



# education

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Department:  
Education  
**REPUBLIC OF SOUTH AFRICA**

**NATIONAL  
SENIOR CERTIFICATE**

**GRADE 10**

**WISKUNDE VS2**

**NOVEMBER 2006**

**Hierdie memorandum bestaan uit 8 bladsye.**

<p>1.1.1 (a) <math>AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \checkmark</math>  <math>= \sqrt{(1+2)^2 + (3+2)^2} \checkmark</math>  <math>= \sqrt{34} \checkmark</math></p>	<p><math>\checkmark</math> Formule  <math>\checkmark</math> substitusie  <math>\checkmark</math> antwoord                  (3)</p>
<p>(b) <math>BC = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}</math>  <math>= \sqrt{(6-1)^2 + (0-3)^2} \checkmark</math>  <math>= \sqrt{34} \checkmark</math></p>	<p><math>\checkmark</math> substitusie  <math>\checkmark</math> antwoord                  (2)</p>
<p>(c) <math>AC = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}</math>  <math>= \sqrt{(6+2)^2 + (0+2)^2} \checkmark</math>  <math>= \sqrt{68} \checkmark</math></p>	<p><math>\checkmark</math> substitusie  <math>\checkmark</math> antwoord                  (2)</p>
<p>1.1.2 <math>AB^2 = 34 \checkmark</math>  <math>BC^2 = 34</math>  <math>AC^2 = 68 \checkmark</math>  <math>AB^2 + BC^2 = AC^2 \checkmark</math>  <math>\Rightarrow \hat{B} = 90^\circ</math>  <math>\Rightarrow \Delta ABC</math> is 'n reghoekige driehoek</p>	<p><math>\checkmark AB^2 = 34</math>  <math>\checkmark 68</math>  <math>\checkmark AB^2 + BC^2 = AC^2</math>                  (3)</p>
<p>OF</p> <p><math>m_{AB} = \frac{3+2}{1+2} = \frac{5}{3} \checkmark</math>  <math>m_{BC} = \frac{3-0}{1-6} = -\frac{3}{5} \checkmark</math>  <math>m_{AB} \cdot m_{BC} = \frac{5}{3} \times \frac{-3}{5} = -1 \checkmark</math>  <math>\therefore AB \perp BC</math></p>	<p><math>\checkmark m_{AB}</math>  <math>\checkmark m_{BC}</math>  <math>\checkmark m_{AB} \cdot m_{BC} = -1</math>                  (3)</p>
<p>1.1.3 <math>E = \left( \frac{x_A + x_B}{2}; \frac{y_A + y_B}{2} \right) \checkmark</math></p>	<p><math>\checkmark</math> formule</p>

$$E = \left( \frac{-2+1}{2}; \frac{-2+3}{2} \right)$$

$$E = \left( -\frac{1}{2}; \frac{1}{2} \right) \checkmark$$

$$D = \left( \frac{x_A + x_C}{2}; \frac{y_A + y_C}{2} \right)$$

$$D = \left( \frac{-2+6}{2}; \frac{-2+0}{2} \right)$$

$$D = (2; -1) \checkmark$$

$$m_{DE} = \frac{y_2 - y_1}{x_2 - x_1} \checkmark$$

$$= \frac{-1 - \frac{1}{2}}{2 + \frac{1}{2}} \checkmark$$

$$= \frac{-\frac{3}{2}}{\frac{5}{2}}$$

$$= -\frac{3}{5} \checkmark$$

$$m_{BC} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{0-3}{6-1}$$

$$= -\frac{3}{5} \checkmark$$

$$\Rightarrow m_{DE} = m_{BC} \checkmark$$

Dus is DE parallel aan BC.

✓ koordinate E

✓ koordinate D

✓ formule

✓ substitusie

✓ antwoord van  $m_{DE}$ .

✓ antwoord van  $m_{BC}$

✓ afleiding

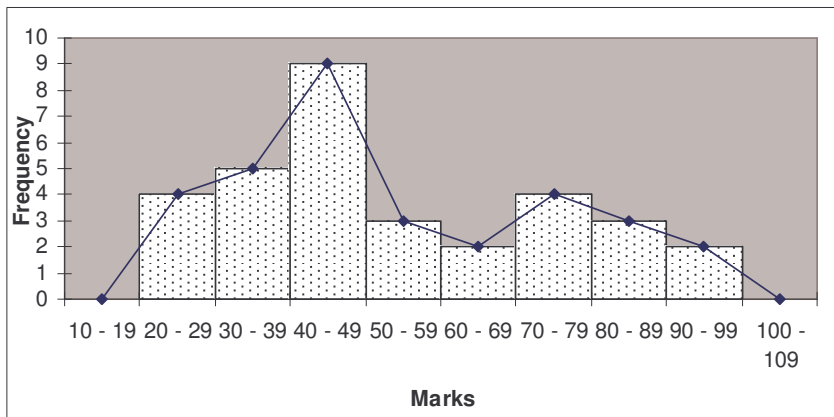
(8)

$$1.2 \quad m_{CD} = \frac{3}{4}$$

$\therefore m_{AB} = -\frac{4}{3}$ $\frac{y - (-5)}{x - 3} = -\frac{4}{3}$ $3y + 15 = -4x + 12$ $4x = -3y - 3$ $x = \frac{-3y - 3}{4}$	<p>√ omgekeerde en verandering van teken</p> <p>√ substitusie</p> <p>√ gelykstelling van die gradient aan die omgekeerde waarde.</p> <p>√ oorkruis vermenigvuldiging</p> <p>√ antwoord</p> <p>(5) [23]</p>
<p>2.1 <math>A' (-1 ; -4)</math> √√ <math>C' (1 ; -2)</math> √√ <math>F' (3 ; -4)</math> √√</p> <p>2.2 <math>A' (6 ; 2)</math> √ <math>C' (4 ; 4)</math> √ <math>F' (2 ; 2)</math> √</p> <p>2.3 <math>A' (2 ; -6)</math> √√ <math>C' (4 ; -4)</math> √√ <math>F' (2 ; -2)</math> √√</p>	<p>√√ koördinate A'</p> <p>√√ koördinate C'</p> <p>√√ koördinate F'</p> <p>(6)</p> <p>√ x koördinate A'</p> <p>√ x koördinate C'</p> <p>√ x koördinate F'</p> <p>(3)</p> <p>√√ koördinate A'</p> <p>√√ koördinate C'</p> <p>√√ koördinate F'</p> <p>(6) [15]</p>
<p>3.1.1 <math>\frac{90^0}{360^0} = \frac{1}{4}</math> √</p> <p>3.1.2 <math>\frac{2}{5} \times 360^0</math> √ <math>= 144^0</math> √</p> <p>3.1.3 percentage burnt = <math>\frac{144}{360} \times 100</math> √</p>	<p>√ antwoord</p> <p>(1)</p> <p>√ berekening</p> <p>√ antwoord</p> <p>(2)</p>

<p style="text-align: center;"><math>= 40 \% \checkmark</math></p> <p>percentage re-cycled = <math>25 \% \checkmark</math></p> <p>Therefore percentage used for landfill</p> <p><math>= 100 - (40 + 25) = 35 \% \checkmark</math></p> <p>OR <math>360^0 - (90^0 + 144^0) \checkmark</math></p> <p><math>= 360^0 - 234^0</math></p> <p><math>= 126^0 \checkmark</math></p> <p>Therefore percentage used for landfill <math>= \frac{126}{360} \times 100 \checkmark</math></p> <p style="text-align: center;"><math>= 35 \% \checkmark</math></p>	<p><math>\checkmark</math> berekening <math>\checkmark</math> antwoord</p> <p><math>\checkmark</math> antwoord</p> <p><math>\checkmark</math> finale antwoord (4)</p> <p><math>\checkmark</math> berekening</p> <p><math>\checkmark</math> antwoord</p> <p><math>\checkmark</math> berekening <math>\checkmark</math> final antwoord (4)</p>																		
<p>3.2.1</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Punte interval</th> <th>Frekwensie</th> </tr> </thead> <tbody> <tr> <td><math>20 \leq \text{punt} &lt; 30</math></td> <td>4</td> </tr> <tr> <td><math>30 \leq \text{punt} &lt; 40</math></td> <td>5</td> </tr> <tr> <td><math>40 \leq \text{punt} &lt; 50</math></td> <td>9</td> </tr> <tr> <td><math>50 \leq \text{punt} &lt; 60</math></td> <td>3</td> </tr> <tr> <td><math>60 \leq \text{punt} &lt; 70</math></td> <td>2</td> </tr> <tr> <td><math>70 \leq \text{punt} &lt; 80</math></td> <td>4</td> </tr> <tr> <td><math>80 \leq \text{punt} &lt; 90</math></td> <td>3</td> </tr> <tr> <td><math>90 \leq \text{punt} &lt; 100</math></td> <td>2</td> </tr> </tbody> </table>	Punte interval	Frekwensie	$20 \leq \text{punt} < 30$	4	$30 \leq \text{punt} < 40$	5	$40 \leq \text{punt} < 50$	9	$50 \leq \text{punt} < 60$	3	$60 \leq \text{punt} < 70$	2	$70 \leq \text{punt} < 80$	4	$80 \leq \text{punt} < 90$	3	$90 \leq \text{punt} < 100$	2	<p>(4)</p> <p><math>\checkmark\checkmark\checkmark\checkmark</math> korrekte waardes in die tabel (5)</p>
Punte interval	Frekwensie																		
$20 \leq \text{punt} < 30$	4																		
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<p>3.2.2 gemiddeld <math>= \frac{1706}{32} \checkmark</math></p> <p><math>= 53,3 \checkmark</math></p>	<p><math>\checkmark</math> substitusie <math>\checkmark</math> antwoord (2)</p>																		
<p>3.2.3 21; 24; 27; 29; 33; 33; 36; 36; 39; 42; 42; 42; 42; 42; 45; 46; 49; 49; 53; 54; 55; 64; 66; 73; 76; 77; 79; 80; 83; 88; 90 ; 91</p> <p>mediaan = <math>\frac{46 + 49}{2} \checkmark</math></p> <p>mediaan = <math>47,5 \checkmark</math></p>	<p><math>\checkmark</math> gemiddeld van 16<sup>de</sup> en 17<sup>de</sup> getalle <math>\checkmark</math> antwoord (2)</p>																		
<p>3.2.4 <math>40 \leq \text{punt} &lt; 50 \checkmark\checkmark</math></p> <p>3.2.5 &amp;</p>	<p><math>\checkmark\checkmark</math> antwoord (2)</p>																		

3.2.6



3.2.5  
 ✓ skaal van x-as  
 ✓ skaal van y-as  
 ✓✓ korrekte grafiek  
 ✓ korrekte intervale  
 (5)

3.2.6  
 ✓ middelpunte  
 ✓ reguitlyne  
 ✓ lee intervale aan weerskante van die histogram  
 ✓ punte op x-as  
 (4)  
 [27]

4.1.1  $\sin 63^\circ = \frac{CD}{5} \checkmark$   
 $\Rightarrow CD = 5 \times \sin 63^\circ \checkmark$   
 $= 4.46 \text{ cm} \checkmark$

✓ sin verhouding  
 ✓ berekening  
 ✓ CD  
 (3)

4.1.2  $\cos 63^\circ = \frac{AD}{5} \checkmark$   
 $\Rightarrow AD = 5 \times \cos 63^\circ \checkmark$   
 $= 2.27 \text{ cm} \checkmark$

$\tan 33^\circ = \frac{CD}{BD} \checkmark$

$\tan 33^\circ = \frac{4.46}{BD}$

$BD = \frac{4.46}{\tan 33^\circ} \checkmark$

$= 6.87 \text{ cm} \checkmark$

$\therefore AB = 2.27 + 6.87 = 9.14 \text{ cm} \checkmark$

✓ cos verhouding  
 ✓ berekening  
 ✓ AD  
 ✓ tan verhouding  
 ✓ berekening  
 ✓ BD  
 ✓ AB  
 (7)

4.2  $\sin 30^\circ = \frac{h}{2.5} = 0.5 \checkmark$

$h = 0.5 \times 2.5 = 1.25 \text{ m} \checkmark$

$\text{Area } \Delta ABC = \frac{1}{2} \text{ basis} \times \text{hoogte} \checkmark$

✓ sin verhouding  
 ✓ h  
 ✓ area formule

$= \frac{1}{2} \times 10 \times 1,25$ $= 6,25 \text{ m}^2 \checkmark$ <p>4.3 <math>\frac{h}{45} = \tan 27^\circ \checkmark \checkmark</math></p> $h = 45 \times \tan 27^\circ \checkmark$ $h = 22.9 \text{ m} \checkmark$	$\checkmark$ finale antwoord (4)  $\checkmark$ $\tan 27^\circ$ $\checkmark$ verhouding  $\checkmark$ berekening $\checkmark$ antwoord  (4) [18]
<p>5.1 Area van regterkant oppervlak = <math>20 \times 96 = 1920 \text{ cm}^2 \checkmark</math></p> <p>Area van voorste oppervlak = <math>20 \times 48 = 960 \text{ cm}^2 \checkmark</math></p> <p>Area van basis = <math>96 \times 48 = 4608 \text{ cm}^2 \checkmark</math></p> <p>Totale oppervlak area</p> $= 4608 + (2 \times 1920) \checkmark + (2 \times 960) \checkmark$ $= 10368 \text{ cm}^2 \checkmark$ <p>5.2 <math>6 \times \text{middellyn} = 96 \text{ cm} \checkmark</math></p> <p>dus is die middellyn = <math>\frac{96}{6} = 16 \text{ cm} \checkmark</math></p> <p>die radius = <math>8 \text{ cm} \checkmark</math></p> <p>5.3 Volume van een konfytblik = <math>\pi r^2 h \checkmark</math></p> $= \pi \cdot (8)^2 \cdot (20) \checkmark$ <p>dus is die volume van 18 blikke = <math>18 \times \pi \cdot (8)^2 \cdot (20) \checkmark</math></p> $= 72382,3 \text{ cm}^3 \checkmark$ <p>ALTERNATIEF</p> <p>Volume van een konfytblik = <math>\pi r^2 h \checkmark</math></p>	$\checkmark$ area van regterkant oppervlak $\checkmark$ area van voorste oppervlak $\checkmark$ area van basis  $\checkmark$ twee maal regte kantste oppervlak $\checkmark$ twee maal voorste oppervlak $\checkmark$ finale antwoord (6)  $\checkmark$ die gebruik van die middellyn as lengte van kartondoos $\checkmark$ berekening  $\checkmark$ antwoord (3)  $\checkmark$ formule $\checkmark$ substitusie  $\checkmark$ vermenigvuldig met 18 $\checkmark$ antwoord (4)  $\checkmark$ formule

$= \frac{22}{7} \cdot (8)^2 \cdot (20) \checkmark$ <p>daarom is die volume van 18 blikke = <math>18 \times \frac{22}{7} \cdot (8)^2 \cdot (20) \checkmark</math></p> $= 72411,43 \text{ cm}^3 \checkmark$	$\checkmark$ substitusie $\checkmark$ vermenigvuldig met 18 $\checkmark$ antwoord (4)
<p>5.4 Volume van kartondoos = <math>L \times B \times H \checkmark</math></p> $= 96 \times 20 \times 48$ $= 92160 \text{ cm}^3 \checkmark$ <p>dus is die volume spasie in die doos = <math>92160 - 72382,3 \checkmark</math></p> $= 19777,7 \text{ cm}^3 \checkmark$	$\checkmark$ formule $\checkmark$ antwoord $\checkmark$ aftrek $\checkmark$ antwoord (4)
<p>ALTERNATIEF</p> <p>Volume van doos = <math>L \times B \times H \checkmark</math></p> $= 96 \times 20 \times 48$ $= 92160 \text{ cm}^3 \checkmark$ <p>daarom volume spasie in doos = <math>92160 - 72411,4 \checkmark</math></p> $= 19748,6 \text{ cm}^3 \checkmark$	$\checkmark$ formule $\checkmark$ antwoord $\checkmark$ aftrek $\checkmark$ antwoord (4) [17]