



Province of the
EASTERN CAPE
EDUCATION

Iphondo leMpuma Kapa: Isebe leMfundo
Provinsie van die Oos Kaap: Departement van Onderwys
Porafensie Ya Kapa Dotjahabele: Lefapha la Thuto

NATIONAL SENIOR CERTIFICATE

GRADE 12

JUNE 2026

MATHEMATICS P2

MARKS: 150

TIME: 3 hours



This question paper consists of 14 pages, including 1 information sheet and an answer book of 22 pages.

INSTRUCTIONS AND INFORMATION

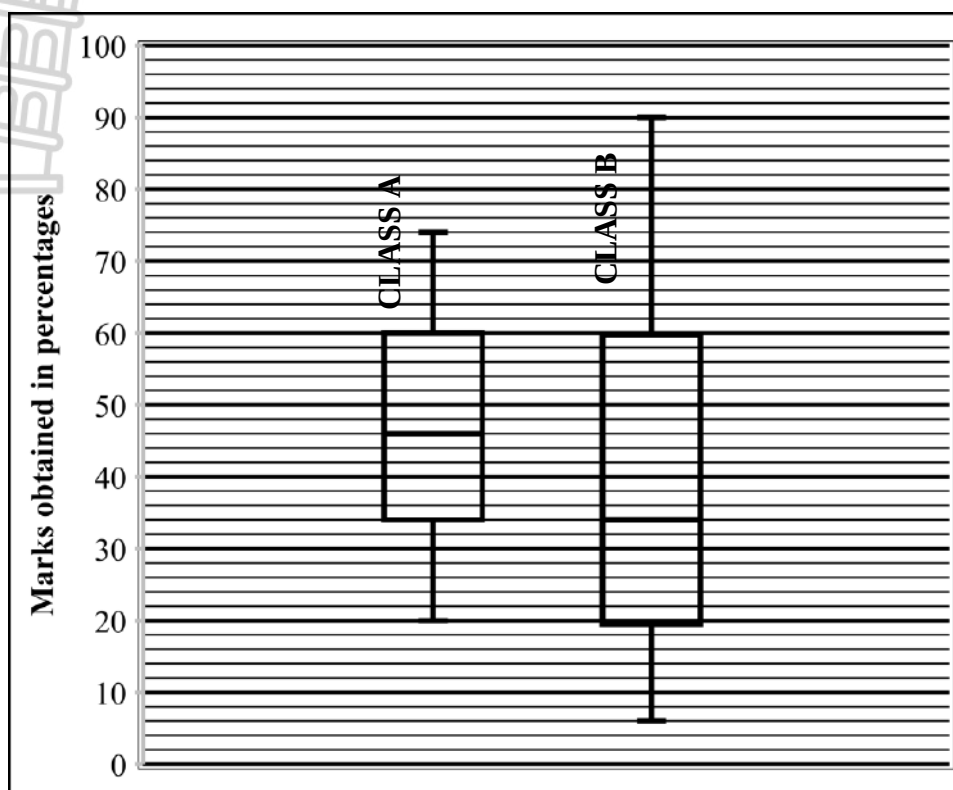
Read the following instructions carefully before answering the questions.

1. This question paper consists of 11 questions.
2. Answer ALL the questions in the SPECIAL ANSWER BOOK provided.
3. Clearly show ALL calculations, diagrams, graphs, etc. which you have used in determining the answers.
4. Answers only will NOT necessarily be awarded full marks.
5. You may use an approved scientific calculator (non-programmable and non-graphical), unless stated otherwise.
6. If necessary, round off answers to TWO decimal places, unless stated otherwise.
7. Diagrams are NOT necessarily drawn to scale.
8. An information sheet with formulae is included at the end of the question paper.
9. Write neatly and legibly.



QUESTION 1

The box and whisker plot below summarises the results obtained by CLASS A and CLASS B in a certain school.



- 1.1 Write down the median of **CLASS B**. (1)
- 1.2 What is common in **CLASS A** and **CLASS B**? (1)
- 1.3 Write down the range of **CLASS B**. (1)
- 1.4 Which class performed better between **CLASS A** and **CLASS B**? Justify your answer. (2)
- 1.5 Which class is having an outlier? (1)
- 1.6 Comment on the skewness of **CLASS A**. (1)
- 1.7 In **CLASS A**, 20 learners wrote the test. Learners who performed above 80% were awarded. Determine how many learners qualified for awards. (2)

[9]

QUESTION 2

On a particular day, 28 residents of a certain community went to a health care facility (clinic) for their medication. They were grouped according to their ages as represented in the table below.

2.1 Complete the table below.

Ages in years	Frequency	Cumulative frequency
$10 < x \leq 19$		1
$20 < x \leq 29$		3
$30 < x \leq 39$		6
$40 < x \leq 49$		10
$50 < x \leq 59$		16
$60 < x \leq 69$		23
$70 < x \leq 79$		27
$80 < x \leq 89$		28

(2)

2.2 Estimate the mean for the table above.

(3)

2.3 Write down the modal class.

(1)

2.4 Sketch the cumulative frequency graph (ogive) from the table above.

(3)

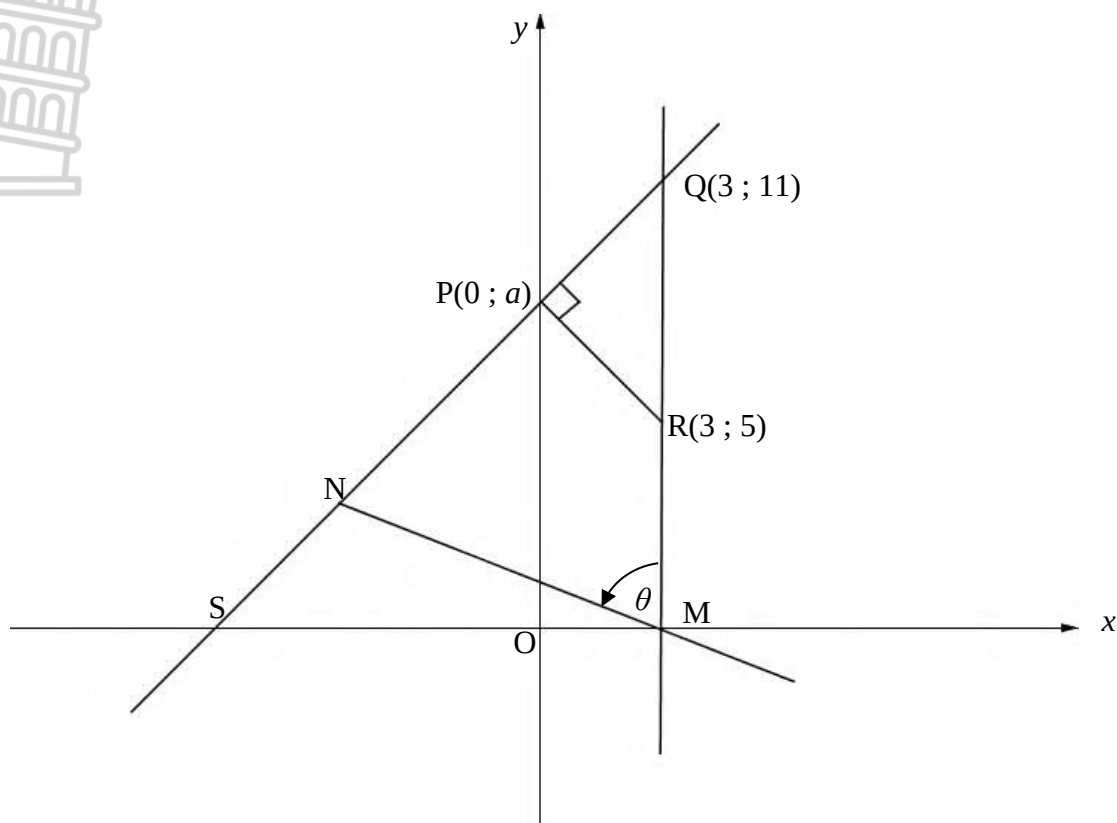
2.5 Determine how many people that were above 50 years went to a health care facility (clinic).

(1)

[10]

QUESTION 3

In the diagram below, MQ is parallel to the y -axis. PR is perpendicular to QS . N lies on QS . MS lie on the x -axis. Area of triangle MQN is 45,38 square units.

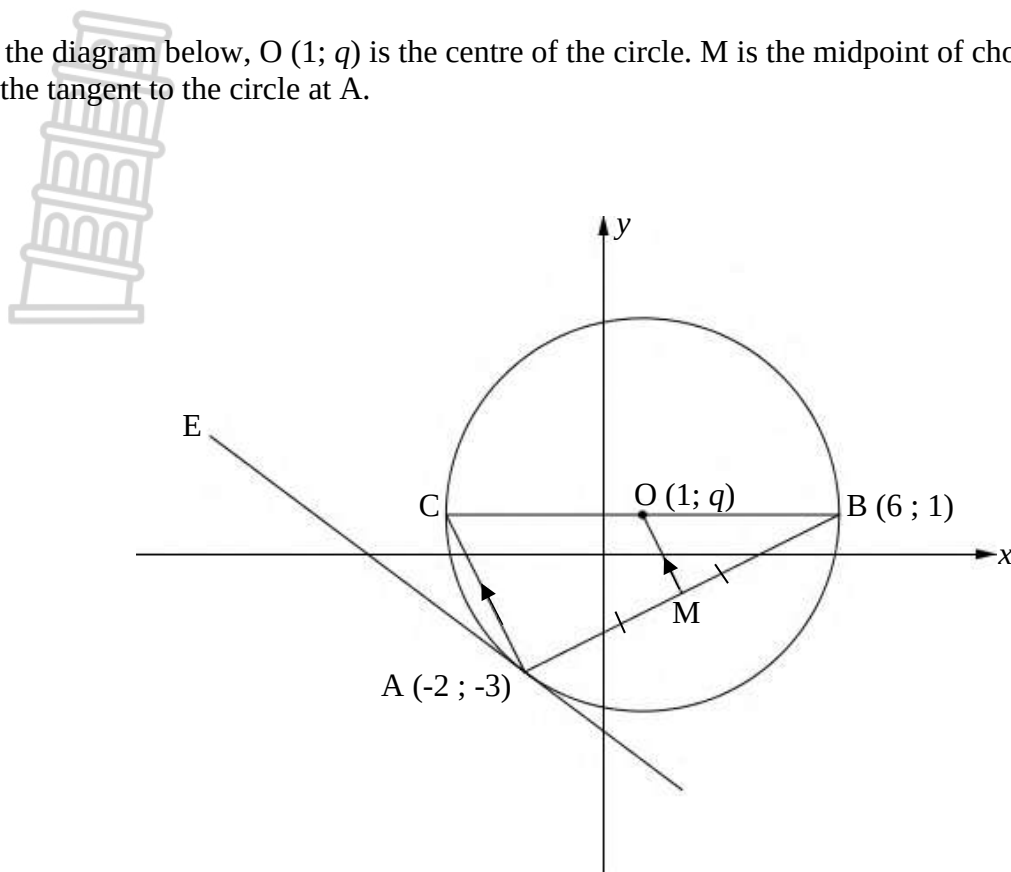


- 3.1 Write down the coordinates of M . (1)
- 3.2 Write down the length of QM . (1)
- 3.3 Determine the gradient of PQ in terms of a . (2)
- 3.4 Show that the value of $a = 8$. (5)
- 3.5 Determine the equation of SQ in the form $y = mx + c$. (3)
- 3.6 Show that $\triangle SMQ$ is isosceles. (3)
- 3.7 If it is further given that, $y = mx + 1$ is the equation of MN , determine the size of θ . (4)
- 3.8 Determine the length of MN . (3)

[22]

QUESTION 4

In the diagram below, O (1; q) is the centre of the circle. M is the midpoint of chord AB. EA is the tangent to the circle at A.

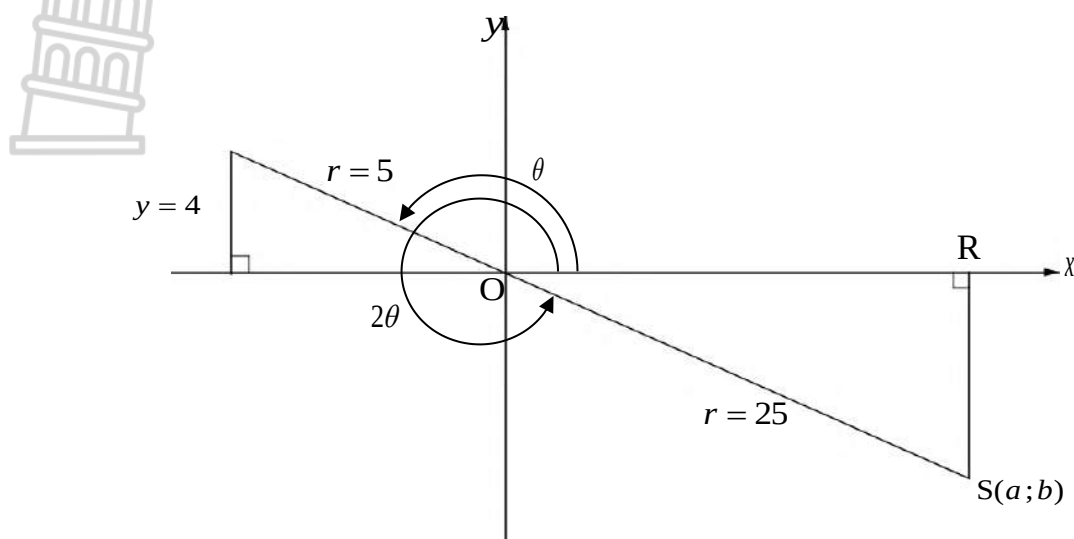


- 4.1 Calculate the length of AB. (2)
- 4.2 If it is given that $AC = 2\sqrt{5}$, write down the length of OM. (1)
- 4.3 Write down the size of $\angle OMB$. (1)
- 4.4 Determine the value of q. (3)
- 4.5 Calculate gradient of AO if q = 1. (2)
- 4.6 Determine the equation of the circle with centre O in the form $(x - a)^2 + (y - b)^2 = r^2$. (2)
- 4.7 Determine the equation of AE. (3)
- 4.8 For which value(s) of t will $y = -\frac{3}{4}x + t$ be a secant to the circle? (2)
- 4.9 Does $\left(-\frac{22}{3}; 1\right)$ lie inside or outside the circle? Justify your answer. (3)

[19]

QUESTION 5

In the diagram below, $\sin \theta = \frac{4}{5}$ where $90^\circ < \theta < 180^\circ$ and point $S(a; b)$ is in the 4th quadrant with reflex angle where $180^\circ < 2\theta < 360^\circ$.



5.1 Determine, **without using a calculator**, the value of:

5.1.1 $\cos \theta$ (2)

5.1.2 $\cos(90^\circ - \theta)$ (2)

5.1.3 Hence or otherwise, determine the coordinates of S. (5)

5.2 Simplify to one trigonometric ratio of θ .

$$\frac{\cos(\theta - 360^\circ) \cdot \sin(180^\circ + \theta)}{\cos^2 \theta + \sin \theta \cos(90^\circ + \theta) + \sin^2 \theta}$$

(6)
[15]

QUESTION 6

6.1 Given: $\frac{16 \sin^2 A \cdot \cos A}{2 \sin^3 A - \sin 2A \cos A} = -4 \tan 2A$

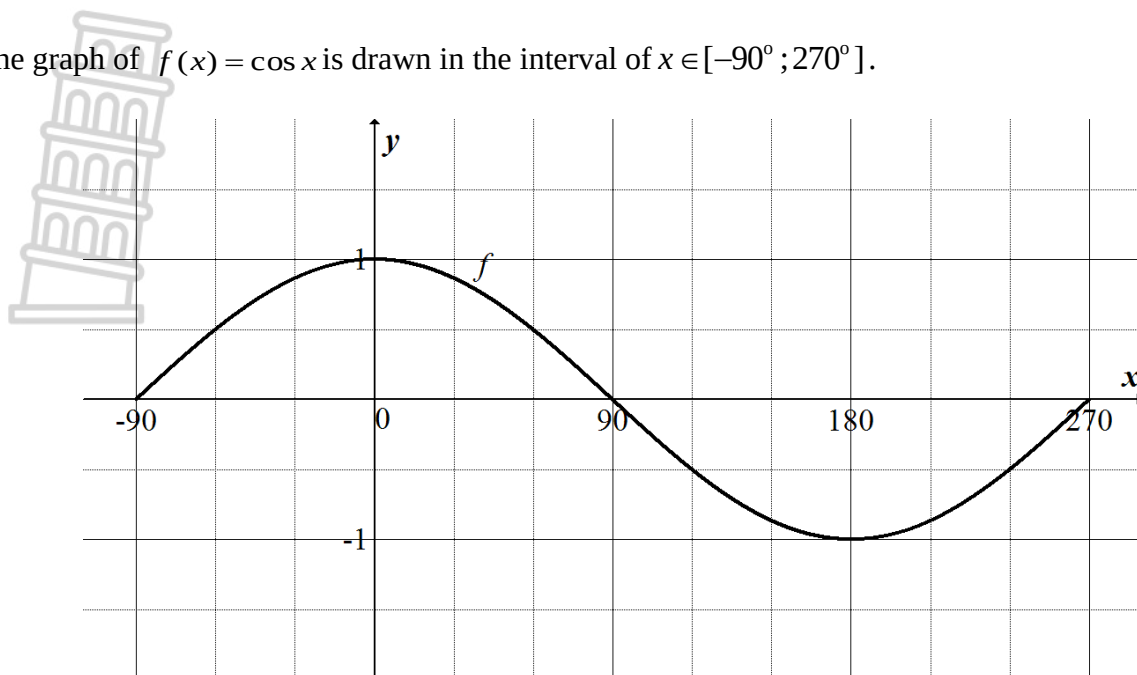
6.1.1 Prove the above identity. (4)

6.1.2 Hence, or otherwise, write down the domain of the above identity in the interval of $A \in [-90^\circ; 90^\circ]$ (2)

6.2 Determine the general solution of $\sin(30^\circ - 2x) = -\sin^2 x + \cos^2 x$ (7)
[13]

QUESTION 7

The graph of $f(x) = \cos x$ is drawn in the interval of $x \in [-90^\circ; 270^\circ]$.



7.1 Write down the range of $f(x) - 2$. (2)

7.2 On the same set of axes draw the graph of $g(x) = \sin(x - 30^\circ)$ in the interval of $x \in [-90^\circ; 270^\circ]$ (3)

7.3 For which values of x is:

7.3.1 $f(x) - g(x) = \frac{3}{2}$ (2)

7.3.2 $2 - 4\cos^2 \frac{1}{2}x = \sqrt{3}\sin x - \cos x$ (4)

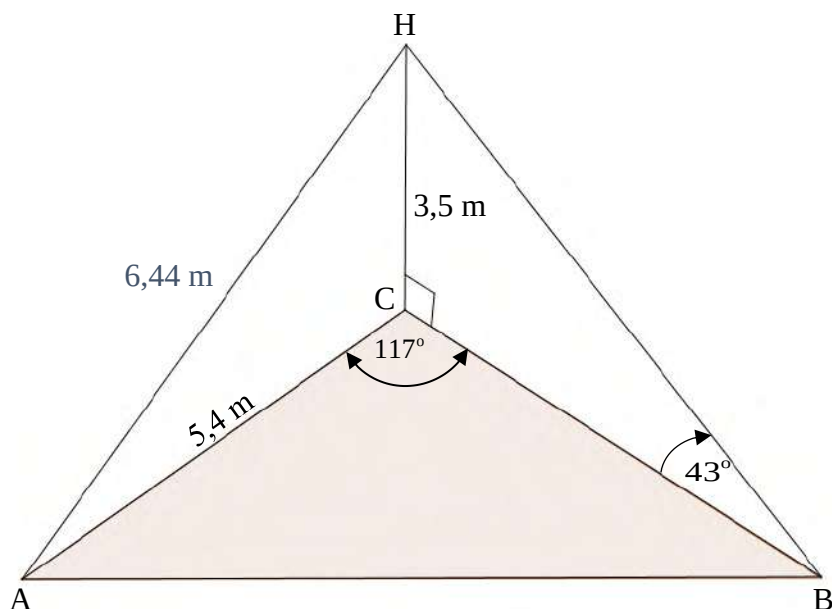
7.3.3 $f'(x + 10^\circ) < 0$ (2)

[13]



QUESTION 8

In the diagram below, HC is the vertical pole mounted on the ground ACB. $HC = 3,5 \text{ m}$, $AC = 5,4 \text{ m}$, $\hat{ACB} = 117^\circ$, $AH = 6,44 \text{ m}$ and $\hat{CBH} = 43^\circ$.



8.1 Determine the length of BC. (2)

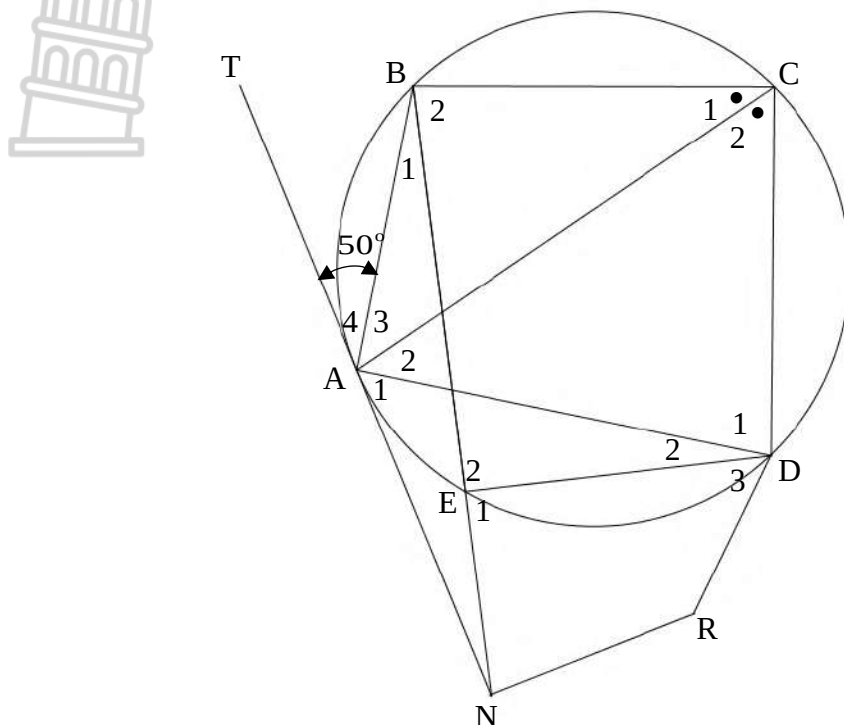
8.2 If it is further given that $AB = 7,85$; calculate the size of $\hat{HAB}$ (5)

8.3 Determine the area of $\triangle HAB$. (3)

[10]

QUESTION 9

In the diagram below, points A, B, C, D and E lie on the circumference of the circle. TAN is a tangent to the circle at point A. $\hat{A}_4 = 50^\circ$ and $\hat{C}_1 = \hat{C}_2$.

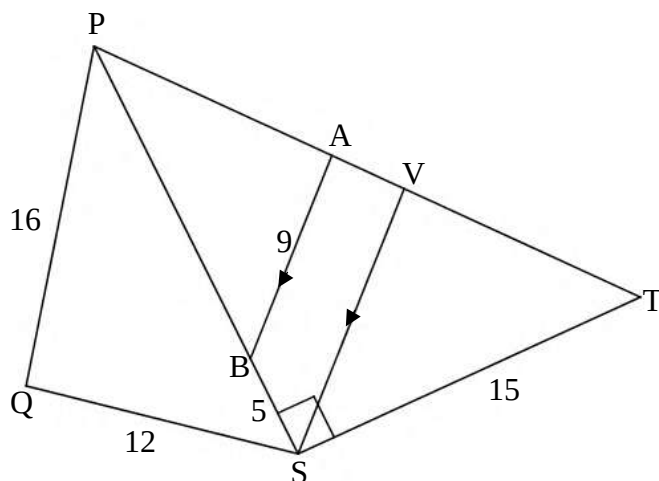


- 9.1 Determine, with reasons, THREE other angles each equal to 50° . (4)
- 9.2 Prove that point E is the centre of the circle that passes through points A, N, R and D. (4)
- 9.3 Determine the size of $\hat{R}$. (2)
- 9.4 Give a reason why $AB = AD$. (1)

[11]

QUESTION 10

In the diagram below, $\triangle PQS$ and $\triangle PST$ are drawn. $AB \parallel VS$ and $\angle PST = 90^\circ$. $\frac{AV}{PV} = \frac{1}{4}$,
 $PQ = 16$ units, $ST = 15$ units, $BS = 5$ units, $AB = 9$ units, $QS = 12$ units and $VT = AB$.



10.1 Determine the length of PB. (3)

10.2 If it is further given that $\triangle PAB \sim \triangle PVS$, prove that $\triangle PQS \sim \triangle SVT$. (6)

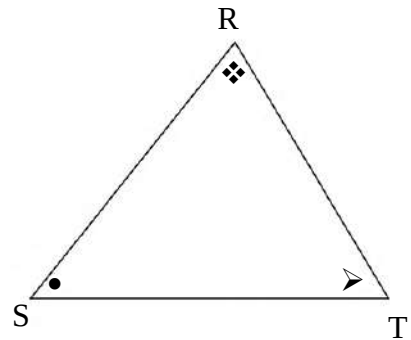
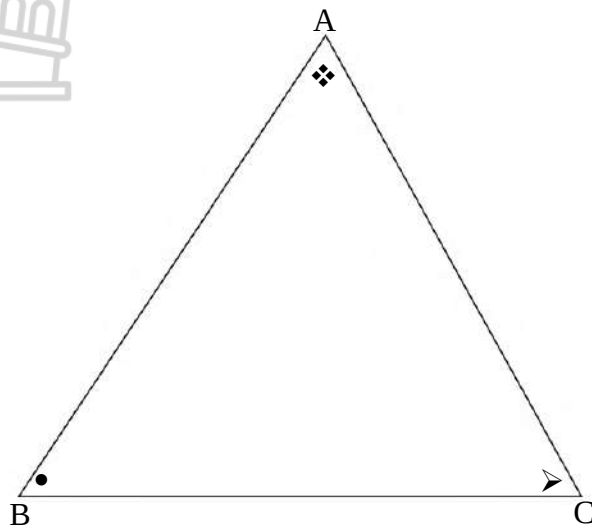
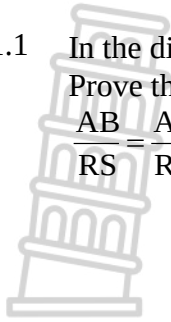
[9]

QUESTION 11

11.1 In the diagram below, $\hat{A} = \hat{R}$, $\hat{B} = \hat{S}$ and $\hat{C} = \hat{T}$.

Prove the theorem which states that equiangular triangles have equal ratios, that is:

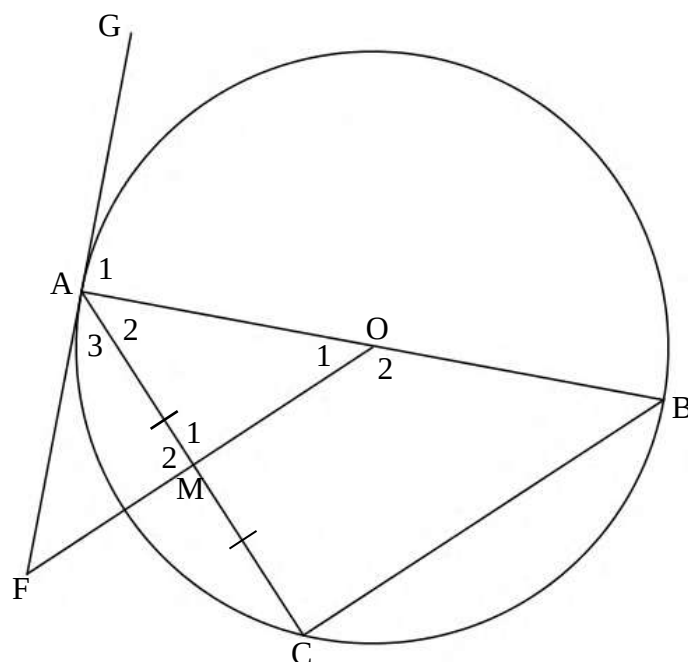
$$\frac{AB}{RS} = \frac{AC}{RT}.$$



(6)



- 11.2 In the diagram below, O is the centre of the circle. GAF is the tangent at A. M is the midpoint of chord AC. CB is a chord. OM is extended to F.



Prove that:

11.2.1 $FO \parallel CB$ (4)

11.2.2 $\triangle MAF \parallel \triangle CBA$ (4)

11.2.3 $AB^2 - BC^2 = 2BC \times MF$ (5)

[19]

TOTAL: 150



INFORMATION SHEET: MATHEMATICS

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

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

$$A = P(1 - ni)$$

$$A = P(1 - i)^n$$

$$A = P(1 + i)^n$$

$$F = \frac{x[(1+i)^n - 1]}{i}$$

$$P = \frac{x[1 - (1+i)^{-n}]}{i}$$

$$T_n = a + (n-1)d$$

$$S_n = \frac{n}{2}(2a + (n-1)d)$$

$$T_n = ar^{n-1}$$

$$S_n = \frac{a(r^n - 1)}{r - 1}; \quad r \neq 1$$

$$S_\infty = \frac{a}{1-r}; \quad -1 < r < 1$$

$$f'(x) = \lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$$

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$M\left(\frac{x_1 + x_2}{2}; \frac{y_1 + y_2}{2}\right)$$

$$y = mx + c \quad y - y_1 = m(x - x_1)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \tan \theta$$

$$(x-a)^2 + (y-b)^2 = r^2$$

$$\text{In } \triangle ABC: \frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$\text{area } \triangle ABC = \frac{1}{2} ab \sin C$$

$$\sin(\alpha + \beta) = \sin \alpha \cos \beta + \cos \alpha \sin \beta$$

$$\sin(\alpha - \beta) = \sin \alpha \cos \beta - \cos \alpha \sin \beta$$

$$\cos(\alpha + \beta) = \cos \alpha \cos \beta - \sin \alpha \sin \beta$$

$$\cos(\alpha - \beta) = \cos \alpha \cos \beta + \sin \alpha \sin \beta$$

$$\cos 2\alpha = \begin{cases} \cos^2 \alpha - \sin^2 \alpha \\ 1 - 2\sin^2 \alpha \\ 2\cos^2 \alpha - 1 \end{cases}$$

$$\sin 2\alpha = 2\sin \alpha \cos \alpha$$

$$\bar{x} = \frac{\sum x}{n} \quad \sigma^2 = \frac{\sum (x_i - \bar{x})^2}{n}$$

$$P(A) = \frac{n(A)}{n(S)}$$

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

$$\hat{y} = a + bx$$

$$b = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sum (x - \bar{x})^2}$$



LEARNER'S NAME:

LEERDER NAAM:

GRADE/GRAAD: 12

**NATIONAL/NASIONALE
 SENIOR
 CERTIFICATE/SERTIFIKAAT**
GRADE 12/GRAAD 12
JUNE/JUNIE 2026
**MATHEMATICS P2/WISKUNDE V2
 SPECIAL ANSWER BOOK/SPEZIALE ANTWOORDEBOEK**

Marker/Merker				Moderator's Initials / Moderator se paraaf											
Question Vraag	Mark Punt			Initial Parafeer	Marks Punte	S M	Marks Punte	D M	Marks Punte	P M	Marks Punte	NM			
1															
2															
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8															
9															
10															
11															
TOTAL TOTAAL															

This special answer book consists of 22 pages. /
 Hierdie spesiale antwoordeboek bestaan uit 22 bladsye.

QUESTION/VRAAG 1

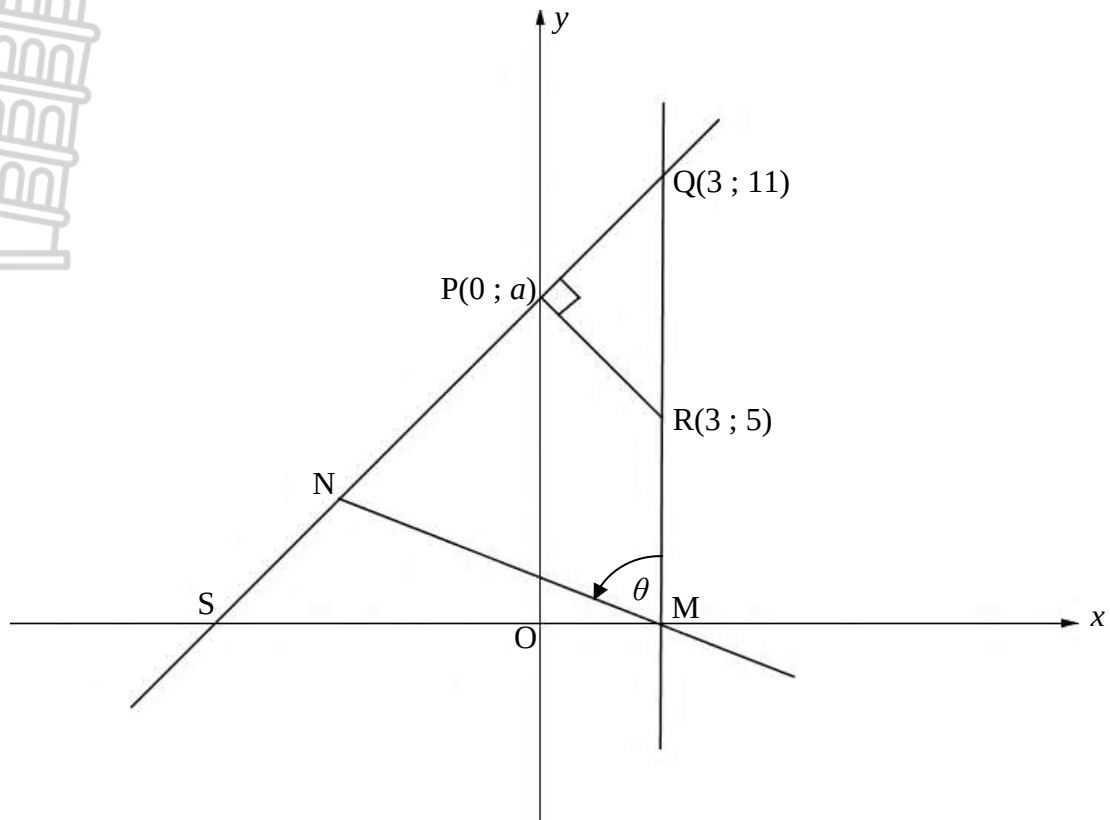
	Solution/Oplossing	Marks/ Punte
1.1		(1)
1.2		(1)
1.3		(1)
1.4		(2)
1.5		(1)
1.6		(1)
1.7		(2)
		[9]



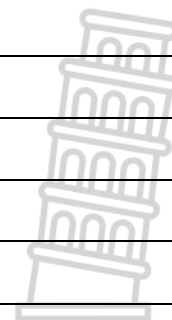
QUESTION/VRAAG 2

	Solution/Oplossing	Marks/ Punte																											
2.1	<table><tr><th>Ages in years <i>Ouderdom in jare</i></th><th>Frequency <i>Frekwensie</i></th><th>Cummulative Frequency <i>Kummulatiewe Frekwensie</i></th></tr><tr><td>$10 < x \leq 19$</td><td></td><td>1</td></tr><tr><td>$20 < x \leq 29$</td><td></td><td>3</td></tr><tr><td>$30 < x \leq 39$</td><td></td><td>6</td></tr><tr><td>$40 < x \leq 49$</td><td></td><td>10</td></tr><tr><td>$50 < x \leq 59$</td><td></td><td>16</td></tr><tr><td>$60 < x \leq 69$</td><td></td><td>23</td></tr><tr><td>$70 < x \leq 79$</td><td></td><td>27</td></tr><tr><td>$80 < x \leq 89$</td><td></td><td>28</td></tr></table>	Ages in years <i>Ouderdom in jare</i>	Frequency <i>Frekwensie</i>	Cummulative Frequency <i>Kummulatiewe Frekwensie</i>	$10 < x \leq 19$		1	$20 < x \leq 29$		3	$30 < x \leq 39$		6	$40 < x \leq 49$		10	$50 < x \leq 59$		16	$60 < x \leq 69$		23	$70 < x \leq 79$		27	$80 < x \leq 89$		28	(2)
Ages in years <i>Ouderdom in jare</i>	Frequency <i>Frekwensie</i>	Cummulative Frequency <i>Kummulatiewe Frekwensie</i>																											
$10 < x \leq 19$		1																											
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$30 < x \leq 39$		6																											
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$50 < x \leq 59$		16																											
$60 < x \leq 69$		23																											
$70 < x \leq 79$		27																											
$80 < x \leq 89$		28																											
2.2	<table><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr><tr><td></td></tr></table>							(3)																					
2.3		(1)																											
2.4	Cummulative Frequency graph/ Ogive <i>Kummulatiewefrekwensie-grafiek / Ogief</i> Cummulative frequency <i>Kummulatiewe frekwensie</i> Ages in years / <i>Ouderdom in jare</i>	(3)																											
2.5	<table><tr><td></td></tr><tr><td></td></tr></table>			(1)																									
		[10]																											

QUESTION/VRAAG 3



	Solution/Oplossing	Marks/ Punte
3.1		(1)
3.2		(1)

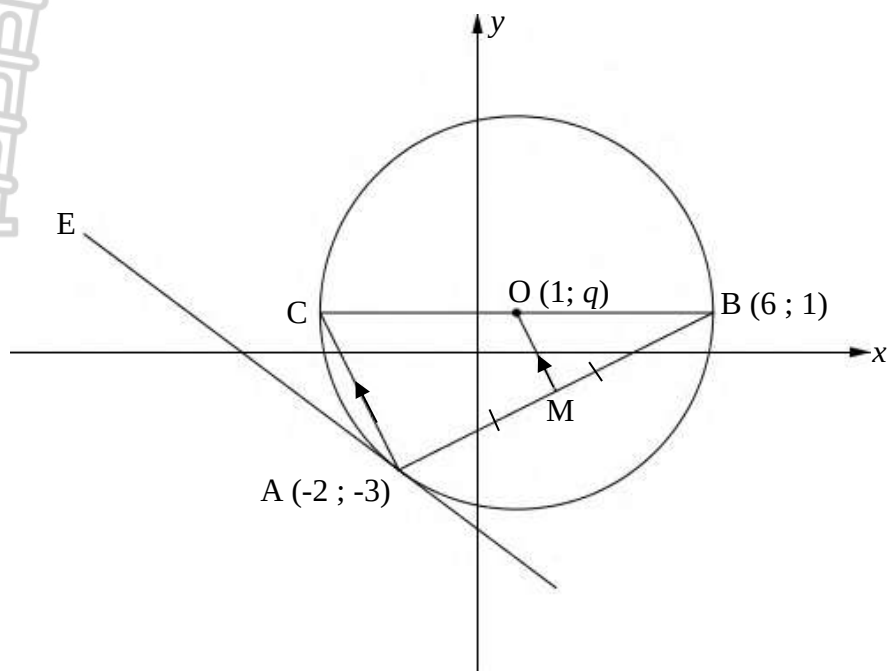


3.3		(2)
3.4		(5)
3.5		(3)
3.6		(3)
3.7		(4)

3.8		(3)
		[22]



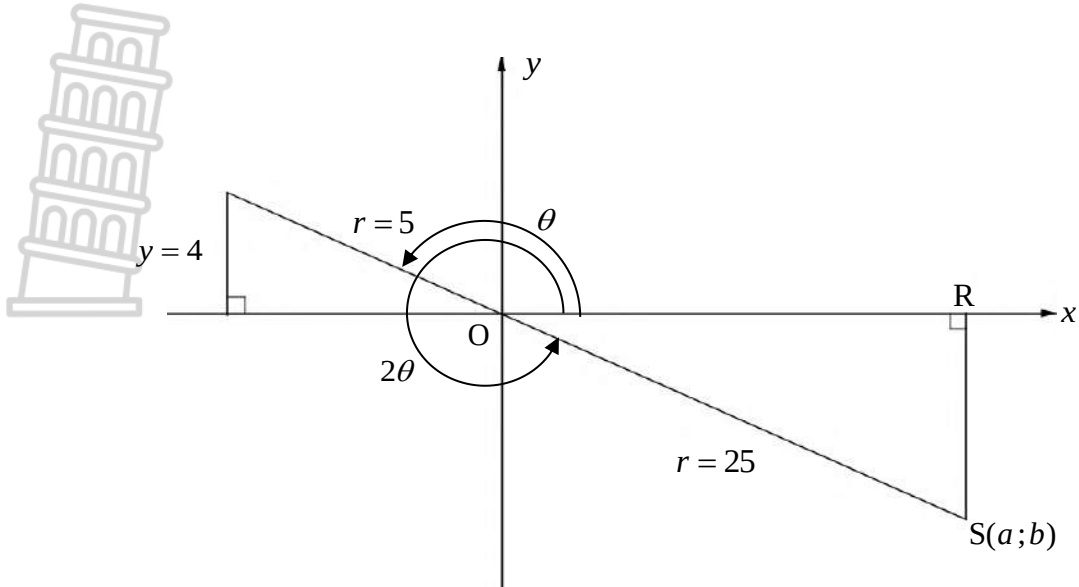
QUESTION/VRAAG 4



	Solution/Oplossing	Marks/ Punte
4.1		(2)
4.2		(1)
4.3		(1)
4.4		(3)

4.5		(2)
4.6		(2)
4.7		(3)
4.8		(2)
4.9		(3)
		[19]

QUESTION/VRAAG 5



	Solution/Oplissing	Marks/ Punte
5.1.1		(2)
5.1.2		(2)
5.1.3		(5)

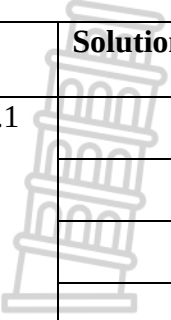
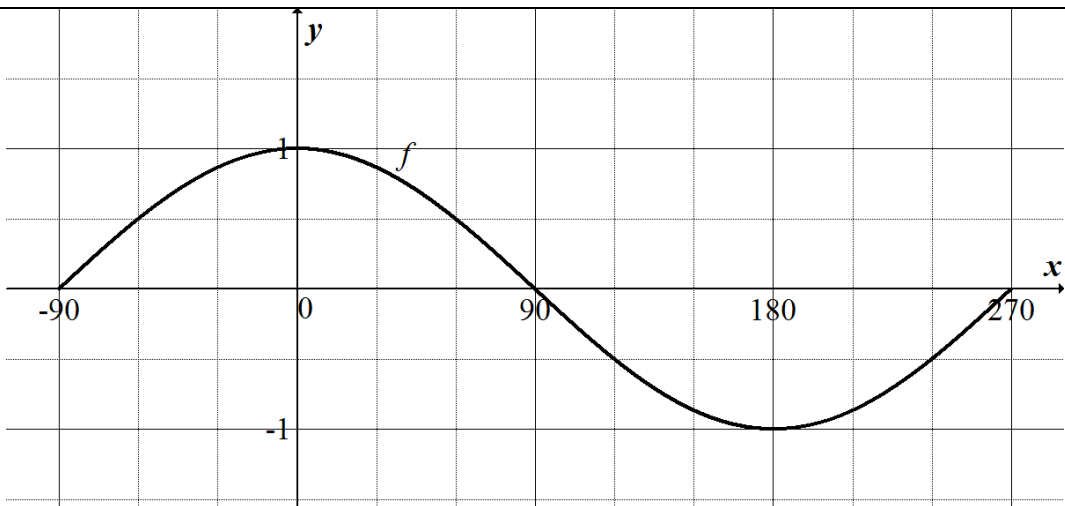
5.2		(6)
		[15]



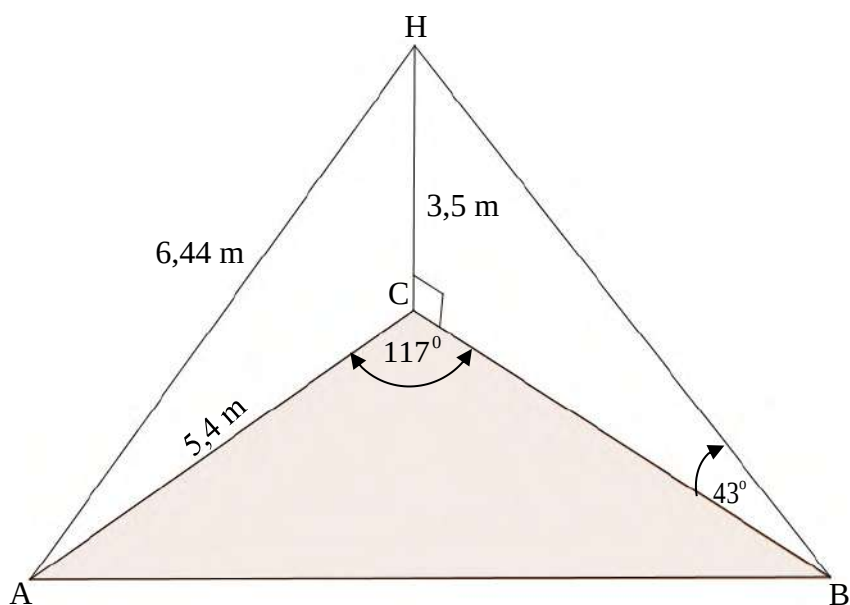
QUESTION/VRAAG 6

	Solution/Oplissing	Marks/ Punte
6.1.1		(4)
6.1.2		(2)
6.2		(7)
		[13]

QUESTON/VRAAG 7

	Solution/Oplissing	Marks/ Punte
7.1		(2)
7.2		(3)
7.3.1		(2)
7.3.2		(4)
7.3.3		(2)
		[13]

QUESTION/VRAAG 8



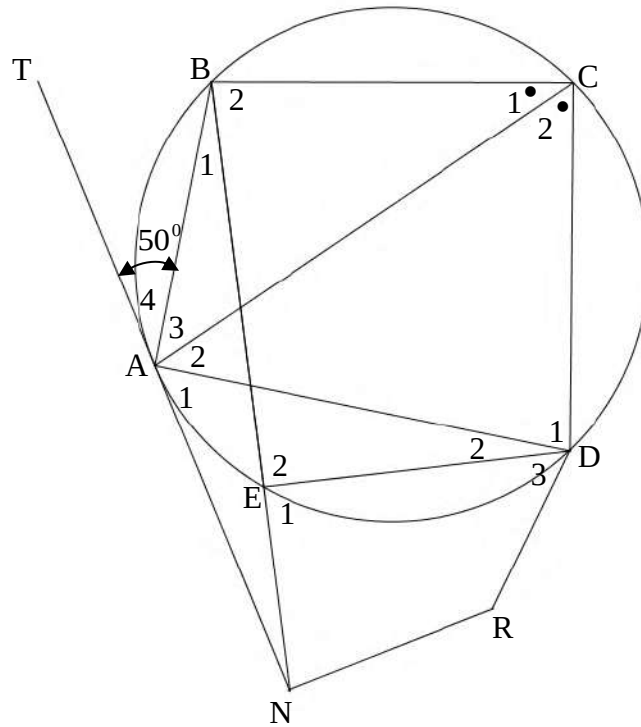
	Solution/Oplissing	Marks/ Punte
8.1		(2)
8.2		(5)



8.3		(3)
		[10]



QUESTION/VRAAG 9

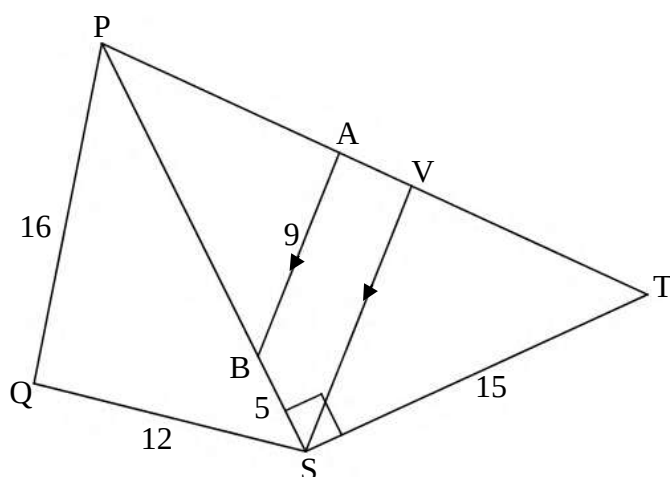


	Solution/Oplossing	Marks/ Punte
9.1		(4)
9.2		(4)

9.3		(2)
9.4		(1)
		[11]



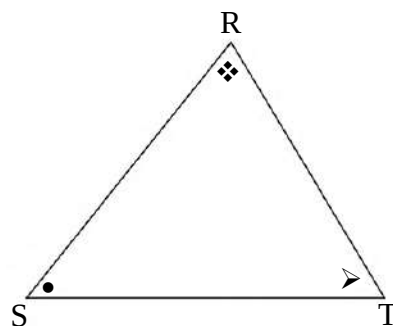
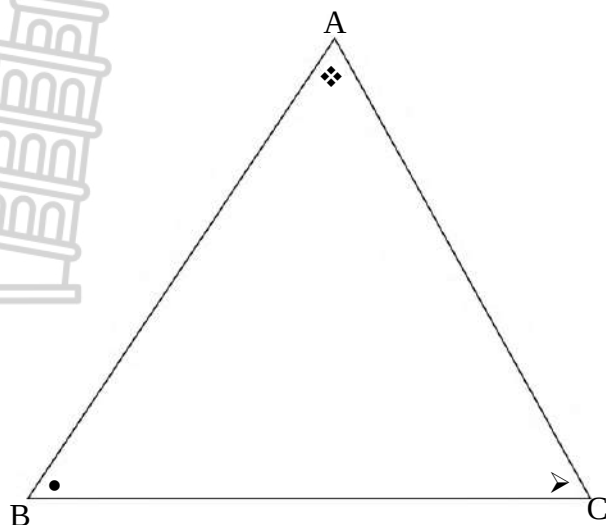
QUESTION/VRAAG 10



	Solution/Oplissing	Marks/ Punte
10.1		(3)
10.2		(6)
		[9]

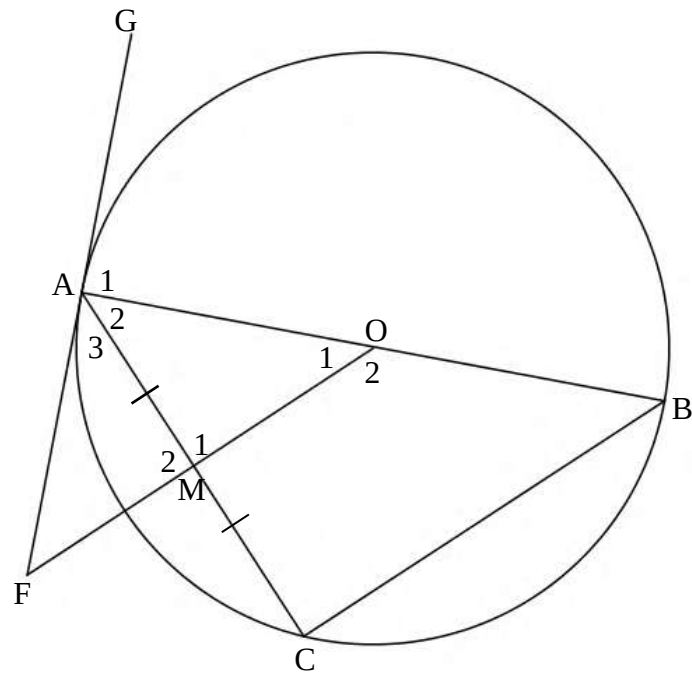


QUESTION/VRAAG 11



11.1			
			(6)



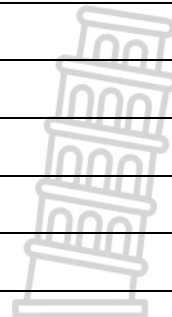


11.2.1		(4)



11.2.2		(4)
11.2.3		(5)
		[19]
	TOTAL/TOTAAL:	150









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NATIONAL/NASIONALE SENIOR CERTIFICATE/SERTIFIKAAT

GRADE/GRAAD 12

JUNE/JUNIE 2026

**MATHEMATICS P2/WISKUNDE V2
MARKING GUIDELINE/NASIENRIGLYN**

MARKS/PUNTE: 150



This marking guideline consists of 17 pages.
Hierdie nasienriglyn bestaan uit 17 bladsye.

NOTE

- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out an attempt of a question and not redone a question, mark the crossed-out version.
- Consistency accuracy applies in ALL aspects of the marking guideline. Stop marking at the second calculation error.
- Assuming answers/values in order to solve a problem is NOT acceptable.

GEOMETRY	
S	A mark for a correct statement. (A statement mark is independent of a reason).
R	A mark for the correct reason. (A reason mark may be awarded if the statement is correct).
S/R	Award a mark if a statement and a reason are both correct.

NOTA

- As 'n kandidaat 'n vraag TWEE keer beantwoord, merk slegs die EERSTE poging.
- As 'n kandidaat 'n poging van 'n vraag doodgetrek het en dit nie oorgedoen nie, merk die doodgetrekte poging.
- Volgehoue akkuraatheid word in ALLE aspekte van die nasienriglyn toegepas. Hou op nasien by die tweede berekeningsfout.
- Om antwoorde/waardes te aanvaar om 'n probleem op te los, word NIE aanvaar NIE.

MEETKUNDE	
S	'n Punt vir korrekte stelling. ('n Stelling punt is onafhanklik van die rede.)
R	'n Punt vir 'n korrekte rede. ('n Punt word slegs vir die rede toegeken as die bewering korrek is.)
S/R	'n Punt word toegeken as die bewering en rede beide korrek is.

QUESTION/VRAAG 1

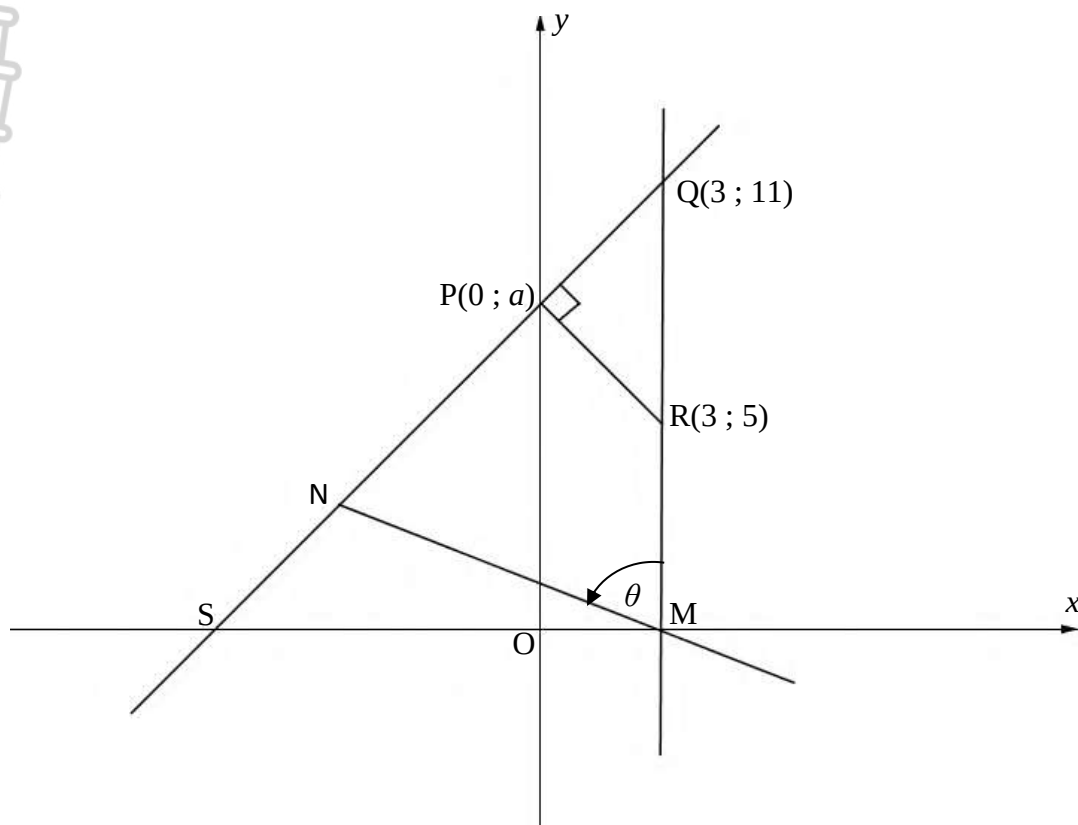
1.1	Median / Mediaan = 34	✓ answer / antwoord	(1)
1.2	$Q_3 = 60$ in both classes / in albei klasse	✓ answer / antwoord	(1)
1.3	$90 - 6 = 84$	✓ 84	(1)
1.4	CLASS A performed better than CLASS B . Range for CLASS A is less than range for CLASS B . <i>KLAS A het beter as KLAS B presteer. Omvang vir KLAS A is kleiner as die omvang van KLAS B.</i>	✓ CLASS A / KLAS A ✓ Reason / Rede	(2)
1.5	CLASS B / KLAS B	✓ answer / antwoord	(1)
1.6	Positively skewed OR skewed to the right <i>Positief skeef OF Skeef na regs</i>	✓ answer / antwoord	(1)
1.7	$\frac{80}{100} \times 20 = 16$ $\therefore 4$ learners qualified for awards <i>4 leerders het vir toekennings gekwalifiseer</i> OR/OF $\frac{20}{100} \times 20 = 4$ $\therefore 4$ learners qualified for the awards <i>4 leerders het vir toekennings gekwalifiseer</i>	✓ method / metode ✓ answer / antwoord OR/OF ✓ method / metode ✓ answer / antwoord	(2)
			[9]



QUESTION/VRAAG 2

2.1	<table><tr><th>Ages in years <i>Ouderdom in jare</i></th><th>Frequency <i>Frekwensie</i></th><th>Cummulative Frequency <i>Kummulatiewe Frekwensie</i></th></tr><tr><td>$10 < x \leq 19$</td><td>1</td><td>1</td></tr><tr><td>$20 < x \leq 29$</td><td>2</td><td>3</td></tr><tr><td>$30 < x \leq 39$</td><td>3</td><td>6</td></tr><tr><td>$40 < x \leq 49$</td><td>4</td><td>10</td></tr><tr><td>$50 < x \leq 59$</td><td>6</td><td>16</td></tr><tr><td>$60 < x \leq 69$</td><td>7</td><td>23</td></tr><tr><td>$70 < x \leq 79$</td><td>4</td><td>27</td></tr><tr><td>$80 < x \leq 89$</td><td>1</td><td>28</td></tr></table>	Ages in years <i>Ouderdom in jare</i>	Frequency <i>Frekwensie</i>	Cummulative Frequency <i>Kummulatiewe Frekwensie</i>	$10 < x \leq 19$	1	1	$20 < x \leq 29$	2	3	$30 < x \leq 39$	3	6	$40 < x \leq 49$	4	10	$50 < x \leq 59$	6	16	$60 < x \leq 69$	7	23	$70 < x \leq 79$	4	27	$80 < x \leq 89$	1	28	✓ first 3 correct <i>eerste 3 korrek</i> (2, 3, 4) ✓ second 3 correct <i>tweede 3 korrek</i> (6 ,7,4)	(2)
Ages in years <i>Ouderdom in jare</i>	Frequency <i>Frekwensie</i>	Cummulative Frequency <i>Kummulatiewe Frekwensie</i>																												
$10 < x \leq 19$	1	1																												
$20 < x \leq 29$	2	3																												
$30 < x \leq 39$	3	6																												
$40 < x \leq 49$	4	10																												
$50 < x \leq 59$	6	16																												
$60 < x \leq 69$	7	23																												
$70 < x \leq 79$	4	27																												
$80 < x \leq 89$	1	28																												
2.2	Mean / <i>Gemiddelde</i> $= \frac{14,5 \times 1 + 24,5 \times 2 + 34,5 \times 3 + 44,5 \times 4 + 54,5 \times 6 + 64,5 \times 7 + 74,5 \times 4 + 84,5 \times 1}{28}$ $= \frac{1506}{28}$ $= 53,79$	✓ method / <i>metode</i> ✓ 1506 ✓ answer/<i>antwoord</i>	(3)																											
2.3	$60 < x \leq 69$	✓ answer/ <i>antwoord</i>	(1)																											
2.4	Cummulative Frequency graph/ Ogive <i>Kummulatiewefrekwesie-grafiek / Ogief</i>	✓ grounding <i>anker</i> ✓ plot against the upper limit <i>afsteek teen</i> <i>boonste limiet</i> ✓ shape / <i>vorm</i>	(3)																											
2.5	18 people / <i>persone</i>		(1)																											
			[10]																											

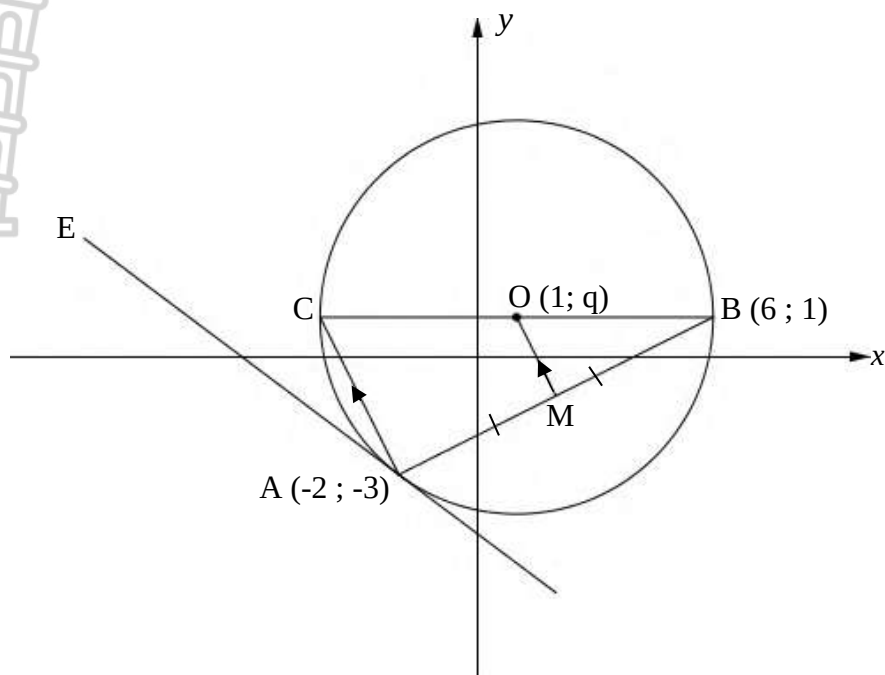
QUESTION/VRAAG 3



3.1	$M(3;0)$	✓ answer / antwoord	(1)
3.2	$QM = 11$ units / eenhede	✓ answer / antwoord	(1)
3.3	$m_{PQ} = \frac{11-a}{3-0} = \frac{11-a}{3}$	✓ correct substitution korrekte vervanging ✓ answer / antwoord	(2)
3.4	$m_{PQ} \times m_{PR} = -1$ [product of gradients of $\perp$ lines] [produk van gradiënte van $\perp$ lyne] $\frac{11-a}{3} \times \frac{5-a}{3} = -1$ $55 - 11a - 5a + a^2 = -9$ $a^2 - 16a + 64 = 0$ $(a-8)^2 = 0$ $\therefore a = 8$	✓ $m_{PQ} \times m_{PR} = -1$ ✓ correct substitution korrekte vervanging ✓ simplification / vereenvoudiging ✓ standard form / standaardvorm ✓ factors / faktore	(5)

3.5	$m_{SQ} = \frac{11-8}{3} = 1$ $11 = 1(3) + c$ or / of $y - 11 = 1(x - 3)$ $8 = c$ $y = x + 8$	✓ m_{SQ} ✓ substituting m_{SQ} and $P(0 ; 8)$ or $Q(3 ; 11)$ vervanging m_{SQ} en $P(0 ; 8)$ of $Q(3 ; 11)$ ✓ answer / antwoord	(3)
3.6	$x + 8 = 0$ $x = -8$ $S(-8 ; 0)$ $SM = 11$ units / eenhede $\therefore \triangle SMQ$ is isosceles ($SM = MQ$) $\triangle SMQ$ is gelykbenig ($SM = MQ$)	✓ $y = 0$ ✓ correct x-value / korrekte x-waarde ✓ $SM = 11$	(3)
3.7	$y = mx + 1$ $0 = m(3) + 1$ $m = -\frac{1}{3}$ $\tan \alpha = -\frac{1}{3}$ $\alpha = 161,57^\circ$ $\theta = 161,57^\circ - 90^\circ$ [$QM \parallel y$ -axis / as] $= 71,57^\circ$	✓ substitute / vervang $M(3;0)$ ✓ m_{MN} ✓ inclination of MN / inklinasie van MN ✓ answer / antwoord	(4)
3.8	Area of $\triangle MQN = \frac{1}{2} \times MN \times MQ \times \sin \theta$ $45,38 = \frac{1}{2} \times MN \times 11 \times \sin 71,57^\circ$ $MN = 8,70$	✓ correct formula of $\triangle MQN$ korrekte formule van $\triangle MQN$ ✓ correct substitution / korrekte vervanging ✓ answer / antwoord	(3)
			[22]

QUESTION/VRAAG 4

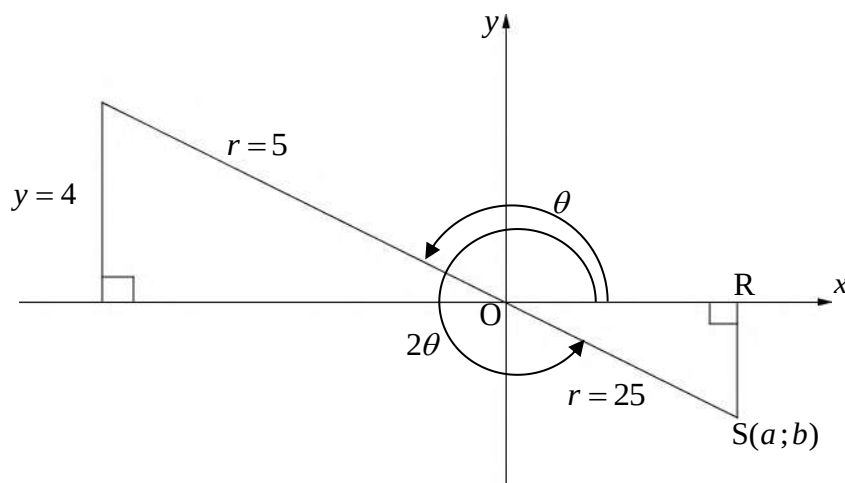


4.1	$AB = \sqrt{(-2-6)^2 + (-3-1)^2}$ $= \sqrt{80} = 4\sqrt{5}$	✓ correct substitution korrekte vervanging ✓ answer / antwoord	(2)
4.2	$OM = \sqrt{5}$ [Midpoint Thm / Middelpunt Stelling]	✓ answer / antwoord	(1)
4.3	$\angle OMB = 90^\circ$ [line from centre to the midpoint] [lyn vanaf middelpunt]	✓ answer / antwoord	(1)
4.4	$OB^2 = OM^2 + MB^2$ [Pyth Thm / Pyth Stelling] $(1-6)^2 + (q-1)^2 = (\sqrt{5})^2 + (2\sqrt{5})^2$ $25 + (q-1)^2 = 25$ $q-1 = 0$ $q = 1$	✓ correct subst. into Pyth korrekte verv. in Pyth ✓ simplification vereenvoudiging ✓ answer / antwoord	(3)
4.5	$m_{AO} = \frac{1+3}{1+2}$ $= \frac{4}{3}$	✓ correct substitution korrekte vervanging ✓ answer / antwoord	(2)
4.6	$(x-1)^2 + (y-1)^2 = 25$	✓ LHS / LK ✓ RHS / RK	(2)

4.7	$m_{AE} = -\frac{3}{4} \quad [\tan \perp \text{rad}] / [\text{raaklyn} \perp \text{radius}]$ $y + 3 = -\frac{3}{4}(x + 2)$ $y = -\frac{3}{4}x - \frac{9}{2}$	✓ m_{AE} ✓ substituting / vervanging m_{AE} and / en A(2 ; -3) ✓ answer / antwoord	(3)
4.8	$-\frac{9}{2} < t < 8$	✓ correct c.v's. korrekte k/w's ✓ correct notation korrekte notasie	(2)
4.9	$\left(-\frac{22}{3}; 1\right)$ $r_{\text{new/nuwe}}^2 = \left(-\frac{22}{3} - 1\right)^2 + (1 - 1)^2$ $r_{\text{new/nuwe}} = \frac{25}{3}$ $r_{\text{old/oud}} = 5$ $r_{\text{old/oud}} > r_{\text{new/nuwe}}$ $\therefore \left(-\frac{22}{3} - 1\right)$ lies outside the circle / lê buite die sirkel	✓ $r_{\text{new/nuwe}}$ ✓ $r_{\text{old/oud}} > r_{\text{new/nuwe}}$ ✓ conclusion / gevolgtrekking	(3)
			[19]

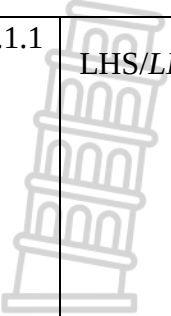


QUESTION/VRAAG 5

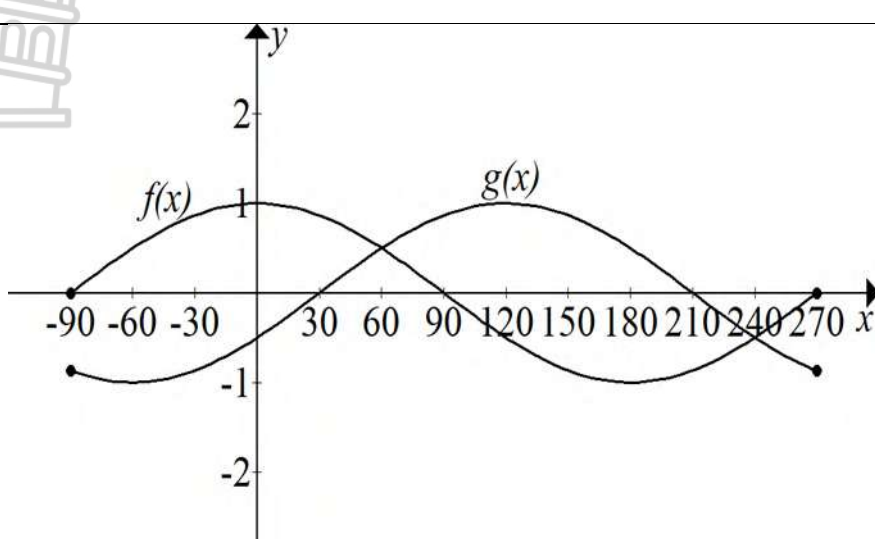


5.1	5.1.1	$x = -\sqrt{5^2 - 4^2} = -3$ $\cos \theta = -\frac{3}{5}$	✓ correct x-value korrekte x-waarde ✓ answer / antwoord	(2)
	5.1.2	$\cos(90^\circ - \theta) = \sin \theta$ $= \frac{4}{5}$	✓ $\sin \theta$ ✓ answer / antwoord	(2)
	5.1.3	$\sin 2\theta = \frac{b}{25}$ $2 \sin \theta \cos \theta = \frac{b}{25}$ $2 \left(\frac{4}{5} \right) \left(-\frac{3}{5} \right) = \frac{b}{25}$ $b = -24$ $a = \sqrt{(25)^2 - (-24)^2} = 7$ $\therefore S(7; -24)$	✓ correct ratio korrekte verhouding ✓ identity / identiteit ✓ correct substitution korrekte vervanging ✓ value of b / waarde van b ✓ value of a / waarde van a	(5)
5.2		$\frac{\cos(\theta - 360^\circ) \cdot \sin(180^\circ + \theta)}{\cos^2 \theta + \sin \theta \cos(90^\circ + \theta) + \sin^2 \theta}$ $= \frac{(\cos \theta)(-\sin \theta)}{1 + \sin \theta(-\sin \theta)}$ $= -\frac{\sin \theta \cos \theta}{1 - \sin^2 \theta}$ $= -\frac{\sin \theta \cos \theta}{\cos^2 \theta}$ $= -\tan \theta$	✓ $\cos \theta$ ✓ $-\sin \theta$ ✓ $\sin^2 \theta + \cos^2 \theta = 1$ ✓ $-\sin \theta$ ✓ $\cos^2 \theta$ ✓ answer / antwoord	(6)
				[15]

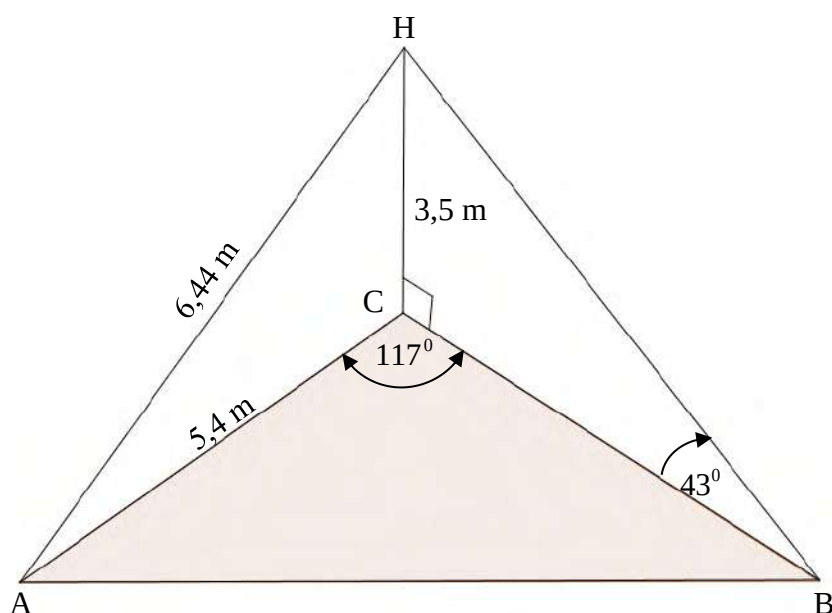
QUESTION/VRAAG 6

6.1.1	 $\begin{aligned} \text{LHS/LK} &= \frac{16 \sin^2 A \cdot \cos A}{2 \sin^3 A - \sin 2A \cos A} \\ &= \frac{8 \cdot 2 \sin A \cdot \sin A \cdot \cos A}{2 \sin^3 A - 2 \sin A \cdot \cos A \cdot \cos A} \\ &= \frac{8 \sin A \cdot \sin 2A}{2 \sin A (\sin^2 A - \cos^2 A)} \\ &= \frac{4 \sin 2A}{-\cos 2A} \\ &= -4 \tan 2A \end{aligned}$	$\checkmark 2 \sin A \cos A$ $\checkmark \sin 2A$ $\checkmark$ common factor <i>gemene faktor</i> $\checkmark -\cos 2A$	(4)
6.1.2	$A \in [-90^\circ; 90^\circ]$, but/maar $A \neq -45^\circ$ and/en $A \neq 45^\circ$	$\checkmark A \neq -45^\circ \quad \checkmark A \neq 45^\circ$	(2)
6.2	$\sin(30^\circ - 2x) = -\sin^2 x + \cos^2 x$ $\sin(30^\circ - 2x) = \cos 2x$ $\sin 30^\circ \cos 2x - \sin 2x \cos 30^\circ = \cos 2x$ $\frac{1}{2} \cos 2x - \frac{\sqrt{3}}{2} \sin 2x - \cos 2x = 0$ $-\frac{1}{2} \cos 2x - \frac{\sqrt{3}}{2} \sin 2x = 0$ $\frac{\sqrt{3}}{2} \sin 2x = -\frac{1}{2} \cos 2x$ $\tan 2x = -\frac{1}{\sqrt{3}}$ $2x = 150^\circ + 180^\circ \cdot k, \quad k \in \mathbb{Z}$ $x = 75^\circ + 90^\circ k$	$\checkmark \cos 2x$ $\checkmark$ expansion / <i>uitbreiding</i> $\checkmark$ simplification <i>vereenvoudiging</i> $\checkmark$ equating / <i>gelykstel</i> $\checkmark \tan 2x = -\frac{1}{\sqrt{3}}$ $\checkmark$ $2x = 150^\circ + 180^\circ \cdot k, \quad k \in \mathbb{Z}$ $\checkmark x = 75^\circ + 90^\circ k$	(7)
			[13]

QUESTION/VRAAG 7

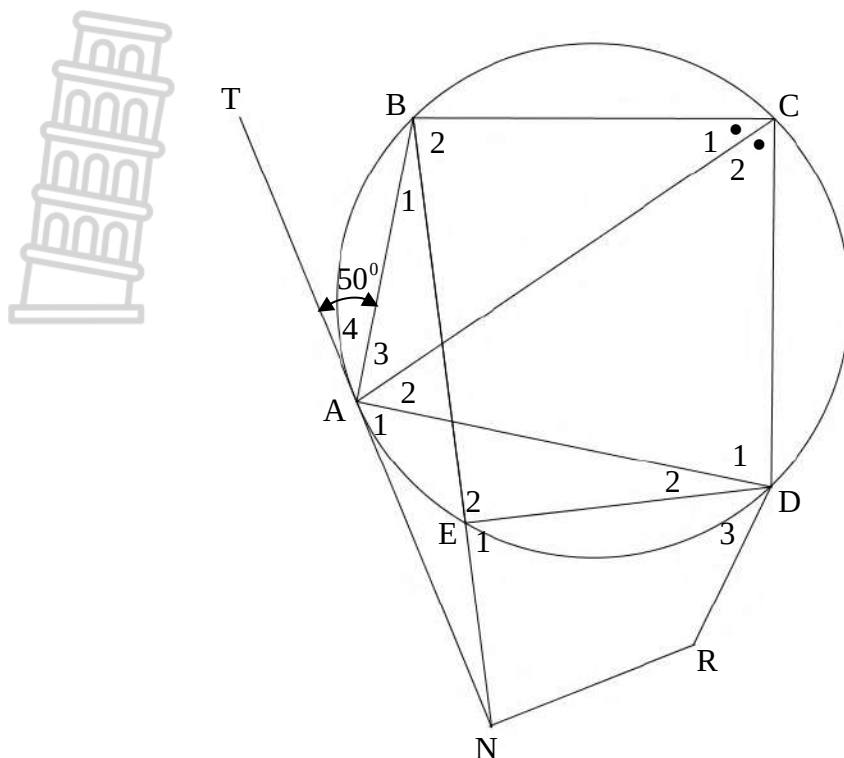
7.1	$-3 \leq y \leq -1$	✓ correct critical values korrekte kritieke waardes ✓ correct notation korrekte notasie	(2)
7.2		✓ intercepts with the axes afsnitte met die asse ✓ turning points draaipunte ✓ shape / vorm	(3)
7.3.1	$x = -60^\circ$ and/en $x = 0^\circ$	✓✓ each x-value elke x-waarde	(2)
7.3.2	$2 - 4 \cos^2 \frac{1}{2}x = \sqrt{3} \sin x - \cos x$ $-2 \left(2 \cos^2 \frac{1}{2}x - 1 \right) = \sqrt{3} \sin x - \cos x$ $\cos x = -\frac{\sqrt{3}}{2} \sin x + \frac{1}{2} \cos x$ $\frac{\sqrt{3}}{2} \sin x = \frac{1}{2} \cos x - \cos x$ $\frac{\sqrt{3}}{2} \sin x = -\frac{1}{2} \cos x$ $\tan x = \frac{-1}{\sqrt{3}}$ $x = 150^\circ + 180^\circ \cdot k, k \in \mathbb{Z}$ or / of $x = 330^\circ + 180^\circ \cdot k$	✓ common factor gemene faktor ✓ identity/ $\cos x$ identiteit / $\cos x$ ✓ $\tan x = \frac{-1}{\sqrt{3}}$ ✓ answers / antwoorde	(4)
7.3.3	$-10^\circ < x < 170^\circ$	✓✓ answer / antwoord	(2)
			[13]

QUESTION/VRAAG 8



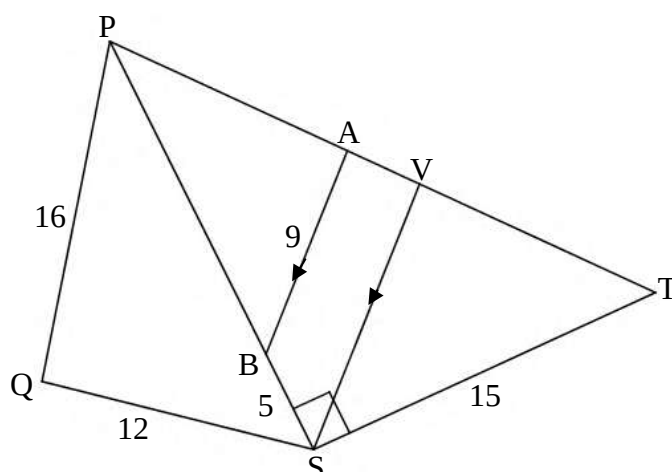
8.1	$\tan 43^\circ = \frac{3,5}{BC}$ $BC = 3,75$	✓ correct substitution <i>korrekte vervanging</i> ✓ BC	(2)
8.2	$HB = \sqrt{(3,75)^2 + (3,5)^2}$ [Pyth Thm / Stelling] $= 5,13$ $HB^2 = AH^2 + AB^2 - 2 \cdot AH \cdot AB \cdot \cos \hat{HAB}$ $(5,13)^2 = (6,44)^2 + (7,85)^2 - 2(6,44)(7,85) \cos A$ $\cos A = 0,7593780908$ $\hat{HAB} = 40,59^\circ$	✓ HB ✓ correct application of cosine rule <i>korrekte toepassing van kosinusreël</i> ✓ correct substitution <i>korrekte vervanging</i> ✓ correct ratio of cos A <i>korrekte verhouding van cos A</i> ✓ answer / antwoord	(5)
8.3	$\text{Area } \triangle HAB = \frac{1}{2} \times AH \times AB \times \sin 40,59^\circ$ $= \frac{1}{2} \times 6,44 \times 7,85 \times \sin(40,59^\circ)$ $= 16,45 \text{ cm}^2$	✓ correct application in area rule in $\triangle HAB$ <i>korrekte toepassing van oppervlakte-reël</i> ✓ correct substitution <i>korrekte vervanging</i> ✓ answer / antwoord	(3)
			[10]

QUESTION/VRAAG 9



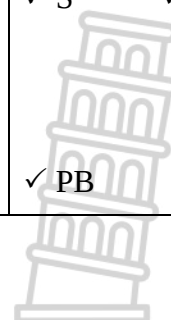
9.1	$\hat{C}_1 = \hat{A}_4 = 50^\circ$ [tan chord theo] / [raaklyn – koord stelling] $\hat{C}_2 = \hat{C}_1 = 50^\circ$ [given] / [gegee] $\hat{A}_1 = \hat{C}_2 = 50^\circ$ [tan chord theo] / [raaklyn – koord stelling]	$\checkmark$ S $\checkmark$ R $\checkmark$ S $\checkmark$ S/R	(4)
9.2	$\hat{E}_1 = \hat{C} = 100^\circ$ [ext $\angle$ of a cyclic quad] / [buite $\angle$ van koordevh] $\hat{C}_1 = \hat{C}_2$ [given] / [gegee] $\therefore \hat{E}_1 = 2\hat{C}_2 = 100^\circ$ $\therefore \hat{E}_1 = 2\hat{A}_1 = 100^\circ$ $\therefore E$ is the centre of the circle passing through A, N, R and D [converse $\angle$ at centre = $2\angle$ at circumf] <i>E is die middelpunt van die sirkel wat deur A, N, R en D gaan.</i> [omgekeerde middelpunts $\angle = 2 \times$ omtreks $\angle$]	$\checkmark$ S $\checkmark$ R $\checkmark$ $\hat{E}_1 = 2\hat{A}_1 = 100^\circ$ $\checkmark$ R	(4)
9.3	$\hat{R} = 130^\circ$ [opp $\angle$ s of a cyclic quad] / [teenoorst. $\angle$ e van koordevh]	$\checkmark$ S R $\checkmark$	(2)
9.4	Chords subt. = $\angle$ s / Koorde onderspan = $\angle$ e	$\checkmark$ R	(1)
			[11]

QUESTION/VRAAG 10



10.1	$\frac{PB}{BS} = \frac{PA}{AV} \quad [\text{line} \parallel \text{to one side of a } \Delta] / [\text{lyn} \parallel \text{aan een sy van } \Delta]$ $\frac{PB}{5} = \frac{3}{1}$ $PB = 15$ OR/OF $\frac{PS}{BS} = \frac{PV}{AV} \quad [\text{line} \parallel \text{to one side of a } \Delta] / [\text{lyn} \parallel \text{aan een sy van } \Delta]$ $\frac{PS}{5} = \frac{4}{1}$ $PS = 20$ $\therefore PB = 15$ OR/OF $\frac{PB}{PS} = \frac{PA}{PV} \quad [\text{line} \parallel \text{to one side of a } \Delta] / [\text{lyn} \parallel \text{aan een sy van } \Delta]$ $\frac{PB}{PB + 5} = \frac{3}{4}$ $4PB = 3PB + 15$ $PB = 15$	✓ S ✓ R ✓ PB OR/OF ✓ S ✓ R ✓ PB OR/OF ✓ S ✓ R ✓ PB	
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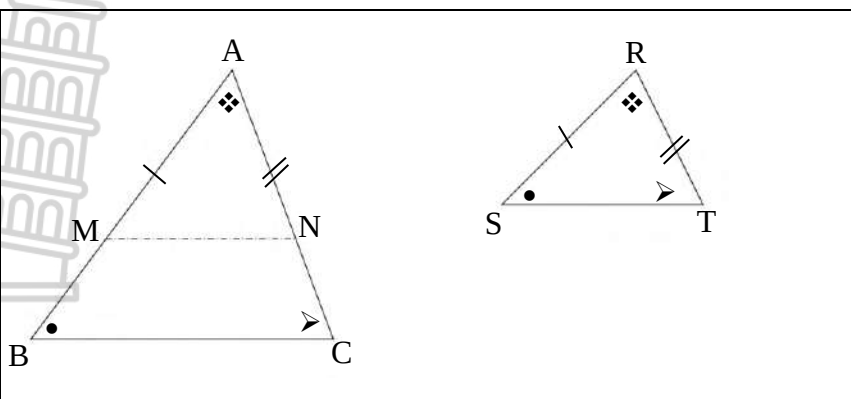
(3)



10.2	$\Delta PAB \parallel \Delta PVS$ $\frac{PB}{PS} = \frac{AB}{VS}$ [$\parallel \Delta s/e$] $\frac{15}{20} = \frac{9}{VS}$ $VS = 12$ In ΔPQS and ΔSVT / In ΔPQS en ΔSVT $\frac{PQ}{SV} = \frac{16}{12} = \frac{4}{3}$ $\frac{QS}{VT} = \frac{12}{9} = \frac{4}{3}$ $\frac{PS}{ST} = \frac{20}{15} = \frac{4}{3}$ $\therefore \Delta PQS \parallel \Delta SVT$ [corresp sides have = ratios] [ooreenk. sye het = verhoudings]	$\checkmark S$ $\checkmark R$ $\checkmark$ substitution / <i>vervang</i> $\checkmark VS$ $\checkmark$ all 3 equal ratios <i>al 3 gelyke verhoudings</i> $\checkmark R$	(6) [9]
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QUESTION/VRAAG 11

11.1	 Constructions. Put point M on AB and N on AC such that $AM = RS$ and $AN = RT$ Proof: In $\triangle AMN$ & $\triangle RST$ $AM = RS$ [constructions] $AN = RT$ [constructions] $\hat{BAC} = \hat{SRT}$ [given] $\therefore \triangle AMN \equiv \triangle RST$ [S<S] $\therefore \hat{AMN} = \hat{RST}$ [$\equiv \Delta s$] $\therefore \hat{AMN} = \hat{B}$ $\therefore MN \parallel BC$ [corresp. $\angle s =$] $\therefore \frac{AB}{AM} = \frac{AC}{AN}$ [line $\parallel$ to one side of a Δ] $\frac{AB}{RS} = \frac{AC}{RT}$	✓ complete constructions ✓ all 3 statements ✓ R for congruency ✓ R for $MN \parallel BC$ ✓ S ✓ R	
	<i>Konstruksies. Plaas punt M op AB en N op AC sodat $AM = RS$ en $AN = RT$</i> <i>Bewys: In $\triangle AMN$ & $\triangle RST$</i> $AM = RS$ [konstruksie] $AN = RT$ [konstruksie] $\hat{BAC} = \hat{SRT}$ [gegee] $\therefore \triangle AMN \equiv \triangle RST$ [S<S] $\therefore \hat{AMN} = \hat{RST}$ [$\equiv \Delta e$] $\therefore \hat{AMN} = \hat{B}$ $\therefore MN \parallel BC$ [ooreenk. $\angle s =$] $\therefore \frac{AB}{AM} = \frac{AC}{AN}$ [lyn $\parallel$ aan een sy van 'n Δ] $\frac{AB}{RS} = \frac{AC}{RT}$	✓ volledige konstruksies ✓ al 3 stellings ✓ R vir kongruensie ✓ R vir $MN \parallel BC$ ✓ S ✓ R	(6)

11.2			
11.2.1	$\hat{C} = 90^\circ$ [$\angle$ in semi – circle]/[$\angle$ in semi – sirkel] $\hat{M}_1 = 90^\circ$ [line from centre to midpoint] [lyn vanaf die middelpunt van sirkel] $FO \parallel CB$ [corresp. $\angle$ s=]/[ooreenk. $\angle$ e=]	$\checkmark$ S $\checkmark$ R S / R $\checkmark$ $\checkmark$ R	(4)
11.2.2	$\hat{M}_2 = \hat{M}_1$ [$\angle$ s on a straight line]/[$\angle$ op 'n reguitlyn] $\hat{M}_2 = \hat{C}$ [both / beide = 90°] $\hat{A}_3 = \hat{B}$ [tan chord theo]/[raaklyn – koord – st] $\hat{F} = \hat{A}_2$ [3rd / 3de $\angle$] $\triangle MAF \parallel \triangle CBA$ [$\angle \angle \angle$] OR/OF $\hat{M}_2 = \hat{M}_1$ [$\angle$ s on a straight line]/[$\angle$ op 'n reguitlyn] $\hat{M}_2 = \hat{C}$ [both / beide = 90°] $\hat{A}_3 = \hat{B}$ [tan chord theo]/[raaklyn – koord – st] $\hat{F} = \hat{A}_2$ [3rd / 3de $\angle$] $\triangle MAF \parallel \triangle CBA$ [$\angle \angle \angle$]	$\checkmark$ S $\checkmark$ S $\checkmark$ R $\checkmark$ R OR/OF $\checkmark$ S $\checkmark$ S $\checkmark$ R $\checkmark$ S for/vir 3 ^{rd/de} $\angle$	(4)
11.2.3	$\frac{MA}{CB} = \frac{MF}{AC}$ [$\parallel \Delta$ s] $MA \times AC = MF \times BC$ $MA = \frac{1}{2} AC$ [given / gegee] $\therefore AC \times \frac{1}{2} AC = MF \times BC$ $AC^2 = 2BC \times MF$ $AC^2 = AB^2 - BC^2$ [Pyth Thm / Stelling] $AB^2 - BC^2 = 2BC \times MF$	$\checkmark$ S $\checkmark$ R $\checkmark$ $MA = \frac{1}{2} AC$ $\checkmark$ $AC^2 = 2BC \times MF$ $\checkmark$ Pyth theo / stel	(5)
			[19]
		TOTAL/TOTAAL:	150

Additional Notes June Maths P2 2026

1.2	Positively skewed OR $Q_3 = 60$	✓ Answer/ <i>Antwoord</i>	(1)
1.4	CLASS A performed better than CLASS B . Median of CLASS A is higher than median of CLASS B .	✓ CLASS A ✓ Reason/ <i>Rede</i>	(2)
1.7	No learner was awarded in CLASS A OR zero	✓✓ Answer/ <i>Antwoord</i> (Any relevant explanation is acceptable.)	(2)
2.2	Answer ONLY full marks		(3)
2.5	Accept $[17 - 19]$	✓ Answer/ <i>Antwoord</i>	(1)
3.4	Alternate solution $PQ^2 + PR^2 = QR^2$ $(3 - 0)^2 + (11 - a)^2 + (0 - 3)^2 + (a - 5)^2 = 6^2$ $9 + 121 - 22a + a^2 + 9 + a^2 - 10a + 25 = 36$ $2a^2 - 32a + 128 = 0$ $a^2 - 16a + 64 = 0$ $(a - 8)^2 = 0$ $\therefore a = 8$	✓ Application of Pyth ✓ correct substitution ✓ simplification ✓ standard form ✓ factors	(5)
3.5	Alternate solution $\tan \hat{MSQ} = m_{PS} = 1$ $\hat{MSQ} = 45^\circ$ $\hat{SQM} = 45^\circ$ [$\angle s$ in $\triangle SMQ$] $\therefore SM = MQ$ [<i>sides opp = $\angle s$</i>]	✓ $\tan \hat{MSQ} = m_{PS}$ ✓ $\hat{MSQ}$ ✓ $\hat{SQM}$	(3)



3.8	Alternate solution $x + 8 = -\frac{1}{3}x + 1$ $x = -\frac{21}{4}$ $y = -\frac{11}{4}$ $MN^2 = \left(-\frac{21}{4} - 3\right)^2 + \left(-\frac{11}{4} - 0\right)^2$ $= 8,70$	✓ Equating equations ✓ coordinates of N ✓ answer	(3)
4.4	$m_{AB} = \frac{1+3}{6+2} = \frac{1}{2}$ $M\left(\frac{6+2}{2}; \frac{1+3}{2}\right)$ $M(2;-1)$ $OM : -1 = -2(2) + c$ $3 = c$ $\therefore y = -2x + 3$ $q = -2(1) + 3$ $= 1$	✓ midpoint of AB ✓ equation of OM ✓ q	(3)
4.9	$\left(-\frac{22}{3}; 1\right)$ $r_{new}^2 = \left(-\frac{22}{3} - 1\right)^2 + (1 - 1)^2$ $r_{new} = \frac{25}{3}$ $r_{old} = 5$ $\therefore r_{new} > r_{old}$ $\therefore \left(-\frac{22}{3}; 1\right) \text{ lies outside the circle}$ OR $C(-4;1)$	✓ r_{new} ✓ $r_{new} > r_{old}$ OR $r_{old} < r_{new}$ ✓ conclusion OR ✓ $C(-4;1)$ ✓ any valid explanation	(3)



	Point $\left(-\frac{22}{3}; 1\right)$ lies on the same straight line as B, O and C $x = -\frac{22}{3}$ lies on the left of C outside the circle	✓ conclusion	
6.1.2	$A \neq -45^0$ or $A \neq 45^0$ or $A \neq 0^0$	✓✓ any 2	(2)
6.2	$\sin(30^0 - 2x) = -\sin^2 x + \cos^2 x$ $\sin(30^0 - 2x) = \cos 2x$ $\sin(30^0 - 2x) = \sin(90^0 - 2x)$ $30^0 - 2x = 180 - 90^0 + 2x + 360^0.k, k \in \mathbb{Z}$ $-4x = 60^0 + 360^0.k$ $x = -15^0 - 90^0.k$ OR $30^0 - 2x = 90^0 - 2x + 360^0.k$ no solution	✓ identity ✓ co-ratio ✓ both quads ✓ $-4x = 60^0 + 360^0.k$ ✓ $x = -15^0 - 90^0.k$ ✓ no solution ✓ $k \in \mathbb{Z}$	(7)
7.2	Correcting MG $2 - 4 \cos^2 \frac{1}{2}x = \sqrt{3} \sin x - \cos x$ $2\left(1 - 2 \cos^2 \frac{1}{2}x\right) = \sqrt{3} \sin x - \cos x$ $-\cos x = \frac{\sqrt{3}}{2} \sin x - \frac{1}{2} \cos x$ $-\sin(90^0 - x) = \cos 30^0 \sin x - \sin 30^0 \cos x$ $\sin(x - 30^0) = -\sin(90^0 - x)$ $x - 30^0 = 180^0 + (90^0 - x) + 360^0, k \in \mathbb{Z}$ $2x = 300^0 + 360^0.k$ $x = 150^0 + 180^0.k$ $x = 150^0$ or $x = -30^0$	✓ common factor ✓ identity ✓ co-ratio ✓ both solutions	(4)



9.2	Correcting mark allocation $\hat{E}_1 = 100^\circ \quad [\text{ext } \angle \text{ of a cyclic quad}]$ $\hat{C}_1 = \hat{C}_2 \quad [\text{given}]$ $\hat{A}_1 = \hat{C}_2 \quad [\text{proved}]$ $\therefore \hat{E}_1 = 2\hat{A}_1 = 100^\circ$	$\checkmark$ S $\checkmark$ R	24
		$\checkmark$ S	
		$\checkmark$ S	

Iphondo leMpuma Kapa: Isise leMfundo
Provinsie van die Oos Kaap: Departement van
Peratensie Ya Kapa Botjhabola: Letapha ts

(4)

