

**SENIORSERTIFIKAAT-EKSAMEN/**

**NASIONALE SENIORSERTIFIKAAT-EKSAMEN**

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| **WISKUNDIGE GELETTERDHEID V1**  **2019** |

**PUNTE: 150**

**TYD: 3 uur**

## Hierdie vraestel bestaan uit 13 bladsye,

## 2 antwoordblaaie en 'n addendum met 3 bylaes.

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| **INSTRUKSIES EN INLIGTING** |  |  |

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| 1. | Hierdie vraestel bestaan uit VYF vrae. Beantwoord AL die vrae. |  |  |

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| 2. | 2.1 | Gebruik die BYLAES in die ADDENDUM om die volgende vrae te beantwoord:  BYLAE A vir VRAAG 1.1  BYLAE B vir VRAAG 2.1.4 BYLAE C vir VRAAG 4.2 |  |  |

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|  | 2.2 | Beantwoord VRAAG 2.2.3 op die aangehegte ANTWOORDBLAD 1.  Beantwoord VRAAG 5.1.8 op die aangehegte ANTWOORDBLAD 2. |  |  |

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|  | 2.3 | Skryf jou sentrumnommer en eksamennommer in die ruimtes wat op die ANTWOORDBLAD voorsien is. Lewer die ANTWOORDBLAD saam met jou ANTWOORDEBOEK in. |  |  |

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| 3. | Nommer die antwoorde korrek volgens die nommeringstelsel wat in die vraestel gebruik is. |  |  |

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| 4.  5.  6.  7. | Begin ELKE vraag op 'n NUWE bladsy.  Jy mag 'n goedgekeurde sakrekenaar (nieprogrammeerbaar en niegrafies) gebruik, tensy anders aangedui.  Toon ALLE bewerkings duidelik.  Rond ALLE finale antwoorde toepaslik volgens die gegewe konteks af, tensy anders aangedui. |  |  |

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| 8.  9.  10. | Dui meeteenhede aan, waar van toepassing.  Kaarte en diagramme is NIE noodwendig volgens skaal geteken NIE, tensy anders vermeld.  Skryf netjies en leesbaar. |  |  |

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| **VRAAG 1** |  |  |

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| 1.1 | BYLAE A toon 'n wentelkredietlening wat by Woolworths Finansiële Dienste aangegaan is.  **LET WEL:**  'n wentelkredietplan is 'n lening waar 'n persoon alles of 'n gedeelte van die geld wat teen die lening terugbetaal is weer kan gebruik, sonder om weer daarvoor aansoek te doen. |  |  |

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|  | Gebruik BYLAE A om die vrae wat volg, te beantwoord. |  |  |

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|  | 1.1.1 | Identifiseer die lener van die wentelkredietlening. |  | (2) |

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|  | 1.1.2 | Skryf die leningsbedrag wat op hierdie staat beskikbaar is, neer. |  | (2) |

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|  | 1.1.3 | Skryf die getal state wat die lener in een jaar sal ontvang, neer. |  | (2) |

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|  | 1.1.4 | Verduidelik die term *debietorder*. |  | (2) |

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|  | 1.1.5 | Bereken die getal dae vanaf die datum van die rekening tot die datum wanneer die rekening betaal moet wees. |  | (2) |

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|  | 1.1.6 | Bereken die eindsaldo (**A**) van die lening wat op 29/04/2016 uitgeneem is. |  | (2) |

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| 1.2 | Die weervoorspelling vir Kaapstad vir die tydperk 1 tot 9 Junie word hieronder getoon. |  |  |

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|  | |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **MA.** | **DI.** | **WO.** | **DO.** | **VR.** | **SA.** | **SO.** |  | **SLEUTEL** | | |  |  |  | **1** | **2** | **3** | **4** |  |  | Sonnig | |  |  |  |  |  |  |  |  |  | Bewolk | |  |  |  | **19 °C** | **26 °C** | **22 °C** | **21 °C** |  |  | Reën | |  |  |  | 9 °C | 7 °C | 11 °C | 6 °C |  |  | Reën en weerlig | | **5** | **6** | **7** | **8** | **9** |  |  |  | **35 °C** | Maks.  temp. | |  |  |  |  |  |  |  |  | 7 °C | Min. temp. | | **20 °C** | **14 °C** | **15 °C** | **15 °C** | **16 °C** |  |  |  |  |  | | 9 °C | 9 °C | 7 °C | 3 °C | 8 °C |  |  |  |  |  | | [Bron: www.wunderground.com] | | | | | | | | | | |  |  |

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|  | Bestudeer die inligting hierbo en beantwoord die vrae wat volg. |  |  |

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|  | 1.2.1 | Identifiseer die maksimum temperatuur vir Vrydag 2 Junie 2017. |  | (2) |

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|  | 1.2.2 | Skryf die volledige datum neer waarop die laagste minimum temperatuur gemeet is. |  | (2) |

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|  | 1.2.3 | Rangskik die maksimum temperature in dalende orde. |  | (2) |

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|  | 1.2.4 | Bepaal die datum waarop daar reën en weerlig was. |  | (2) |

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|  | 1.2.5 | Bepaal die verskil tussen die maksimum en minimum temperature op Donderdag 8 Junie 2017. |  | (2) |

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| 1.3 | Die vergelykende staafgrafiek toon die nasionale registrasiestatistiek van die Suid-Afrikaanse bevolking vir beide mans en vrouens soos op 28 April 2018. |  |  |

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|  | |  |  |  | | --- | --- | --- | | **NASIONALE RegistraSIESTATISTIEK soos op 28 April 2018** | | | | **VROULIK** | **OUDER-DOMS-**  **GROEP** | **MANLIK** | |  | **18 – 19** |  | |  | **20–29** |  | |  | **30–39** |  | |  | **40–49** |  | |  | **50–59** |  | |  | **60–69** |  | |  | **70–79** |  | |  | **80+** |  | |  | **TotaAl** |  | | **14 442 779** |  | **11 797 561** |   [Bron: [www.elections.org.za](http://www.elections.org.za)] |  |

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|  | Bestudeer die grafiek hierbo en beantwoord die vrae wat volg. |  |  |

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|  | 1.3.1 | Skryf die ouderdomsgroep neer waarin die tweede hoogste getal vroulike kiesers geregistreer is. |  | (2) |

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|  | 1.3.2 | Bereken die getal manlike kiesers onder die ouderdom van 40 jaar. |  | (2) |

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|  | 1.3.3 | Skryf in woorde die getal vroulike kiesers in die 40–49-ouderdomsgroep neer. |  | (2) |

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|  | 1.3.4 | Noem of die data in die grafiek diskreet of aaneenlopend is. |  | (2) |

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|  | 1.3.5 | Bereken die verskil tussen die totale getal manlike en vroulike kiesers. |  | (2) |
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| **VRAAG 2** |  |  |

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| 2.1 | Susan wil ekstra geld verdien en beplan om koppies Milo by die plaaslike taxistaanplek te verkoop. Milo is 'n voedsame aanvullingsdrankie wat ontwikkel is om belangrike vitamines en minerale aan aktiewe mense te verskaf.  BYLAE B toon die advertensie van haar plaaslike winkel waar sy beoog om haar voorraad te koop. |  |  |

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|  | Gebruik BYLAE B om die vrae wat volg, te beantwoord. |  |  |

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|  | 2.1.1 | Bepaal die eenheidsprys wanneer Milo opsie 2 gekoop word. |  | (3) |

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|  | 2.1.2 | Bepaal die totale koste van 6 ℓ melk. |  | (2) |

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|  | 2.1.3 | Verduidelik die betekenis van die woord *kosprys*. |  | (2) |

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|  | 2.1.4 | Susan het besluit om die koste van die water uit te sluit wanneer sy die kosprys per koppie Milo bereken.  TABEL 1 hieronder toon hoe Susan die kosprys van een koppie Milo bereken het.  **TABEL 1:**   |  |  |  |  | | --- | --- | --- | --- | | **Hoeveelheid gekoop** | **Koste van BESTANDDELE** | **HOEVEELHEID gebruik vir EEN koppie** | **Koste per koppie Milo** | | 1 kg Milo | R97,95 | 0,04 kg | **A** | | 1 ℓ melk | R11,99 | **B** | R1,20 | | 2,5 kg suiker | R33,20 | 0,01 kg | R0,13 | | 25 polistireen- koppies | **C** | Een | R1,78 | | 50 lepels | R12,75 | Een | R0,26 | | **TOTALE KOSTE** | | | **D** | |  |  |

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|  |  | (a) | Bereken **A**, die koste van Milo per koppie. |  | (2) |

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|  |  | (b) | Bepaal **B**, die hoeveelheid melk, in liter, wat vir EEN koppie Milo gebruik word. |  | (2) |

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|  |  | (c) | Skryf die waarde van **C**, die koste van 25 polistireenkoppies neer. |  | (2) |

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|  |  | (d) | Toon dat die koste van een koppie Milo, **D**, R7,29 is. |  | (2) |

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|  | 2.1.5 | Bepaal die verkoopsprys van een koppie Milo, indien Susan se beplande winsgrens 25% is. |  | (4) |

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| 2.2 | Susan het een maand later haar besigheid begin en omdat die pryse van produkte gestyg het, het dit haar toe R9,50 gekos om een koppie Milo te maak. Sy het bereken dat haar daaglikse vaste koste R90,00 is en dat sy sal 100 koppies Milo per dag kon verkoop. Sy sal die Milo teen R12,50 per koppie verkoop. |  |  |

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|  | Gebruik die inligting hierbo om die vrae wat volg te beantwoord. |  |  |

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|  | 2.2.1 | TABEL 2 toon die inkomste uit die verkoop van die koppies Milo.  **TABEL 2: INKOMSTE UIT DIE VERKOOP VAN KOPPIES MILO**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Getal koppies Milo (n) | 0 | 20 | 30 | 40 | 80 | 100 | | Inkomste in rand (R) | 0 | 250 | 375 | **P** | 1 000 | 1 250 | |  |  |

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|  |  | (a) | Bepaal die waarde van **P** in TABEL 2 hierbo. |  | (2) |

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|  |  | (b) | Skryf 'n vergelyking neer wat gebruik kan word om die inkomste te bereken. |  | (2) |

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|  |  | (c) | Identifiseer die onafhanklike veranderlike in TABEL 2. |  | (2) |

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|  | 2.2.2 | Susan gebruik die volgende formule om die kosprys van die koppies Milo te bereken.  **Kosprys = R90,00 + R9,50 × *n*** waar n = aantal koppies Milo  TABEL 3 toon die kosprys vir 'n aantal koppies Milo.  **TABEL 3: KOSPRYS VIR 'N AANTAL KOPPIES MILO**   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Getal koppies Milo (n) | 0 | 20 | 30 | **Q** | 80 | 100 | | Kosprys in rand (R) | 90 | 280 | 375 | 612,50 | 850 | 1 040 |   Bereken die waarde van **Q** in TABEL 3 hierbo. |  | (3) |

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|  | 2.2.3 | Die grafiek op ANTWOORDBLAD 1 toon die totale inkomste uit die maak van tot 100 koppies Milo. Gebruik die inligting in TABEL 3 en teken nog 'n grafiek wat die koste van die verkoop van tot 100 koppies Milo voorstel. |  | (3) |

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|  | 2.2.4 | Gebruik die tabelle of die grafieke op ANTWOORDBLAD 1 om die vrae wat volg, te beantwoord. |  |  |

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|  |  | (a) | Verduidelik wat die woord *gelykbreekpunt* in die konteks van die vraag beteken. |  | (2) |

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|  |  | (b) | Bepaal die getal koppies Milo by die gelykbreekpunt. |  | (2) |

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| 2.3 | Susan besluit om R1 200 aan haar suster, wat in Japan studeer, te stuur. Die wisselkoers op daardie datum is 1 jen = R0,10976. |  |  |

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|  | 2.3.1 | Bereken die bedrag geld wat sy in Japannese jen gestuur het. |  | (3) |

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|  | 2.3.2 | Dui aan of die jen sterker of swakker as die rand is. |  | (2) |
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| **VRAAG 3** |  |  |

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| 3.1 | Die Bambanani Kleuterskool in Bethlehem het die vierkantige blokke/kubusse hieronder by 'n veiling gekoop. Hulle het 'n sykantlengte van 45 cm. Aan twee teenoorstaande kante van die kubusse is 'n sirkelvormige gat in die aansig van die blok. Hulle wil die blokke as stoele vir hul kinders gebruik.  Aansig sonder gat   |  |  | | --- | --- | | Image result for crafts with cube shapes  Aansig met gat | Afmetings:  Lengte: 45 cm  Radius van die gat: 9,5 cm | |  |  |

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|  | 3.1.1 | Hulle wil die stoele met Dulux-meerdoelige verf groen verf. |  |  |

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|  |  | (a) | Bereken die oppervlakte (in cm2) van een van die aansigte van die blok wat nie 'n sirkelvormige gat het nie.  Jy kan die volgende formule gebruik:  **Oppervlakte van vierkant = sy × sy** |  | (3) |

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|  |  | (b) | Toon dat die totale buite-oppervlakte (oppervlakte van die aansigte met sirkelvormige gate + oppervlakte van aansigte sonder sirkelvormige gate) = 11 582,869 cm2.  Jy kan die volgende formule gebruik:  **Oppervlakte van sirkel = π × radius2**,gebruik = 3,142 |  | (5) |

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|  |  | (c) | Die verf het 'n spreikoers van 1,8 mℓ verf per 15 cm2.  Bereken die totale hoeveelheid verf, afgerond tot die naaste liter, wat benodig sal word om 12 stoele met een laag verf te verf. |  | (4) |

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|  | 3.1.2 | Die verf word in 5 ℓ-blikke verkoop. Elke blik het 'n radius van 7 cm en 'n hoogte van 35 cm.  Hoogte van verf in blik  5 ℓ = 5 000 cm3 | Hoogte van  blik |  |

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|  |  | (a) | Skryf die middellyn van die blik neer. |  | (2) |

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|  |  | (b) | Bereken die hoogte van die verf in die blik.  Jy kan die volgende formule gebruik:  **Volume van 'n silinder = π × (radius)2 × hoogte**,gebruik = 3,142 |  | (3) |

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| 3.2 | Die middellyf-tot-heupverhouding (MHV) is nog 'n manier om die risiko van siekte wat aan vetsug verwant is, te bepaal.  Jy kan die volgende formule gebruik:  **Middellyf-tot-heupverhouding =**  Nadat die berekening gedoen is, word 'n persoon se siekterisiko wat met vetsug verband hou as laag, middelmatig, hoog of baie hoog, gebaseer op ouderdom, geklassifiseer.  **SIEKTE WAT MET VETSUG VERBAND HOU**   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | |  | **OUDER-DOMS-GROEP** | **KLASSIFIKASIE** | | | | | **(JAAR)** | **LAAG** | **MIDDEL-MATIG** | **HOOG** | **BAIE HOOG** | | **MANS** | 20–29 | <0,83 | 0,83–0,88 | 0,89–0,94 | >0,94 | | 30–39 | <0,84 | 0,84–0,91 | 0,92–0,96 | >0,96 | | 40–49 | <0,88 | 0,88–0,95 | 0,96–1,00 | >1,00 | | 50–59 | <0,90 | 0,90–0,96 | 0,97–1,02 | >1,02 | | 60–69 | <0,91 | 0,91–0,98 | 0,99–1,03 | >1,03 | | **VROUENS** | 20–29 | <0,71 | 0,71–0,77 | 0,78–0,82 | >0,82 | | 30–39 | <0,72 | 0,72–0,78 | 0,79–0,84 | >0,84 | | 40–49 | <0,73 | 0,73–0,79 | 0,80–0,87 | >0,87 | | 50–59 | <0,74 | 0,74–0,81 | 0,82–0,88 | >0,88 | | 60–69 | <0,76 | 0,76–0,83 | 0,84–0,90 | >0,90 |   [Aangepas uit *Champaign IL, Human Kinetics*, 1999, bl. 82] |  |

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|  | Gebruik die inligting hierbo om die vrae wat volg, te beantwoord. |  |  |

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|  | 3.2.1 | Bepaal of 'n 37-jarige man met 'n MHV van 0,95 'n middelmatige of 'n hoë risiko van vetsug het. |  | (2) |

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|  | 3.2.2 | 'n 50-jarige man het die volgende afmetings:  middellyf = 105 cm; heup = 92 cm  Bereken hierdie man se MHV. |  | (2) |

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|  | 3.2.3 | 'n Vrou met 'n middellyf van 72 cm het 'n MHV wat aan 0,7826 gelyk is en word as 'n gemiddelde risiko geklassifiseer. |  |  |

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|  |  | (a) | Dui EEN moontlike ouderdomsgroep van hierdie vrou aan. |  | (2) |

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|  |  | (b) | Bereken die vrou se heupmaat. Rond jou antwoord tot die naaste cm af. |  | (3) |
|  |  |  |  |  | **[26]** |

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| **VRAAG 4** |  |  |

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| 4.1 | Die sitplekplan hieronder verteenwoordig die sitplekrangskikking van 'n treinwa.    **Sleutel:**   |  |  | | --- | --- | |  | venster | |  | Deur | |  | Sitplek sonder kragpunt | |  | Sitplek met 'n kragpunt | |  |  |

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|  | Gebruik die inligting hierbo om die vrae wat volg, te beantwoord. |  |  |

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|  | 4.1.1 | Hoeveel passasiers kan in een wa sit? |  | (2) |

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|  | 4.1.2 | Skryf die nommer van die sitplek neer wat naby aan die venster en die toilet is. |  | (2) |

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|  | 4.1.3 | In watter algemene rigting is die toilet van sitplek B6 af? |  | (2) |

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|  | 4.1.4 | Bepaal die waarskynlikheid (as 'n persentasie) om ewekansig 'n sitplek met 'n kragpunt in die wa te kies. |  | (3) |

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|  | 4.1.5 | 'n Man sit op sitplek J2 en gebruik die volgende roete om na 'n ander sitplek te skuif:   * Vanaf J2 draai links en loop na die gang toe * Hy draai links en loop reguit aan totdat hy die voorkant van die wa bereik * Hy draai dan regs en sit in die middelste sitplek   Skryf sy nuwe sitpleknommer neer. |  | (2) |

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| 4.2 | BYLAE C toon die kaart wat die roetes van 'n Suid-Afrikaanse busmaatskappy verteenwoordig. |  |  |

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|  | Gebruik BYLAE C om die vrae wat volg, te beantwoord. |  |  |

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|  | 4.2.1 | Hoeveel lughawens is langs die busroetes? |  | (2) |

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|  | 4.2.2 | Verduidelik die betekenis van die gegewe skaal. |  | (2) |

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|  | 4.2.3 | Bereken die werklike afstand, in km, vanaf Mosselbaai na Oos-Londen indien die afstand op die kaart 60 mm is. |  | (3) |

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|  | 4.2.4 | Die bus het 7 uur 26 minute geneem om vanaf Bloemfontein na Grahamstad te reis.  Bereken die gemiddelde spoed (in km/uur) wat die bus gereis het, indien die afstand vanaf Bloemfontein na Grahamstad 597 km is.  Jy kan die volgende formule gebruik:  **Spoed =** |  | (3) |
|  |  |  |  | **[21]** |

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| **VRAAG 5** |  |  |

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| 5.1 | TABEL 4 toon die tipe stemlokale (SL'e) wat gedurende die 2016 plaaslike regeringsverkiesing in Suid-Afrika gebruik is.  **TABEL 4: TIPE STEMLOKALE**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Provinsie** | **SL'e** | **Permanent** | **Tydelik** | **Mobiel** | | Oos-Kaap | **4 699** | 4 535 | 161 | 3 | | Vrystaat | **1 531** | 1 342 | 189 | 0 | | Gauteng | **2 716** | 2 389 | 327 | 0 | | KwaZulu-Natal | **4 792** | 4 647 | 133 | 12 | | Limpopo | **3 111** | 2 966 | **145** | 0 | | Mpumalanga | **1 744** | 1 650 | 82 | 12 | | Noordwes | **1 723** | 1 605 | 115 | 3 | | Noord-Kaap | **710** | 684 | 26 | 0 | | Wes-Kaap | **1 586** | 1 534 | 50 | 2 | | **Totaal** | 22 612 | 21 352 | 1 228 | 32 |   [Bron: www.elections.org.za] |  |  |

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|  | 5.1.1 | Noem 'n tipe instrument wat gebruik is om hierdie data in te samel. |  | (2) |

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|  | 5.1.2 | Dui aan watter provinsie die meeste stemlokale het. |  | (2) |

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|  | 5.1.3 | Bepaal die gemiddelde getal stemlokale (SL'e) in Suid-Afrika. |  | (3) |

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|  | 5.1.4 | Skryf die modale getal mobiele stemlokale in Suid-Afrika neer. |  | (2) |

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|  | 5.1.5 | Bepaal die totale getal tydelike SL'e as 'n persentasie van die totale getal SL'e in Suid-Afrika. |  | (3) |

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|  | 5.1.6 | Bepaal die waarskynlikheid om ewekansig 'n mobiele SL in Gauteng te kies. |  | (2) |

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|  | 5.1.7 | Toon hoe die waarde van 145 bereken is. |  | (2) |

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|  | 5.1.8 | Die staafgrafiek op ANTWOORDBLAD 2 toon die totale getal stemlokale.  die eerste drie stawe wat die permanente stemlokale toon, is op dieselfde ANTWOORDBLAD geteken.  Vul die oorblywende staafgrafieke in wat die permanente stemlokale toon. |  | (6) |

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| 5.2 | Die twee sirkeldiagramme hieronder toon hoekom en hoe mense in Suid-Afrika reis.   |  |  | | --- | --- | |  |  |   [Bron: [www.](http://www.)grafieka 24.co.za] |  |  |

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|  | Bestudeer die twee sirkeldiagramme hierbo en beantwoord die vrae wat volg. |  |  |

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|  | 5.2.1 | Bereken die persentasie mense wat vir sport reis. |  | (2) |

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|  | 5.2.2 | Watter tipe vervoer word deur die meeste mense gebruik? |  | (2) |

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|  | 5.2.3 | Bepaal die waarskynlikheid (geskryf as 'n breuk in die eenvoudigste vorm) om ewekansig 'n persoon te kies wie se tipe vervoer per bus is. |  | (3) |

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|  | 5.2.4 | 'n Totaal van 542 267 mense het aan hierdie opname deelgeneem.  Bereken die getal mense wat reis om by familie en vriende te kuier. |  | (2) |
|  |  |  |  | **[31]** |

**antwoordblad 1**

**vraag 2.2.3**

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| **SENTRUMNOMMER:**  IMATU PARK  IMATU PARK  [www.reg.uci.edu] |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **EKSAMENNOMMER:** |  |  |  |  |  |  |  |  |  |  |  |  |  |

**ANTWOORDBLAD 2**

**VRAAG 5.1.8**

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| **SENTRUMNOMMER:**  IMATU PARK  IMATU PARK  [www.reg.uci.edu] |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **EKSAMENNOMMER:** |  |  |  |  |  |  |  |  |  |  |  |  |  |

**SLEUTEL:**

**Totale**

**stemlokale**

**Permanente**

**stemlokale**

**Provinsies**