PROBABILITY TEST

Grade 10 Mathematics

Marks: **40**
Time: **50 MINUTES**

Name: **MEMORANDUM**

REFRACTION
www.refractions.co.za

QUESTION 1

The following letter cards have been laid face down on a table. One card is chosen at random.

C	H	O	C	O	L	A	T	E	S

1.1 Calculate the probability that the card chosen will be C. (2) S1901

$P(C) = \frac{2}{10} = 0,2$ ✓✓

1.2 Calculate the probability that the card chosen will not be an T. (2) S1901

$P(T') = \frac{9}{10} = 0,9$ OR $P(T') = 1 - \frac{1}{10} = 0,9$ ✓✓

1.3 Calculate the probability that the card chosen is an E or an O. (3) S1901

$P(E\ or\ O) = \frac{1}{10} + \frac{2}{10} = 0,3$ ✓✓✓

1.4 Calculate the probability that the card chosen is a S and a L. (1) S1901

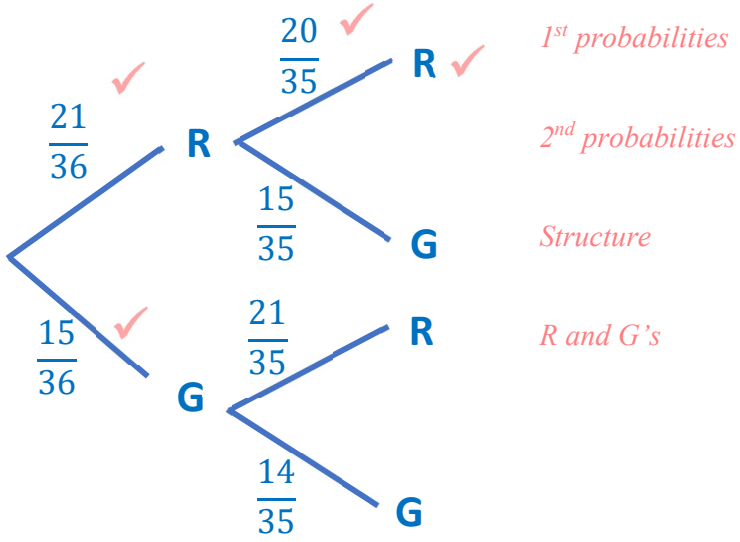
$P(S\ and\ L) = 0$ ✓

[8]

QUESTION 2

During December, Smarties sold cartons of smarties that only contain red and green smarties. The specific carton that you bought contain 15 green and 21 red smarties.

2.1 Draw a tree diagram to represent all the possible outcomes for the colours of the first 2 smarties that you eat. (4) S1902



2.2 Determine the probability that the first 2 smarties you eat will be one of each colour. (3) S1902

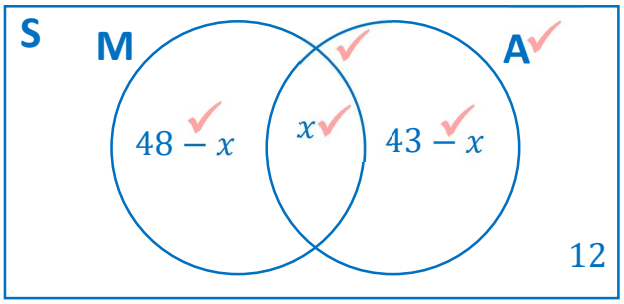
$$P(G \text{ and } R) = \left(\frac{21}{36} \times \frac{15}{35}\right) + \left(\frac{15}{36} \times \frac{21}{35}\right)$$
$$= 0{,}5$$

[7]

QUESTION 3

In a group of 85 learners, 48 likes M&M's, 43 likes Astros and 12 do not like either of these.

3.1 Draw a Venn diagram to illustrate this information and to determine how many learners like M&Ms and Astros. Let x = number of learners that like M&Ms and Astros. (6) S1904



3.2 Determine the value of x (3) S1904

$48 - x + x + 43 - x + 12 = 85$ ✓

$-x = 85 - 48 - 43 - 12$ ✓

$-x = -18$

$x = 18$ ✓

3.3 Determine the probability that if a learner is chosen at random, that he/she:

a) Only likes M&Ms. (2) S1904

$P(S) = \frac{30}{85} = 0{,}353$ ✓✓

b) Does not like Astros. (2) S1904

$P(A') = \frac{42}{85} = 0{,}494$ ✓✓

c) Likes M&Ms or Astros. (2) S1904

$P(M \text{ or } A) = \frac{73}{85} = 0{,}859$ ✓✓

[15]

VRAAG 4

It is given that $P(A) = 0{,}22$, $P(B) = 0{,}6$ and $P(A \text{ or } B) = 0{,}59$.

4.1 Calculate $P(A \text{ and } B)$ (3) S1904

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

$0{,}59 = 0{,}22 + 0{,}6 - P(A \text{ and } B)$ ✓

$P(A \text{ and } B) = 0{,}23$ ✓

Events A and B are **mutually exclusive**. If $P(A) = 0{,}71$ and $P(B) = 0{,}13$:

4.2 Calculate $P(A \text{ or } B)$ (2) S1905

$P(A \text{ or } B) = 0{,}71 + 0{,}13$ ✓

$= 0{,}84$ ✓

4.3 Calculate $P(A \text{ and } B)$ (1) S1905

$P(A \text{ and } B) = 0$ ✓

Events A and B are **complimentary**. If $P(A) = 0{,}71$:

4.4 Calculate $P(A \text{ or } B)$ (1) S1905

$P(A \text{ or } B) = 1$ ✓

4.5 Calculate $P(A \text{ and } B)$ (1) S1905

$P(A \text{ and } B) = 0$ ✓

4.6 Calculate $P(B)$ (2) S1905

$P(A) + P(B) = 1$

$0{,}71 + P(B) = 1$ ✓

$P(B) = 0{,}29$ ✓

[10]

Total: 40 Marks