the entire sample space. Also, $P(A') = 0,35$.

- 7.1.1 Complete the statement: $P(A) + P(B) = \dots$ (1)
- 7.1.2 Write down the value of $P(A \text{ and } B)$. (1)
- 7.1.3 Write down the value of $P(B)$. (1)

7.2 A survey was conducted among 150 learners in Grade 10 at a certain school to establish how many of them owned the following devices: smartphone (S) or tablet (T).

The results were as follows:

- 8 learners did not own either a smartphone or a tablet.
- 20 learners owned both a smartphone and a tablet.
- 48 learners owned a tablet.
- x learners owned a smartphone.

- 7.2.1 Represent the information above in a Venn diagram. (4)
- 7.2.2 How many learners owned only a smartphone? (3)
- 7.2.3 Calculate the probability that a learner selected at random from this group:
- (a) Owned only a smartphone (1)
- (b) Owned at most one type of device (2)

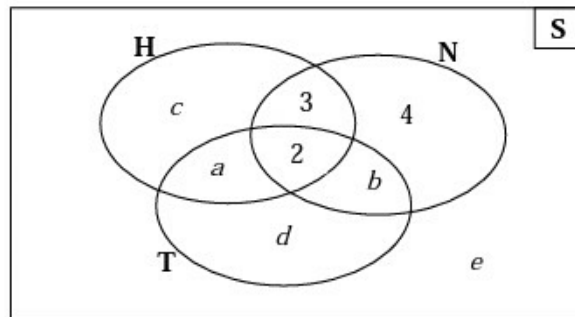
[13]

QUESTION 12 EXEMPLAR 13

12.1 A group of 33 learners was surveyed at a school. The following information from the survey is given:

- 2 learners play tennis, hockey and netball
- 5 learners play hockey and netball
- 7 learners play hockey and tennis
- 6 learners play tennis and netball
- A total of 18 learners play hockey
- A total of 12 learners play tennis
- 4 learners play netball ONLY

12.1.1 A Venn diagram representing the survey results is given below. Use the information provided to determine the values of a , b , c , d and e .



(5)

12.1.2 How many of these learners do not play any of the sports on the survey (that is netball, tennis or hockey)?

(1)

12.1.3 Write down the probability that a learner selected at random from this sample plays netball ONLY.

(1)

12.1.4 Determine the probability that a learner selected at random from this sample plays hockey or netball.

(1)

12.2 In all South African schools, EVERY learner must choose to do either Mathematics or Mathematical Literacy.

At a certain South African school, it is known that 60% of the learners are girls. The probability that a randomly chosen girl at the school does Mathematical Literacy is 55%. The probability that a randomly chosen boy at the school does Mathematical Literacy is 65%.

Determine the probability that a learner selected at random from this school does Mathematics.

(6)
[14]

QUESTION 5 EXEMPLAR 12

5.1 What expression BEST represents the shaded area of the following Venn diagrams?

5.1.1  (1)

5.1.2  (1)

5.2 State which of the following sets of events is mutually exclusive:

- A Event 1: The learners in Grade 10 in the swimming team
Event 2: The learners in Grade 10 in the debating team
 - B Event 1: The learners in Grade 8
Event 2: The learners in Grade 12
 - C Event 1: The learners who take Mathematics in Grade 10
Event 2: The learners who take Physical Sciences in Grade 10
- (1)

5.3 In a class of 40 learners the following information is TRUE:

- 7 learners are left-handed
- 18 learners play soccer
- 4 learners play soccer and are left-handed
- All 40 learners are either right-handed or left-handed

Let L be the set of all left-handed people and S be the set of all learners who play soccer.

5.3.1 How many learners in the class are right-handed and do NOT play soccer? (1)

5.3.2 Draw a Venn diagram to represent the above information. (4)

5.3.3 Determine the probability that a learner is:

(a) Left-handed or plays soccer (3)

(b) Right-handed and plays soccer (2)

[13]

QUESTION 11 [14 marks]

11.1. Customers at a supermarket were surveyed about their purchases of bread (B) and milk (M).

- 80 customers were surveyed
- 54 bought bread
- 42 bought milk
- 73 bought bread or milk

Represent the given information as a Venn diagram.
Show all relevant calculations and working out.

(4)

11.2. Two events, A and B, are mutually exclusive.

- $P(B') = 0,4$
- $P(A \cup B) = 0,7$

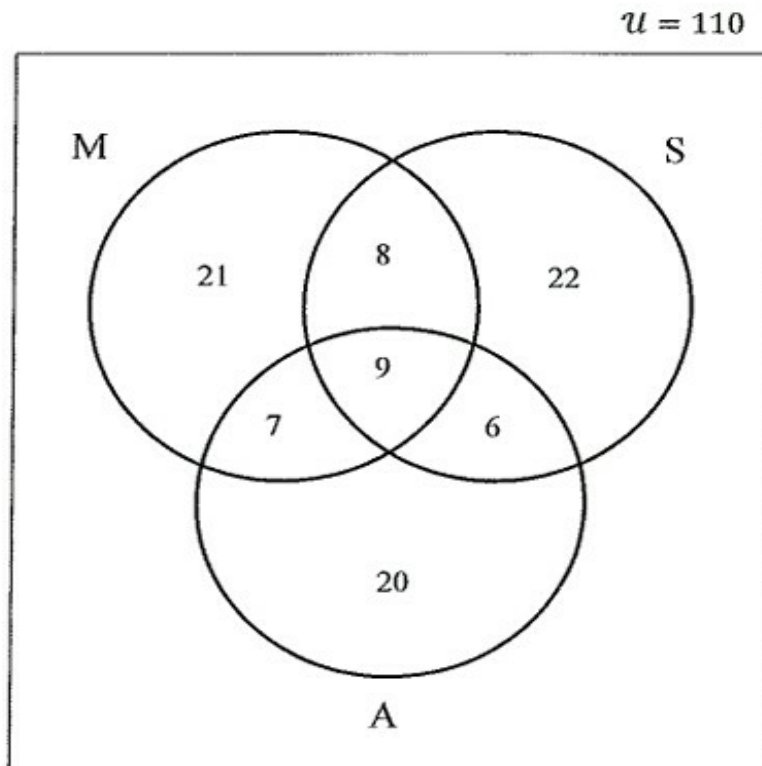
Calculate $P(A)$.

(4)

11.3. At a certain school, pupils doing the subjects

- Mathematics (M)
- Physical Science (S)
- Accounting (A)

were surveyed. The following Venn diagram represents the results of the survey :



Calculate the probability that a pupil chosen at random does :

- | | | |
|---------|--|-----------------------|
| 11.3.1. | none of the three subjects | $\frac{1}{110}$ |
| 11.3.2. | only one of the three subjects | $\frac{61}{110}$ |
| 11.3.3. | at least one of the three subjects | $\frac{89}{110}$ |
| 11.3.4. | at least two of the three subjects | $\frac{23}{110}$ |
| 11.3.5. | Mathematics and Accounting, but not Physical Science | $\frac{7}{110}$ |
| 11.3.6. | $M \cup S'$ | $\frac{103}{110}$ (6) |