



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE**

GRADE/ *GRAAD* 11

NOVEMBER 2012

**MATHEMATICS P3/ *WISKUNDE V3*
MEMORANDUM**

MARKS: 100
PUNTE:

This memorandum consists of 6 pages./
Hierdie memorandum bestaan uit 6 bladsye.

QUESTION/ VRAAG 1

1.1	1.1.1	$P(A \text{ and/en } B) = P(A) \times P(B)$				$\sqrt{P(A) \times P(B)}$	(1)
	1.1.2	$P(A \text{ or/of } B) = P(A) + P(B)$				$\sqrt{P(A) + P(B)}$	(1)
1.2	1.2.1	(a)	30 \checkmark	(b)	150 \checkmark	(c)	40 \checkmark
		(d)	150 \checkmark	(e)	160 \checkmark	(f)	140 \checkmark
	1.2.2	P(M passed and S passed/ (W slaag en S slaag) = $\frac{120}{300} = 0,40$				$\sqrt{0,40}$	(1)
	1.2.3	P(M passed and S failed/ (W slaag en S druip) = $\frac{30}{300} = 0,10$				$\sqrt{0,10}$	(1)
	1.2.4	P(M passed and S passed/ (W slaag en S slaag) = $\frac{120}{300} = 0,40$ P(M passed/ W slaag) = $\frac{150}{300} = 0,50$ P(S passed/ S slaag) = $\frac{160}{300} = 0,53$ $\therefore P(M \text{ passed/ } W \text{ slaag}) \times$ $P(S \text{ passed/ } S \text{ slaag}) = 0,50 \times 0,53$ $= 0,267$ $\therefore P(M \text{ passed and S passed/ } W \text{ slaag en S slaag})$ $\neq P(M \text{ passed/ } W \text{ slaag}) \times P(S \text{ passed/ } S \text{ slaag})$ \therefore Events M and S are dependent/ <i>Gebeurtenisse W en S is afhanklik</i>					(5)
							[15]

QUESTION/ VRAAG 2

2.1	$31+10+23+15+x+18 +48+5 = 160$ $x = 10$	$\sqrt{\text{equation/vergeljking}}$ $\sqrt{\text{answer/antwoord}}$	(2)
2.2	$\frac{5}{160} = \frac{1}{32} = 0,03125$	$\sqrt{\text{answer/antwoord}}$	(1)
2.3	$P(B) = \frac{10+10+23+18}{160}$ $= \frac{61}{160}$ $= 0,381$	$\sqrt{\text{addition/optelling}}$ $\sqrt{160}$ $\sqrt{\text{answer/antwoord}}$	(3)
2.4	P(at least TWO candidates/ Ten minste TWEE kandidate) $= \frac{10+10+15+18}{160}$ $= \frac{53}{160}$ $= 0,331$ $= 33\%$	$\sqrt{\text{addition/optelling}}$ $\sqrt{160}$ $\sqrt{\text{answer/antwoord}}$	(3)
			[9]

QUESTION/ VRAAG 3

<p>3.1</p>	<p>The statement is correct as far as the sample is concerned/ <i>Die stelling is korrek sover dit die steekproef aangaan.</i></p> <p>This does not imply that the total voter population will have the same result/ <i>Dit impliseer nie dat die totale stemgeregtigde bevolking dieselfde resultaat gaan hê nie.</i></p> <p>It is a small sample to consider when you look at a presidential race, as $\frac{1\ 000}{23\ 000\ 000}$ is far less than 10%/ <i>Dit is 'n klein steekproef om in ag te neem as jy kyk na 'n presidensiële wedloop, wetende dat $\frac{1\ 000}{23\ 000\ 000}$ ver kleiner as 10%.</i></p> <p>This could swing the broader public's vote unfairly in the actual voting as they might believe it is not worthwhile voting for the other candidate(s) in the race./ <i>Dit kan die breër publiek se stem onregverdig in die werklike stemming swaai, omdat hulle mag dink dit sal nie die moeite werd wees om vir die ander kandidaat/kandidate in die wedloop te stem nie.</i></p>	<p>(4)</p>
<p>3.2</p>	<p>3.2.1</p> <p style="text-align: right;">(7)</p>	<p>(7)</p>
<p>3.2.2</p>	<p>$P(W,W) = \frac{5}{14} = 0,36$</p>	<p>(2)</p>
<p>3.2.3</p>	<p>$P(M,W \text{ any order/ enige orde}) = \frac{15}{56} + \frac{15}{56}$ $= \frac{30}{56}$ $= 53,4\%$</p>	<p>(3)</p>
		<p>[16]</p>

QUESTION/ VRAAG 4

4.1	$P(\text{HIV}+) = \frac{3\,100\,863}{12\,641\,970}$ $= 0,245$ $= 24,5\%$	✓ fraction / breuk ✓ percentage / persentasie	(2)
4.2	$P(25 - 29) = \frac{720\,678}{12\,641\,970}$ $= 0,057$ $= 5,7\%$	✓ fraction / breuk ✓ percentage / persentasie	(2)
4.3	$P(15 - 19, \text{ not infected/nie-geïnfekteer nie}) = \frac{2\,130\,128}{12\,641\,970}$ $= 0,168$ $= 16,8\%$	✓ fraction / breuk ✓ percentage / persentasie	(2)
4.4	$\text{Total population/Totale bevolking (HIV}+) = \frac{3\,100\,863}{12\,641\,970} \times 100$ $= 24,5\%$	✓ fraction / breuk ✓ percentage / persentasie	(2)
4.5	Age group/Ouderdomsgroep: 25 – 29 = 35,4%	✓ age group / ouderdom ✓ comparing / vergelyking ✓ percentage / persentasie	(3)
4.6	More education on HIV/Aids issues, knowing your status, single partner, faithful to partner, use of condoms, etc./ <i>Meer opvoeding oor HIV/Vigs, ken jou status, enkel genoot, getrou aan genoot, gebruik van kondome, ens.</i>	✓✓✓ Any THREE logical reasons/ <i>Enige DRIE logiese redes</i>	(3)
			[14]

QUESTION/ VRAAG 5

5.1	GRAPH A. The scale on the vertical axis is causing the effect./ <i>GRAFIEK A. Die skaal op die vertikale as veroorsaak die effek.</i>	✓ GRAPH A / <i>GRAFIEK A</i> ✓ reason / rede	(2)
5.2	GRAPH B. It is clear from the graph that the illegal immigrant influx shows a slight increase for a three month period, which show that the minister is in control of the problem./ <i>GRAFIEK B. Dit is duidelik vanaf die grafiek dat die instroming van onwettige immigrante 'n matige toename wys vir 'n drie-maande periode, wat toon dat die minister in beheer van die probleem is</i>	✓ GRAPH B / <i>GRAFIEK B</i> ✓ reason / rede	(2)
5.3	GRAPH A. It is clear from the graph that the illegal immigrant influx shows a steep increase for the three month period, which the opposition could use to show the lack of control by government over the problem./ <i>GRAFIEK A. Dit is duidelik vanaf die grafiek dat die instroming van onwettige immigrante 'n skerp toename wys vir die drie-maande periode, wat die opposisie kan gebruik om te wys dat die regering in gebreke bly om die probleem te beheer.</i>	✓ GRAPH A / <i>GRAFIEK A</i> ✓ reason / rede	(2)
			[6]

* FOR QUESTIONS 6 TO 9 FOLLOW CANDIDATES REASONING */

* VANAF VRAAG 6 TOT VRAAG 9 VOLG KANDIDATE SE REDENERING*

QUESTION/ VRAAG 6

6.1	6.1.1	$P'(8;14)$		(1)
	6.1.2	$Q'(8;1)$		(1)
	6.1.3	$R'(2; 9)$		(1)
6.2	6.2.1	$P''(2; \frac{7}{2})$		(1)
	6.2.2	$Q''(2; \frac{1}{4})$		(1)
	6.2.3	$R''(\frac{1}{2}; \frac{9}{4})$		(1)
6.3	Yes, the corresponding sides are equal in proportion/ <i>Ja, die ooreenstemmende sye is eweredig gelyk.</i>		$= 2$ or/of $\frac{1}{2}$	(2)
6.4	Area $\Delta P'Q'R' = (2)^2(16x) = \underline{64x}$ units ² / <i>Oppervlakte $\Delta P'Q'R' = (2)^2(16x) = \underline{64x}$ eenhede²</i>			(2)
				[10]

QUESTION/ VRAAG 7

7.1	7.1.1	$\frac{PR}{PV} = \frac{7}{11}$	✓✓ answer / antwoord	(2)
	7.1.2	$PM = 2PV$ (V is the midpoint of PM) = 22 <i>PM = 2PV (V is die middelpunt van PM) = 22</i> $\frac{PM}{RV} = \frac{22}{4}$ $= \frac{11}{2}$	✓✓ answer / antwoord	(2)
	7.1.3	$\frac{MW}{WT} = \frac{11}{4}$	✓✓ answer / antwoord	(2)
7.2	7.2.1	$Q\hat{S}R = y$ (alternate angles, // lines/ <i>verwisselende hoeke, // lyne</i>)	✓ statement / stelling	(1)
	7.2.2	$P\hat{S}T = 90^\circ - y$ (angles on a straight line/ <i>hoeke op 'n reguitlyn</i>)	✓ statement / stelling	(1)
	7.2.3	In ΔPSQ and/ en ΔSTP $\hat{P}_1 = \hat{S}_1 = 90^\circ - y$ (alternate angles/ <i>verwisselende hoeke : PQ // TR</i>) $Q\hat{S}P = \hat{T} = 90^\circ$ $\hat{Q}_2 = \hat{P}_2$ (3^{rd} angle of $\Delta/3^{de}$ hoek van Δ) $\therefore \Delta PSQ \text{ /// } \Delta STP$ (AAA)/(HHH)/(\angle, \angle, \angle)	✓ statement / stelling ✓ statement / stelling ✓ statement / stelling	(3)
	7.2.4	$\frac{PS}{ST} = \frac{SQ}{TP} = \frac{PQ}{SP}$ (similar triangles/ <i>gelyksoortige driehoeke</i>) $\therefore PS^2 = ST \times PQ$ $= ST \times (RS + ST)$ (PQ = RT $= RS + ST$, opp. sides of rectangle equal/ <i>teenoorst. sye van reghoek gelyk</i>)	✓ statement / stelling ✓ statement / stelling ✓ answer / antwoord	(3)
				[14]

QUESTION/ VRAAG 8

8.1	In ΔSTP and/ en ΔSQT : \widehat{S} is common/ is gemeen $S\widehat{T}P = T\widehat{Q}S$ (given/ gegee) 3^{rd} angle/ 3^{de} hoek $\therefore \Delta STP \text{ /// } \Delta SQT$ (AAA)	<ul style="list-style-type: none"> ✓ statement / stelling ✓ statement / stelling ✓ statement / stelling 	(3)
8.2	$\frac{ST}{SQ} = \frac{SP}{ST}$ (similar triangles/ gelyksoortige driehoeke) $\frac{51}{SQ} = \frac{32,6}{51}$ $SQ = \frac{51 \times 51}{32,6}$ $= 79,79 \text{ mm}$	<ul style="list-style-type: none"> ✓ statement / stelling ✓ substitution / substitusie ✓ answer / antwoord 	(3)
8.3	$\frac{TP}{QT} = \frac{SP}{ST}$ $\frac{29}{QT} = \frac{32,6}{51}$ $QT = \frac{29 \times 51}{32,6}$ $= 45,37 \text{ mm}$ <p style="text-align: center;">OR/OF</p> $QT = \frac{SQ \times TP}{ST}$ $= \frac{79,79 \times 29}{51}$ $= 45,37 \text{ mm}$	<ul style="list-style-type: none"> ✓ statement / stelling ✓ substitution / substitusie ✓ answer / antwoord 	(3)
			[9]

QUESTION/ VRAAG 9

9.1	$\frac{AO}{EC} = \frac{OD}{CD}$ (similar triangles/ gelyksoortige driehoeke) $\frac{20}{EC} = \frac{10}{p}$ $EC = \frac{20p}{10}$ $= 2p \text{ units/ eenhede}$ $\therefore OB = EC = 2p$ (opposite sides of a rectangle equal/ <i>teenoorstaande sye van reghoek is gelyk</i>)	<ul style="list-style-type: none"> ✓ statement / stelling ✓ substitution/ substitusie ✓ answer / antwoord 	(3)
9.2	$OC = (10 - p) \text{ units/ eenhede}$	<ul style="list-style-type: none"> ✓ answer / antwoord 	(1)
9.3	$\frac{\text{Area of rectangle OBEC}}{\text{Area of } \Delta ECD} = \frac{\text{Oppervlakte van OBEC}}{\text{Oppervlakte van } \Delta ECD} = \frac{l \times b}{\frac{1}{2}b \times h} = \frac{2p(10-p)}{\frac{1}{2}(2p \times p)}$ $= \frac{20p - 2p \cdot p}{p \cdot p}$ $= \frac{2p(10-p)}{p \cdot p}$ $= \frac{2(10-p)}{p}$	<ul style="list-style-type: none"> ✓ statement/ stelling ✓ substitution/ substitusie ✓ answer/ antwoord 	(3)
			[7]

TOTAL/TOTAAL: 100