



Province of the
EASTERN CAPE
EDUCATION

**NATIONAL
SENIOR CERTIFICATE
*NASIONALE
SENIOR SERTIFIKAAT***

GRADE/*GRAAD* 10

NOVEMBER 2020

**MATHEMATICS P2/*WISKUNDE V2*
MARKING GUIDELINE/*NASIENRIGLYN*
(*EXEMPLAR/EKSEMPLAAR*)**

MARKS/*PUNTE*: 100

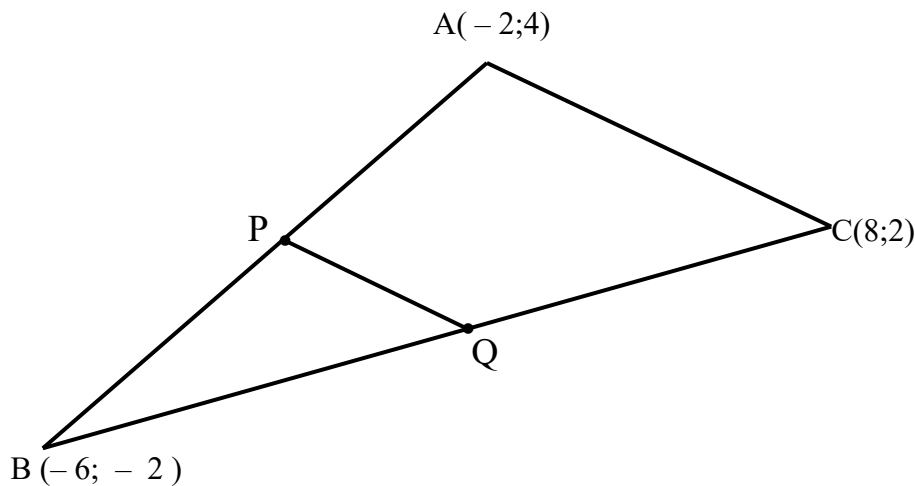
This marking guideline consists of 11 pages./
Hierdie nasienriglyn bestaan uit 11 bladsye.

QUESTION 1/VRAAG 1																																							
1.1	<table border="1"> <thead> <tr> <th>Marks/ Punte</th> <th>Frequency/ Frekwensie</th> <th>Midpoints/ Middelpt</th> <th>Midpoint \times Frequency/ Middelpt \times Frekwensie</th> </tr> </thead> <tbody> <tr> <td>$0 < x \leq 30$</td> <td>2</td> <td>15</td> <td>30</td> </tr> <tr> <td>$30 < x \leq 40$</td> <td>3</td> <td>35</td> <td>105</td> </tr> <tr> <td>$40 < x \leq 50$</td> <td>11</td> <td>45</td> <td>495</td> </tr> <tr> <td>$50 < x \leq 60$</td> <td>7</td> <td>55</td> <td>385</td> </tr> <tr> <td>$60 < x \leq 70$</td> <td>3</td> <td>65</td> <td>195</td> </tr> <tr> <td>$70 < x \leq 80$</td> <td>2</td> <td>75</td> <td>150</td> </tr> <tr> <td>$80 < x \leq 100$</td> <td>0</td> <td>90</td> <td>0</td> </tr> <tr> <td></td> <td>28</td> <td></td> <td>1360</td> </tr> </tbody> </table>	Marks/ Punte	Frequency/ Frekwensie	Midpoints/ Middelpt	Midpoint \times Frequency/ Middelpt \times Frekwensie	$0 < x \leq 30$	2	15	30	$30 < x \leq 40$	3	35	105	$40 < x \leq 50$	11	45	495	$50 < x \leq 60$	7	55	385	$60 < x \leq 70$	3	65	195	$70 < x \leq 80$	2	75	150	$80 < x \leq 100$	0	90	0		28		1360	✓ 385 ✓ 65	(2)
Marks/ Punte	Frequency/ Frekwensie	Midpoints/ Middelpt	Midpoint \times Frequency/ Middelpt \times Frekwensie																																				
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	28		1360																																				
1.1.2	Estimate of the mean/ <i>Benaderde gemiddelde</i> = $\frac{1360}{28}$ = 48,6	✓ 1360 ✓ 48,6	(2)																																				
1.1.3	<p>Grade 10 Mathematics Marks/<i>Graad 10 Wiskundepunte</i></p> <p>Frequency Polygon of gr 10 maths class</p>	✓✓ mdpts / <i>middelptunte</i> Line joining midpoints / <i>Lyn verbind</i> <i>middelptunte</i>	(3)																																				
1.1.4 (a)	$40 < x \leq 50$	✓ Endpoint / <i>Eindpunt</i> ✓ Notation / <i>Notasie</i>	(2)																																				
1.1.4 (b)	2,4 $50 < x \leq 60$	✓ 22,4 ✓ Interval / <i>Interval</i>	(2)																																				

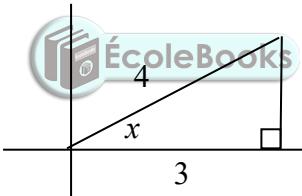
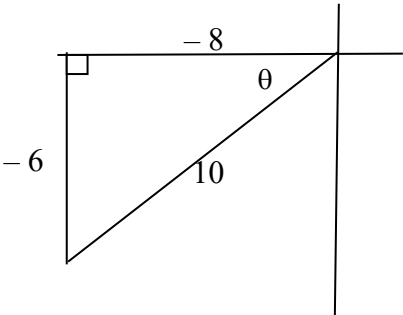
1.2	<table border="1"> <tr> <td>45</td><td>49</td><td>50</td><td>51</td><td>51</td><td>53</td><td>54</td><td>57</td><td>57</td><td>59</td><td>60</td><td>64</td> </tr> <tr> <td>65</td><td>66</td><td>70</td><td>71</td><td>73</td><td>74</td><td>75</td><td>76</td><td>83</td><td>89</td><td>89</td><td></td> </tr> </table>	45	49	50	51	51	53	54	57	57	59	60	64	65	66	70	71	73	74	75	76	83	89	89			
45	49	50	51	51	53	54	57	57	59	60	64																
65	66	70	71	73	74	75	76	83	89	89																	
1.2.1	Median = 64	✓ answer / antwoord	(1)																								
1.2.2	$\begin{aligned} \text{IQR} &= Q_3 - Q_1 \\ &= 74 - 53 \\ &= 21 \end{aligned}$	✓ Q_3 ✓ Q_1 ✓ answer / antwoord	(3)																								
1.2.3		✓ Min./Min. Max./Maks. ✓ Q_1 Q_3 ✓ Q_2	(3)																								
1.2.4	Skewed to the left / <i>Skeef na links</i>	✓✓ answer / antwoord	(2)																								
			[20]																								

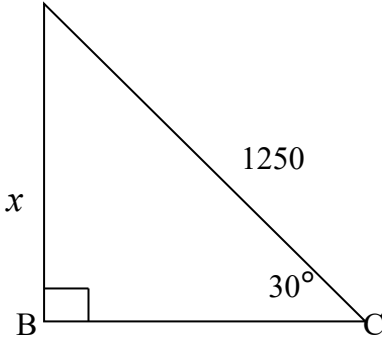


QUESTION 2/VRAAG 2

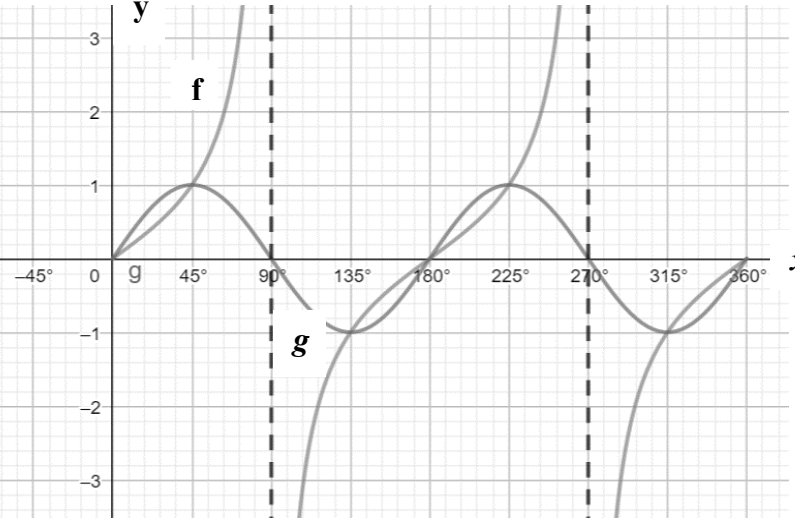


2.1	$P_{\text{midpoint/middelpunt}} = \left(\frac{-6+(-2)}{2}; \frac{4+(-2)}{2} \right)$ $Q_{\text{midpoint/middelpunt}} = \left(\frac{-6+8}{2}; \frac{-2+2}{2} \right)$ $P = (-4; 1)$ $Q = (1; 0)$	✓ form / vorm ✓ P ✓ form / vorm ✓ Q	(4)
2.2.1	Gradient of/Gradiënt van PQ = $m_{PQ} = \frac{0-1}{1-(-4)} = -\frac{1}{5}$ Gradient of/Gradiënt van AC = $m_{AC} = \frac{2-4}{8-(-2)} = -\frac{1}{5}$	✓ form/ vorm ✓ m_{PQ} ✓ form/ vorm ✓ m_{AC}	(4)
2.2.2	Distance of/Afstand van PQ = $d_{PQ} = \sqrt{(1-(-4))^2 + (0-1)^2}$ $= \sqrt{26}$ $= 5,1$ Distance of/Afstand van AC = $d_{AC} = \sqrt{(8-(-2))^2 + (2-4)^2}$ $= \sqrt{104}$ $= 10,2$ $\therefore PQ = \frac{1}{2} AC$	✓ form/ vorm ✓ d_{PQ} ✓ form/ vorm ✓ d_{AC}	(4)
2.3	Distance of/Afstand van AB $d_{AB} = \sqrt{(-2-(-6))^2 + (4-(-2))^2}$ $= \sqrt{52}$ Distance of/Afstand van BC $d_{BC} = \sqrt{(8-(-6))^2 + (2-(-2))^2}$ $= \sqrt{212}$ $\therefore \text{perimeter} = \sqrt{52} + \sqrt{212} + \sqrt{104}$ $= 31,97$	✓ d_{AB} ✓ d_{BC} ✓ add / optel ✓ answer / antwoord	(4)
			[16]

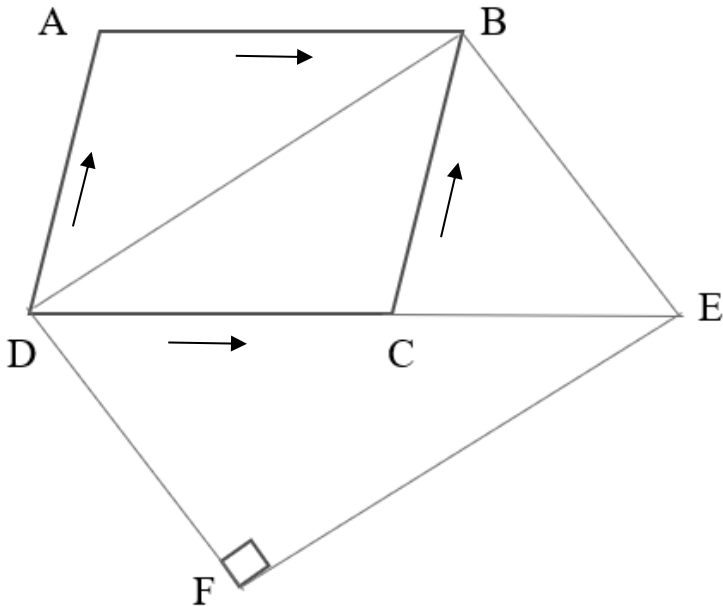
QUESTION 3 / VRAAG 3				
3.1.1	$\sin(x + y)$ $= \sin(229,5^\circ + 117,6^\circ) = -0,22$	✓ substitution / vervanging ✓ answer / antwoord	(2)	
3.1.2	$\cos 2y$ $= \cos(2 \times 117,6^\circ) = -0,57$	✓ substitution / vervanging ✓ answer / antwoord	(2)	
3.1.3	$\operatorname{cosec} x$ $= \frac{1}{\sin 229,5^\circ} = -1,32$	✓ ✓ answer/ antwoord	(2)	
3.2.1	$\cos 2x = 0,5$ $2x = 60^\circ$ $x = 30^\circ$	✓ 60° ✓ 30°	(2)	
3.2.2	$7 \sec x - 11 = 0$ $\sec x = \frac{11}{7}$ $\cos x = \frac{7}{11}$ $x = 50,5^\circ$	✓ $\sec x$ ✓ $\cos x$ ✓ answer/antwoord	(3)	
3.3	$\operatorname{opp}^2 = 4^2 - 3^2$ $\operatorname{opp} = \sqrt{7}$ $\therefore \tan x = \frac{\sqrt{7}}{3}$		✓ opp/teenoorg. ✓ diagram/ diagram ✓ answer/antwoord	(3)
3.4	$\operatorname{hyp}^2 = 6^2 + 8^2$ $\operatorname{hyp} = 10$ $\sec \theta - \operatorname{cosec} \theta$ $= \frac{10}{-8} - \frac{10}{-6}$ $= \frac{5}{12}$		✓ hyp/skuinssy ✓ quadr/kwadr ✓ - 8 and/en - 6 ✓ substitution/ vervanging ✓ answer/antwoord	(5)

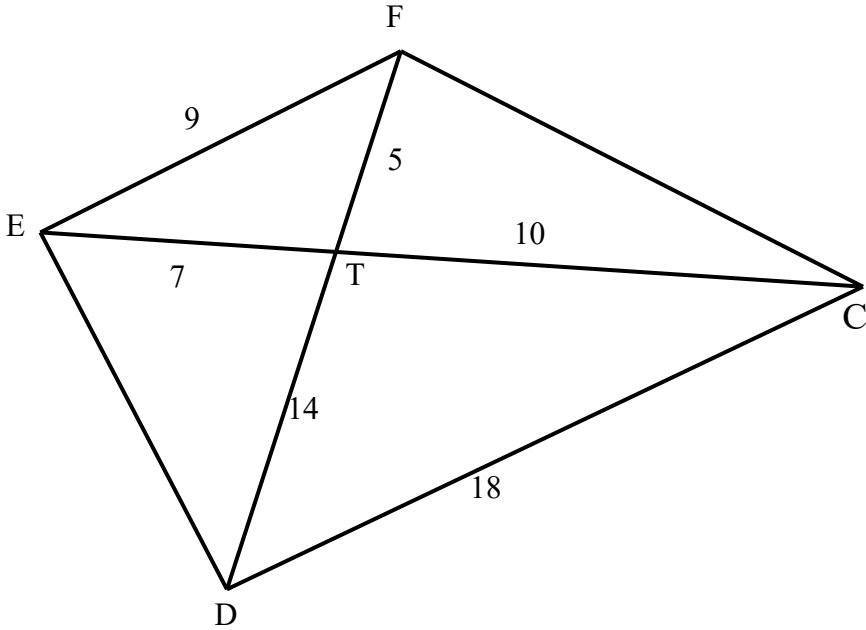
3.5	$\sin 30^\circ = \frac{x}{1250}$ $x = 625$	<p>A</p> 	<p>✓ correct ratio/ korrekte verhoud.</p> <p>✓ answer/antwoord</p>	(2)
				[21]

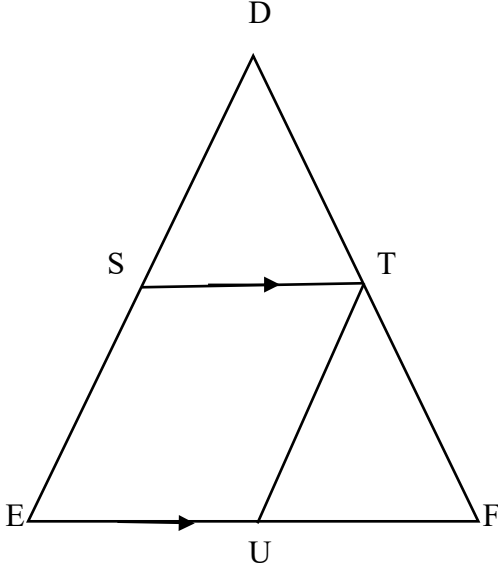

QUESTION 4 / VRAAG 4

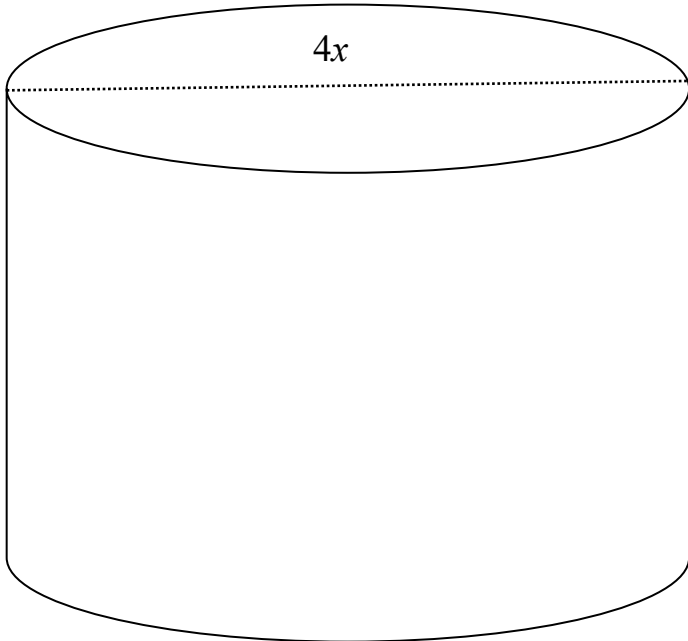
4.1.		<p>✓ (0;0)</p> <p>✓ shape/vorm</p> <p>✓ period/periode</p> <p>✓ amplitude</p>	(4)	
4.2	Amplitude of/van $f = \infty$	✓ answer / antwoord	(1)	
4.3	Period of/Periode van g is 180°	✓ answer / antwoord	(1)	
4.4.1	$90^\circ < x < 180^\circ$ and/en $270^\circ < x < 360^\circ$	✓ 1 st int/1 ^{ste} int ✓ 2 nd int/2 ^{de} int	(2)	
4.4.2	$90^\circ < x < 180^\circ$	✓endpt. / eindpt. ✓notation / notasie	(2)	
4.5	Range of / Waardeversameling van $k(x)$ if / as $k(x) = g(x) - 1$ $-2 \leq y \leq -1$	✓endpt. / eindpt. ✓notation / notasie	(2)	
				[12]

QUESTION 5/VRAAG 5		
5.1		
	<p>BD is common / <i>gemeen</i></p> <p>$\hat{B}_1 = \hat{D}_2$ (alt / <i>verwisselende</i> \angle, AB // CD)</p> <p>$\hat{B}_2 = \hat{D}_1$ (alt / <i>verwisselende</i> \angle, BC // AD)</p> <p>$\therefore \triangle ABD \equiv \triangle CDB$ (\angle, \angle, S)</p> <p>$\therefore AB = CD$ and / <i>en</i> $AD = BC$ ($\equiv \Delta$'s / <i>e</i>)</p>	<p>✓ common / <i>gemeen</i></p> <p>✓ SR</p> <p>✓ SR</p> <p>✓ \angle, \angle, S</p>
		(4)
5.2		
5.2.1	<p>$5x + 18^\circ = 7x - 30^\circ$ (opposite \angle's of a parallelogram / <i>teenoorste</i> \anglee van 'n <i>parallelogram</i>)</p> <p>$-2x = -30^\circ - 18^\circ$ $-2x = -48^\circ$ $x = 24^\circ$</p>	<p>✓ SR</p> <p>✓</p> <p>- 2x</p> <p>✓</p> <p>- 48°</p> <p>✓</p> <p>Ans. / <i>Antw.</i> = 24°</p>
		(4)

5.2.2	$5(24^\circ) + 18^\circ + 4y = 180^\circ$ (Co-int \angle 's / <i>Ko-binne \angle'e</i> $LM \parallel KN$) $4y = 180^\circ - 138^\circ$ $y = 10,5^\circ$	\checkmark SR \checkmark $4y = 42^\circ$ \checkmark Answer / <i>Antw.</i> $= 10,5^\circ$	(3)
5.3			
	$\hat{BCD} = 124^\circ$ (opp angles of parallelogram are equal / <i>teenoorste \anglee van 'n parallelogram</i>) $\hat{BCE} = 56^\circ$ (angles on str line / <i>\anglee op 'n reguit lyn</i>) $\hat{BCE} = \hat{E}$ (base \angle 's of isosceles triangle / <i>teenoorste \anglee van 'n parallelogram</i>) $x = 180^\circ - (56^\circ + 56^\circ)$ (angles of a triangle) $= 68^\circ$ $\hat{DEF} = 56^\circ$ $\therefore y = 34^\circ$ (angles of a triangle)	\checkmark SR \checkmark S \checkmark S \checkmark $x = 68^\circ$ \checkmark $\hat{DEF} = 56^\circ$ \checkmark $y = 34^\circ$	(6)

<p>5.4</p>			
<p>5.4.1</p>	<p>In $\triangle FTE$ and / en $\triangle CTD$:</p> $\frac{FT}{TC} = \frac{ET}{TD} = \frac{EF}{CD} = \frac{1}{2}$ <p>$\therefore \triangle FTE \sim \triangle CTD$ (sides are in proportion / sye is eweredig)</p>	<p>✓ ratio / verhouding</p> <p>✓ ratio / verhouding</p> <p>✓ R</p>	<p>(3)</p>
<p>5.4.2</p>	<p>$\hat{F}EC = \hat{T}DC$ ()</p> <p>But / Maar $\hat{D}FC = \hat{T}DC$ (given / gegee)</p> <p>$\therefore \hat{F}EC = \hat{T}DC = \hat{T}FC$</p>	<p>✓ R</p> <p>✓ given / gegee</p> <p>✓ conclusion / gevolgtrekking</p>	<p>(3)</p>
<p>5.5.1</p>	<p>$AE = EC$ and / en $DE = \frac{1}{2} BC$</p>	<p>✓ S</p>	<p>(1)</p>

5.5.2			
	<p> $ST \parallel EF$ (given / <i>gegee</i>) $DT = TF$ (converse of midpoint theorem / <i>omgekeerde van middelpuntstelling</i>) $\therefore TU \parallel SE$ (converse of midpoint theorem / <i>omgekeerde van middelpuntstelling</i>) \therefore SEUT is a parallelogram / <i>'n parallelogram</i> (both pairs of opposite sides \parallel/beide pare teenoorstaande sye is \parallel) </p>	<p> $\checkmark\checkmark$SR \checkmark R \checkmark R </p>	(4)
			[28]

QUESTION 6 / VRAAG 6			
			
<p>TSA of an open cylinder / <i>TBO van 'n oop silinder</i></p> $= \pi \times r^2 + 2 \times \pi \times r \times h$ $32\pi = \pi \times (2x)^2 + 2 \times \pi \times 2x \times h$ $h = \frac{32\pi - 4\pi x^2}{4\pi x}$ $h = \frac{8}{x} - x$	<p>✓ formula / <i>formule</i></p> <p>✓ subst / <i>vervanging</i></p> <p>✓ Answer of <i>h</i> in terms of <i>x</i> / <i>Antwoord van h in terme van x</i></p>	(3)	
			[3]
TOTAL/TOTAAL:			100