GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

PROVINCIAL EXAMINATION

NOVEMBER 2022

GRADE 10

MATHEMATICS

(PAPER 2)

TIME: **1 hour**

MARKS: **100**

9 pages + 1 information sheet and a special answer book of 14 pages

P.T.O.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1. This question paper consists of 10 questions.

2. Answer ALL the questions in the ANSWER BOOK provided.

3. Clearly show ALL calculations, diagrams, graphs, etc. that you have used to determine 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 otherwise stated.

7. Diagrams are NOT necessarily drawn to scale.

8. Write neatly and legibly.

P.T.O.

QUESTION 1

The heights of 18 grade 8 learners were recorded in cm as shown below. Use the data below to answer the questions that follow.

147	131	142	133	152	125
128	162	129	165	151	130
143	162	110	129	139	153

1.1 Represent the data on a stem and leaf diagram. (4)

1.2 Determine the:

  1.2.1 Median (2)

  1.2.2 Mode (1)

  1.2.3 Lower quartile and the upper quartile (2)

  1.2.4 Mean (2)

  [11]

QUESTION 2

The figures in the table below are the ages, to the nearest year, of a random sample of 30 people negotiating a mortgage in a bank. Use the data below to answer the questions that follow.

29	26	31	42	38	45	35	37	38	38
36	39	49	40	32	32	34	27	56	29
33	31	33	52	44	32	30	38	42	33

2.1 Complete the frequency table on the diagram provided in your ANSWER BOOK. (4)

FREQUENCY TABLE

AGE INTERVALS	TALLY	FREQUENCY
$25 \leq x < 33$		
$33 \leq x < 41$		
$41 \leq x < 49$		
$49 \leq x < 57$		

2.2 Use the information from the frequency table to draw a histogram on the grid provided in the SPECIAL ANSWER SHEET. (2)

2.3 Draw a frequency polygon on the grid provided in the SPECIAL ANSWER SHEET. (3)

  [9]

QUESTION 3

In the diagram below A (–3;7), B (–8;2) and C (4;6) are the vertices of triangle ABC.
AD is drawn such that D (–2;k) is the midpoint of BC.
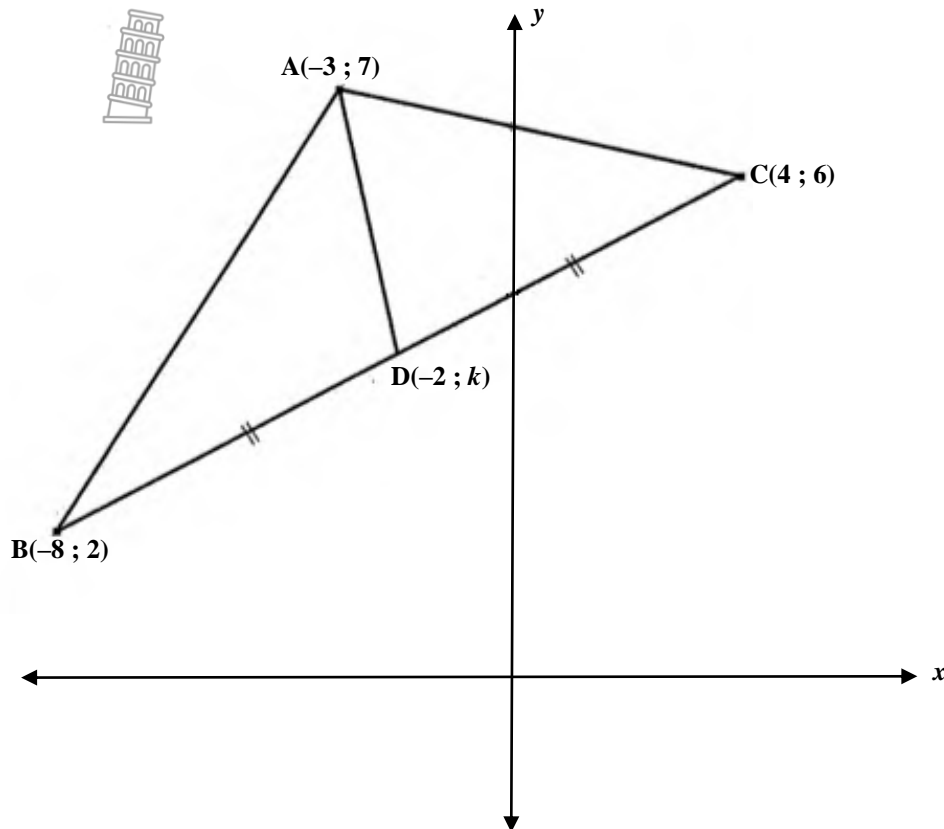
3.1   Determine the gradient of BC.   (2)

3.2   Calculate the length of BC.   (2)

3.3   Determine the value of k.   (2)

3.4   Is AD ⊥ BC? Show all your calculations.   (3)
[9]

QUESTION 4

4.1   If $x = 66,4°$ and $y = 114,7°$, evaluate the following correct to TWO decimal places.

4.1.1 $\cos(x + y)$ (2)

4.1.2 $2\sin x$ (2)

4.1.3 $\operatorname{cosec} x$ (2)

P.T.O.

4.2   Determine the value of θ correct to ONE decimal place.

    4.2.1   sin θ + 0,38 = 1   (2)

    4.2.2   2cot 2θ = 3   (3)

    4.2.3   2cos(3θ – 60°) = 1,71   (4)
                                                                                      [15]

QUESTION 5

5.1   Given that $\sin\theta = \frac{4}{5}$ and $\tan\theta < 0$. Determine with the aid of a diagram and WITHOUT
        the use of a calculator:

    5.1.1   tan θ   (4)

    5.1.2 $2\cos^2\theta - 1$ (2)

5.2   Simplify the following expression WITHOUT using a calculator.

        $\cos 0° + \sin^2 60° + \sqrt{2} \cdot \sec 45°$ (4)

5.3   In the diagram below, a person is standing at point A which is 30 m away from point B.
        Point A and point B are on the same horizontal plane. The angle of elevation of a first
        storey window at point C from point A is 15°. The angle of elevation of the second storey
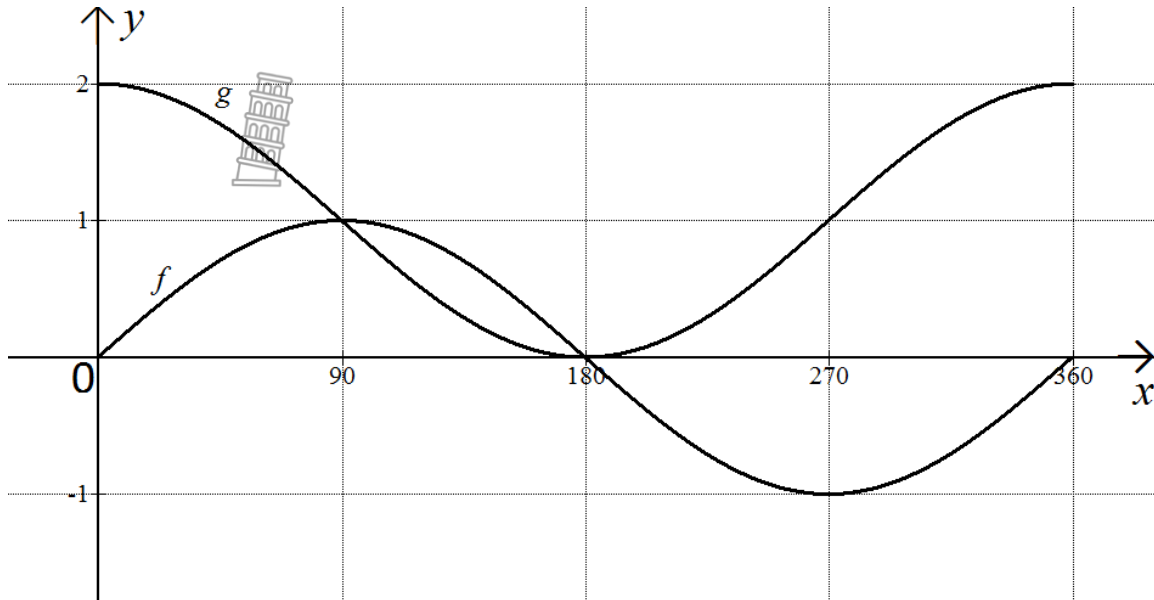   window at point D from point A is 21°.
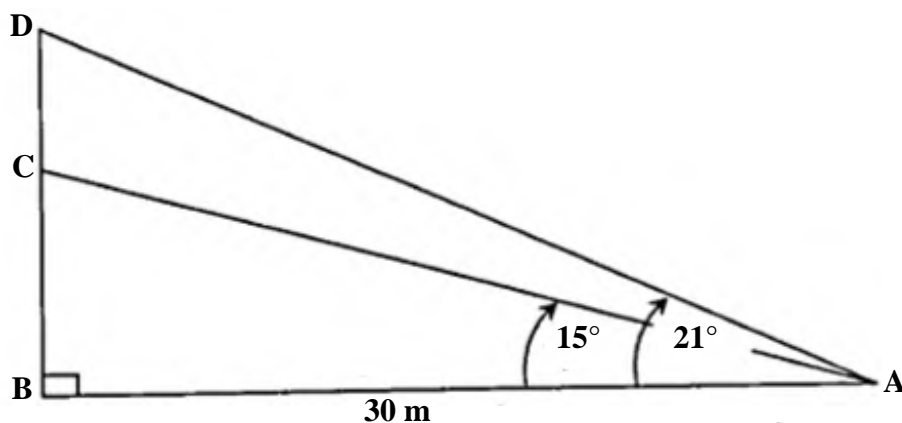
Determine the distance between the two windows.   (6)
                                                                                      [16]

QUESTION 6

The graphs of $f(x) = a \sin x$ and $g(x) \cos x + 1$ for $x \in [0°; 360°]$.

6.1   Write down the value of a. (1)

6.2   Determine the range of g. (2)

6.3   Determine the amplitude of g. (1)

6.4   For which value(s) of x will $f(x) \geq g(x)$. (2)

6.5   For which value(s) of x will $g(x) - f(x) = 2$. (3)

6.6   The graph of f is reflected across the x-axis. Write down the equation of the new graph h. (1)

[10]

P.T.O.

QUESTION 7

7.1   The roof of a canvas tent is in the shape of a right pyramid having a perpendicular height of 0,8 meters on a square base. The length of one side of the base is 3 metres.
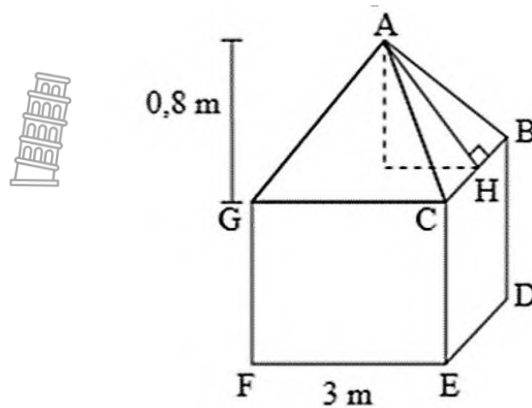
7.1.1   Calculate the length of AH.   (2)

7.1.2   Calculate the surface area of the roof.   (2)

7.1.3   If the height of the walls of the tent is 2,1 metres, calculate the total amount of canvas required to make the tent if the floor is excluded.   (2)

7.2   A metal ball has a radius of 8 millimetres.

Volume of sphere = $\dfrac{4}{3}\pi r^3$

7.2. 1   Calculate the volume of metal used to make this ball. Give your answer correct to TWO decimal places.   (2)

7.2.2   If the radius of the ball is doubled, write down the ratio of the new volume : the original volume.   (2)

7.2.3   You would like this ball to be silver plated to a thickness of 1 millimetre. What is the volume of silver required? Give your answer correct to TWO decimal places.   (2)

[12]

P.T.O.

QUESTION 8

In parallelogram PQRS, PW bisects $Q\hat{P}S$ and SW bisects $P\hat{S}R$. PW // ST and PT // WS.
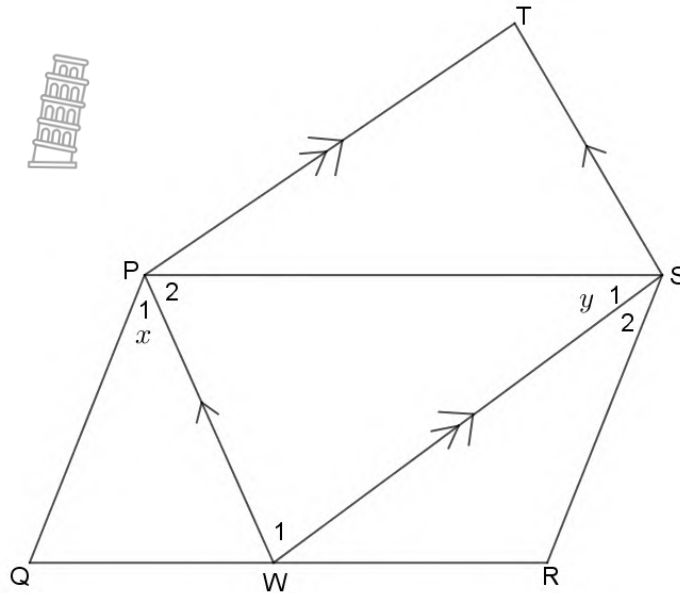
8.1   Prove that x + y = 90°.   (4)
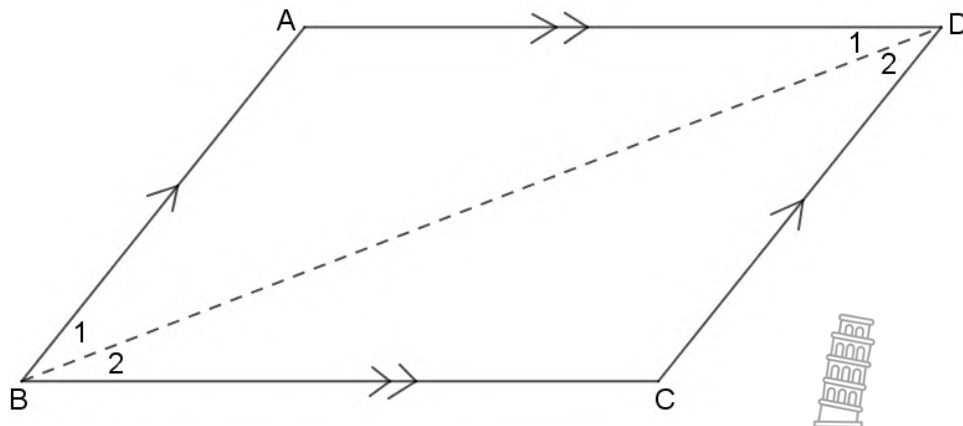
8.2   Prove that PWST is a rectangle.   (4)
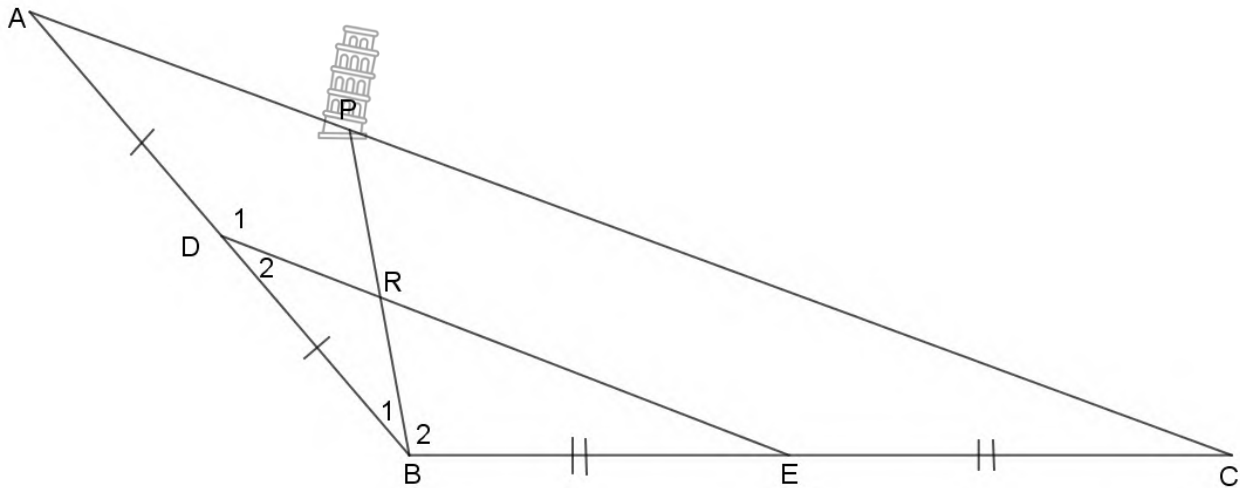   **[8]**

QUESTION 9

ABCD is a parallelogram with AD // BC and BA // CD.

Using the diagram above, prove the theorem that states that the opposite sides of a parallelogram
are equal.

                                                                                                              [5]

QUESTION 10

In the diagram below, D and E are midpoints of sides AB and BC of ΔABC. Point P is on BC such that PA = PB. PB cuts DE at R.

Prove that ΔRDB is isosceles.

[5]

TOTAL: 100

END

INFORMATION SHEET

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

$$A = P(1 + ni) \qquad A = P(1 - ni) \qquad A = P(1 - i)^n \qquad A = P(1 + i)^n$$

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

$$T_n = ar^{n-1} \qquad S_n = \frac{a(r^n - 1)}{r - 1} \; ; \; r \neq 1 \qquad S_\infty = \frac{a}{1 - r} \; ; \; -1 < r < 1$$

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

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

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2} \qquad M\left(\frac{x_1 + x_2}{2}; \frac{y_1 + y_2}{2}\right)$$

$$y = mx + c \qquad y - y_1 = m(x - x_1) \qquad m = \frac{y_2 - y_1}{x_2 - x_1} \qquad m = \tan\theta$$

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

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

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

$$area \; \triangle ABC = \frac{1}{2} \, ab.\sin C$$

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

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

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

$$\bar{x} = \frac{\sum x}{n} \qquad \sigma^2 = \frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n}$$

$$P(A) = \frac{n(A)}{n(S)} \qquad P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$$

$$\hat{y} = a + bx \qquad b = \frac{\sum(x - \bar{x})(y - \bar{y})}{\sum(x - \bar{x})^2}$$

GAUTENG PROVINCE
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NOVEMBER EXAMINATION ANSWER BOOK
NOVEMBER EKSAMEN-ANTWOORDBOEK

2022

CANDIDATE'S NAME *LEERDER SE NAAM*	

DATE *DATUM*								BOOK NUMBER *BOEKNOMMER*	OF *VAN*	BOOKS *BOEKE*

TEACHER *ONDERWYSER*		PAPER NUMBER/ *VRAESTELNOMMER*	2

SUBJECT NAME *VAKNAAM*	**MATHEMATICS/*WISKUNDE***

This answer book consists of 14 pages./*Hierdie antwoordboek bestaan uit 14 bladsye.*

MARKER/*NASIENER*				MODERATOR'S INITIALS IN RELEVANT BLOCK *MODERATOR SE PARAAF IN BETROKKE BLOKKIE*						
Question *Vraag*	Marks *Punte*		Marker's Code & Initials/*Nasiener se Kode en parafeer*	Marks *Punte*						
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

				TOTAL *TOTAAL*					
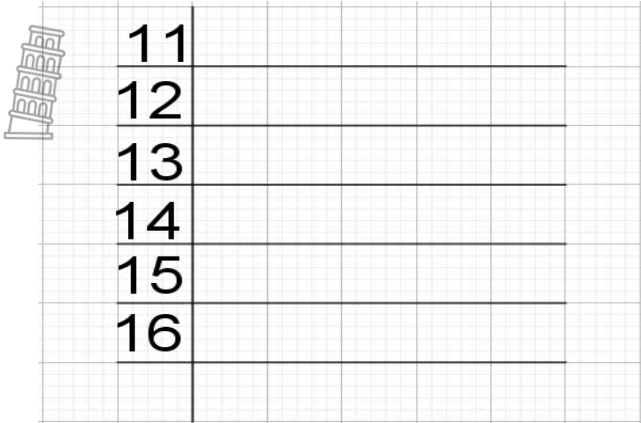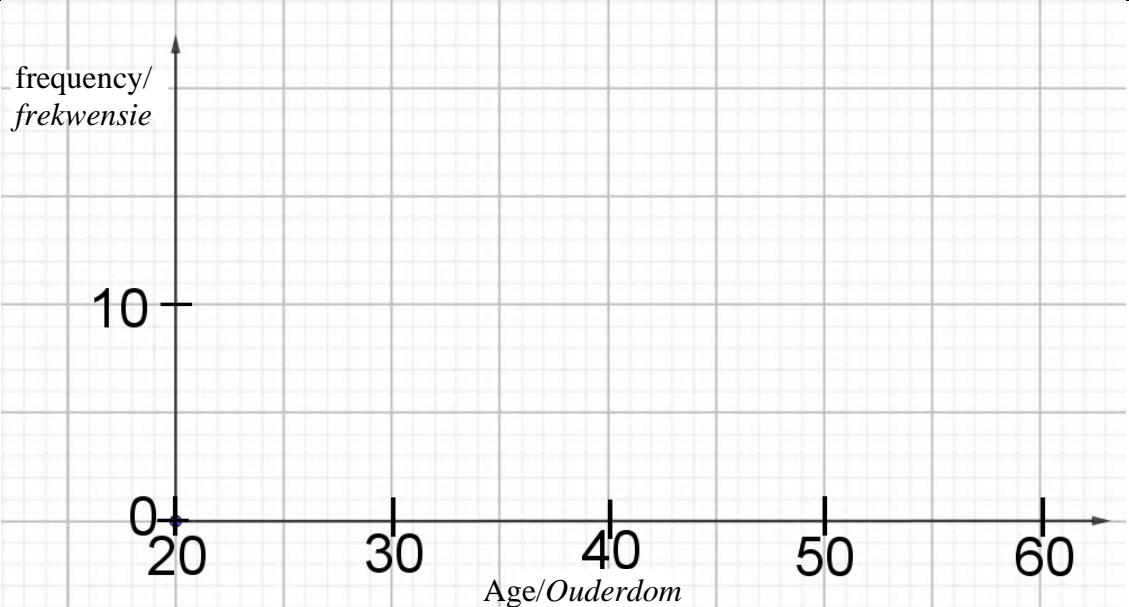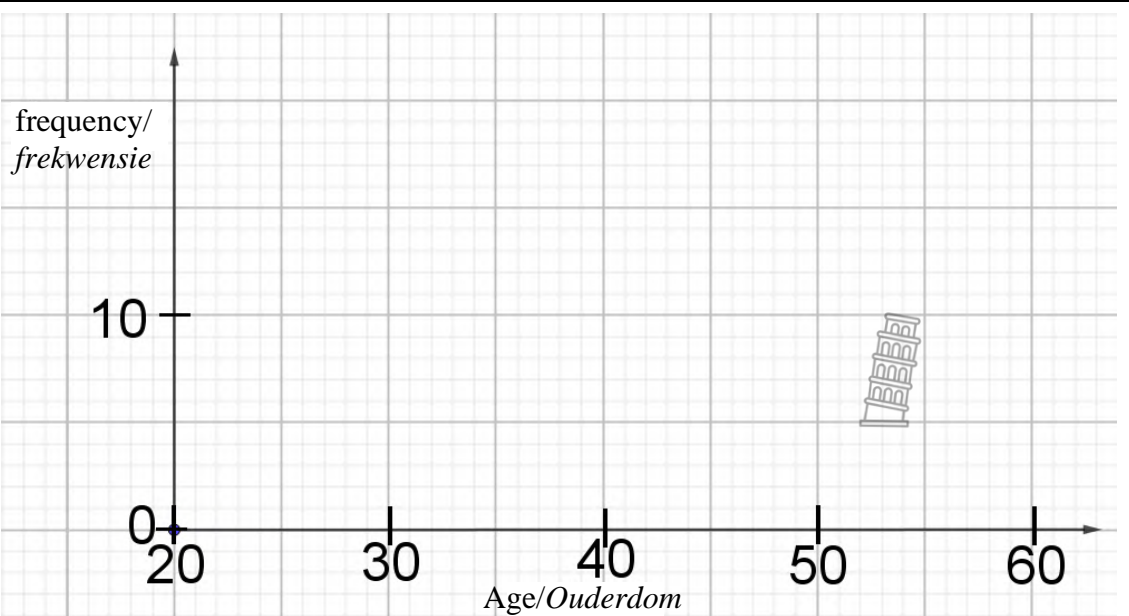
FOLLOW THESE INSTRUCTIONS CAREFULLY.	*VOLG HIERDIE INSTRUKSIES NOUKEURIG.*
1. Answer ALL questions in the spaces provided.	*1. Beantwoord ALLE vrae in die ruimtes wat voorsien is.*
2. No pages may be torn from this answer book.	*2. Geen bladsye mag uit hierdie antwoordboek geskeur word nie.*
3. Candidates may not retain an answer book or remove it from the examination room. Answer books must be returned to the invigilator at the end of the examination session.	*3. Geen antwoordboek mag deur kandidate behou of uit die eksamenlokaal verwyder word nie. Antwoordboeke moet aan die toesighouer terugbesorg word aan die einde van die eksamensessie.*
4. Answers must be written in blue ink as distinctly as possible. Do not write in the margins.	*4. Skryf antwoorde so duidelik moontlik met swart/blou ink. Moenie in die kantlyn skryf nie.*
5. Rule-off through any work/rough work that must not be marked.	*5. Trek 'n netjiese lyn deur enige werk/rofwerk wat nie nagesien moet word nie.*
6. In the event that you use the additional space provided:	*6. Ingeval jy die bykomende ruimte wat voorsien word, gebruik:*
6.1 Write down the number of the question.	*6.1 Skryf die nommer van die vraag neer.*
6.2 Leave a line and rule-off after your answer.	*6.2 Laat 'n lyn oop en trek 'n lyn na jou antwoord.*
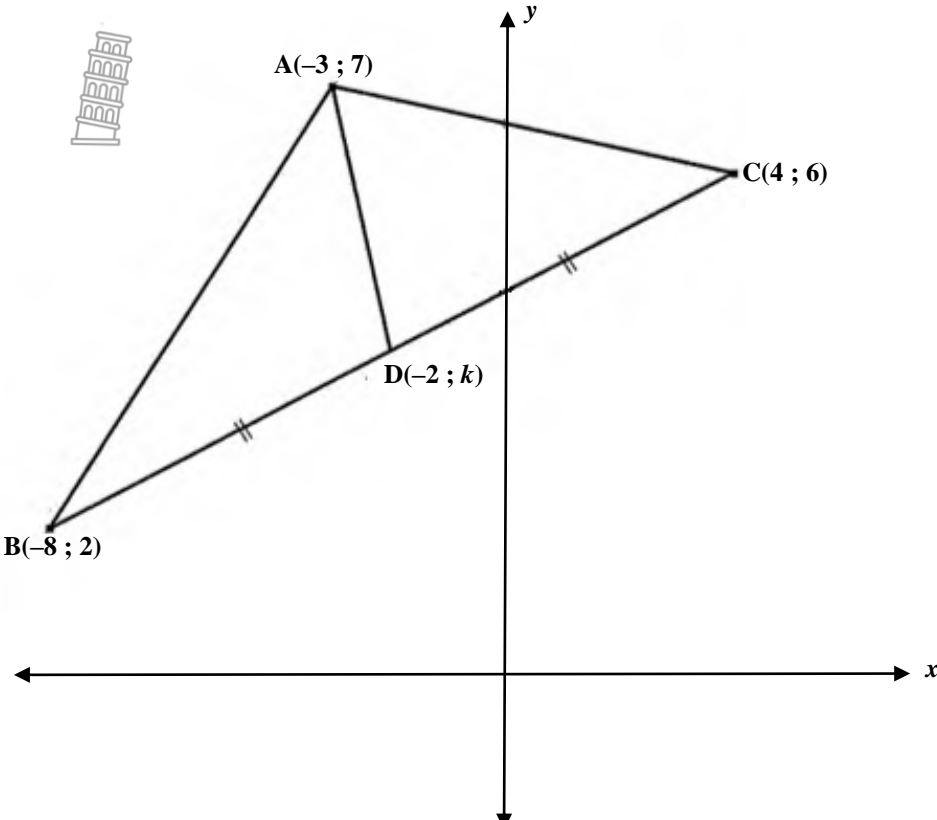
QUESTION/*VRAAG* 1

		Solution/*Oplossing*	Marks/*Punte*
1.1		11 12 13 14 15 16	(4)
1.2	1.2.1		(2)
	1.2.2		(1)
	1.2.3		(2)
	1.2.4		(2)
			[11]

QUESTION/*VRAAG* 2

	Solution/*Oplossing*	Marks/*Punte*
2.1		(4)
2.2		(2)
2.3		(3)
		[9]

2.1

AGE INTERVALS/ *OUDERDOMSINTERVALE*	TALLY/ *TELLING*	FREQUENCY/ *FREKWENSIE*
$25 \le x < 33$		
$33 \le x < 41$		
$41 \le x < 49$		
$49 \le x < 57$		

2.2

frequency/
frekwensie

10

0
20   30   40   50   60

Age/*Ouderdom*

2.3

frequency/
frekwensie

10

0
20   30   40   50   60

Age/*Ouderdom*

QUESTION/*VRAAG* 3

	Solution/*Oplossing*	Marks/*Punte*
3.1		(2)
3.2		(2)

3.3		
		(2)
3.4		
		(3)
		[9]

QUESTION/*VRAAG* 4

4.1	**Solution/*Oplossing***		**Marks/*Punte***
	4.1.1		
			(2)
	4.1.2		
			(2)
	4.1.3		
			(2)

4.2	4.2.1		
			(2)
	4.2.2		
			(3)
	4.2.3		
			(4)
			[15]
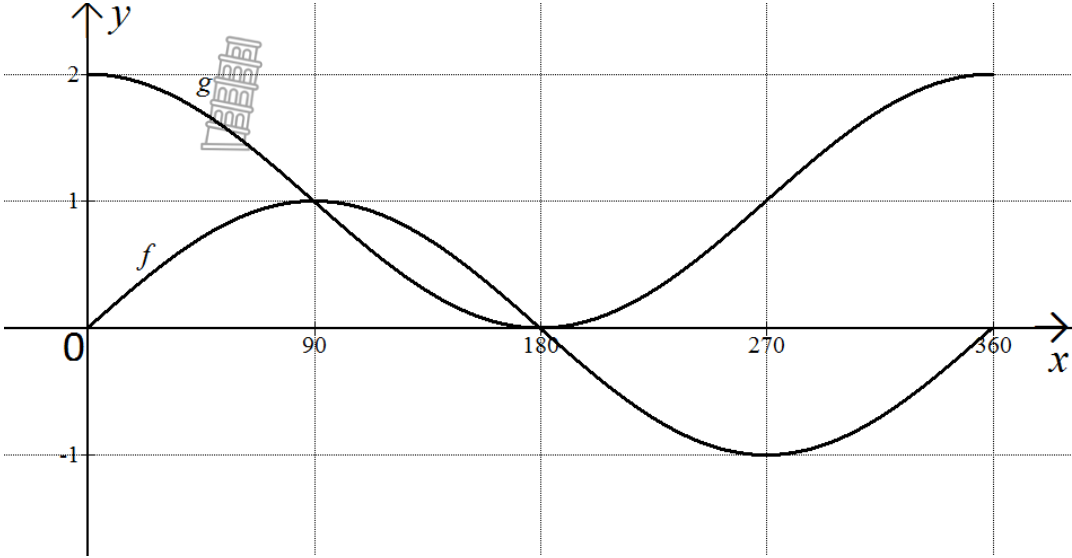
QUESTION/*VRAAG* 5

5.1	**Solution/*Oplossing***	**Marks/*Punte***
	5.1.1	
		(4)
	5.1.2	
		(2)

5.2		P.T.O./*b.o.*
		(4)

5.3		
		(6)
		[16]

	MATHEMATICS/*WISKUNDE* (Answer Book/*Antwoordboek*)	(Paper/*Vraestel* 2) GRADE/*GRA AD* 10	**9**
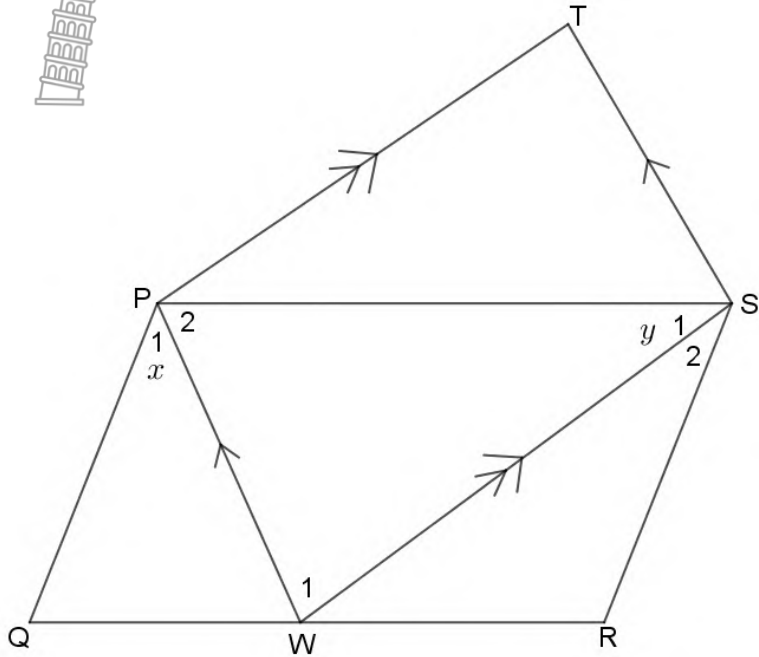
QUESTION/*VRAAG* 6

	Solution/*Oplossing*	Marks/*Punte*
6.1		(1)
6.2		(2)
6.3		(1)
6.4		(2)
6.5		(3)
6.6		(1)
		[10]

QUESTION/*VRAAG* 7

		Solution/*Oplossing*	Marks/*Punte*
7.1	7.1.1		(2)
	7.1.2		(2)
	7.1.3		(2)
7.2	7.2.1		(2)
	7.2.2		(2)
	7.2.3		(2)
			[12]

QUESTION/*VRAAG* 8

	Solution/*Oplossing*	Marks/*Punte*
8.1		
		(4)
8.2		
		(4)
		[8]

QUESTION/*VRAAG* 9

	Solution/*Oplossing*	Marks/*Punte*
		(5)
		[5]

QUESTION/*VRAAG* 10

Solution/*Oplossing*	Marks/*Punte*
	[5]

Additional space/*Bykomende ruimte*	Marks/*Punte*

TOTAL/*TOTAAL*:	100

END/*EINDE*

GAUTENG PROVINCE
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PROVINCIAL EXAMINATION/
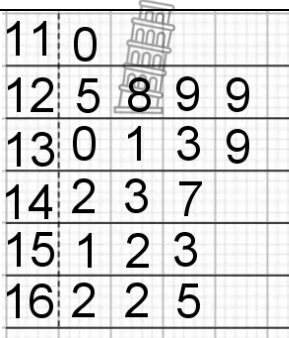
PROVINSIALE EKSAMEN

NOVEMBER 2022

GRADE 10/*GRAAD 10*

MARKING GUIDELINES/

NASIENRIGLYNE
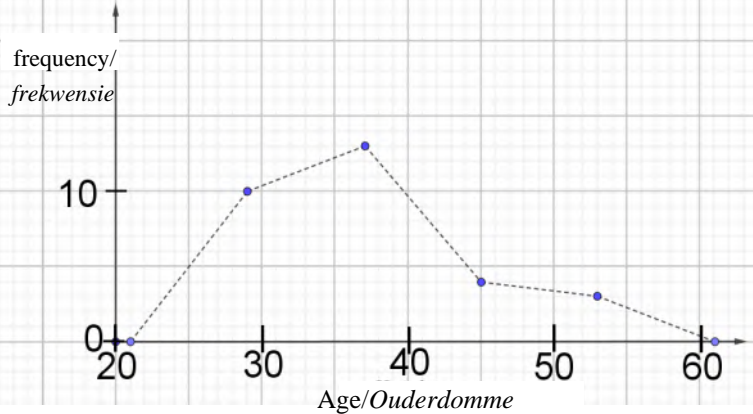
MATHEMATICS (PAPER 2)/*WISKUNDE (VRAESTEL 2)*

10 pages/*bladsye*

	MATHEMATICS/*WISKUNDE*
MARKING GUIDELINES/ *NASIENRIGLYNE*	(PAPER/*VRAESTEL* 2)
	GRADE/*GRAAD* 10

QUESTION/*VRAAG* 1

QUESTION/ *VRAAG*		Suggested solution/ *Voorgestelde oplossing*	Explanation/ *Verduideliking*	Marks/ *Punte*
1.1		11 | 0	✓ Ist and 2nd leaf *1ste en 2de tak*	
		12 | 5 8 9 9	should be in order eg. 0139 *moet in volgorde wees bv.0139* ✓ 3rd and 4th leaf *3de en 4de tak*	
		13 | 0 1 3 9	✓ 5th and 6th leaf *5de en 6de tak*	
		14 | 2 3 7	Should be in order eg. 237 *moet in volgorde wees bv.0139*	
		15 | 1 2 3	✓ key/*sleutel*	
		16 | 2 2 5 Key : 13/3=133		(4)
1.2	1.2.1	$Q_2 = \dfrac{139 + 142}{2}$ $= 140,5$	✓ method/*metode* ✓ answer/*antwoord*	(2)
	1.2.2	129 and/*en* 162	✓ both values *beide waardes*	(1)
	1.2.3	Lower Quartile/*onderste kwartiel* = 129 Upper Quartile/ *boonste kwartiel* = 152	✓ answer/*antwoord* ✓ answer/*antwoord*	(2)
	1.2.4	$\bar{x} = \dfrac{\sum x}{n}$ $= \dfrac{2\,531}{18}$ $= 140,61$ Answer ONLY: FULL marks *SLEGS antwoord : VOLPUNTE*	✓ 2 531 ✓ 140,61	(2)
				[11]

MARKING GUIDELINES/ NASIENRIGLYNE	MATHEMATICS/WISKUNDE (PAPER/VRAESTEL 2) GRADE/GRAAD 10

QUESTION/VRAAG 2

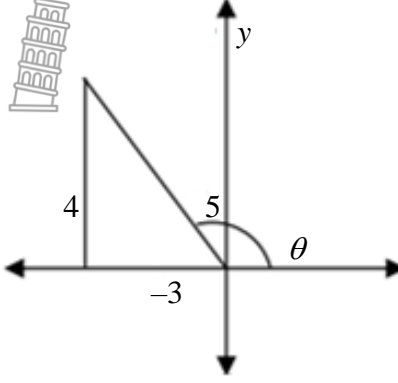| QUESTION/ VRAAG	Suggested solution/ Voorgestelde oplossing			Explanation/ Verduideliking	Marks/ Punte
2.1	**AGE INTERVALS** ***OUDERDOMS-INTERVALLE***	**TALLY/** ***TELLING***	**FREQUENCY/** ***FREKWENSIE***	✓ tallies and f =10/ *telling en f* =10 ✓ tallies and f =13/ *telling en f* =13 ✓ tallies and f = 4 / *telling en f* =4 ✓ tallies and f = 3 / *telling en f* =3	
	$25 \leq x < 33$	~~HHH~~ ~~HHH~~	**10**		
	$33 \leq x < 41$	~~HHH~~ ~~HHH~~ ///	**13**		
	$41 \leq x < 49$	////	**4**		
	$49 \leq x < 57$	///	**3**		(4)
2.2				✓ 1st and 2nd column/ *1ste en 2de kolomme* ✓ 3rd and 4th column/ *3^{rde} en 4de kolomme*	(2)
2.3				✓ shape/*vorm* ✓ (29;10) (28;13) (45;4) (53; 3) ✓ grounding both sides/*begronding beide kante* At/*By* (21;0) and/*en* (61;0)	(3)
					[9]

3

MARKING GUIDELINES/ *NASIENRIGLYNE*	**MATHEMATICS/***WISKUNDE* **(PAPER/***VRAESTEL* 2) **GRADE/***GRAAD* 10	

QUESTION/*VRAAG* **3**

QUESTION/ *VRAAG*	Suggested solution/ *Voorgestelde oplossing*	Explanation/ *Verduideliking*	Marks/ *Punte*
3.1	$m_{BC} = \dfrac{y_2 - y_1}{x_2 - x_1}$ $= \dfrac{6-2}{4+8}$ $= \dfrac{1}{4}$	✓ substitution/*vervanging* ✓ answer/*answer*	(2)
3.2	BC $= \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$ BC $= \sqrt{(4+8)^2 + (6-2)^2}$ BC $= 12{,}65$ OR $4\sqrt{10}$	✓ substitution/*vervanging* ✓ answer/*answer*	(2)
3.3	$k = \dfrac{6+2}{2}$ $= 4$	✓ correct substitution/ *korrekte vervanging* ✓ answer/*antwoord*	(2)
3.4	For AD$\perp BC$ $m_{BC} \times m_{AD} = -1$ $m_{AD} = \dfrac{7-4}{3+2}$ $m_{AD} = -3$ $\therefore \dfrac{1}{4} \times -3 \neq -1$ $\therefore$ AD not $\perp$ BC AD *nie* $\perp$ *op* BC	✓ deduction/*afleiding* ✓ substitution/*vervanging* ✓ answer/*antwoord*	(3)
			[9]
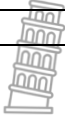
4

QUESTION/*VRAAG* 4

QUESTION/ *VRAAG*		Suggested solution/ *Voorgestelde oplossing*	Explanation/ *Verduideliking*	*Punte/* Marks
4.1	4.1.1	$\cos(x+y)$ $= \cos(66,4° + 114,7°)$ $= \cos(181,1°)$ $= -1,00$	✓ substitution/*vervanging* ✓ answer/*antwoord*	(2)
	4.1.2	$2\sin x$ $= 2\sin(66,4°)$ $= 1,83$	✓ substitution/*vervanging* ✓ answer/*antwoord*	(2)
	4.1.3	cosec x $\dfrac{1}{\sin(66,4°)}$ $= 1,09$	✓ correct substitution/ *korrekte vervanging* ✓ answer/*antwoord*	(2)
4.2	4.2.1	$\sin\theta + 0,38 = 1$ $\sin\theta = 0,62$ $\theta = 38,3°$ Penalise 1 mark for incorrect rounding off/ *Penaliseer 1 punt vir verkeerde afronding*	✓ 0,62 ✓ answer/*antwoord*	(2)
	4.2.2	$2\cot 2\theta = 3$ $2\cot 2\theta = \dfrac{3}{2}$ $2\theta = \tan^{-1}\left(\dfrac{2}{3}\right)$ $2\theta = 33,69\ldots°$ $\theta = 16,8°$	✓ $\dfrac{3}{2}$ ✓ $\tan^{-1}\left(\dfrac{2}{3}\right)$ OR/*OF* $2\theta = 33,69\ldots°$ ✓ answer/*antwoord*	(3)
	4.2.3	$2\cos(3\theta - 60°) = 1,71$ $\cos(3\theta - 60°) = 0,855$ $3\theta - 60° = 31,24\ldots°$ $3\theta = 91,24\ldots°$ $\theta = 30,4°$	✓ 0,855 ✓ $3\theta - 60° = 31,24°$ ✓ $3\theta = 91,24°$ ✓ answer/*antwoord*	(4)
				[15]

	MARKING GUIDELINES/ *NASIENRIGLYNE*	MATHEMATICS/*WISKUNDE* (PAPER/*VRAESTEL* 2) GRADE/*GRAAD* 10

QUESTION/*VRAAG* 5

QUESTION/ *VRAAG*		Suggested solution/ *Voorgestelde oplossing*	Explanation/ *Verduideliking*	*Punte/* Marks
5.1	5.1.1	$y^2 = (5)^2 - = (4)^2$ Pythagoras; $90°\angle$ $y^2 = 25 - 16$ $y = -3$ $\tan\theta = -\frac{4}{3}$	✓ diagram ✓ S ✓ $y = -3$ ✓ answer/*antwoord*	(4)
	5.1.2	$2\cos^2\theta - 1$ $= 2(-\frac{3}{5})^2 - 1$ $= -\frac{7}{25}$	✓ $2(-\frac{3}{5})^2 - 1$ ✓ answer/*antwoord*	(2)
5.2		$\cos 0° + \sin^2 60° + \sqrt{2} \cdot \sec 45°$ $= 1 + \left(\frac{\sqrt{3}}{2}\right)^2 + \sqrt{2} \cdot \frac{2}{\sqrt{2}} \cdot$ $3\frac{3}{4}$ **OR/*OF*** $\frac{15}{4}$	✓ **1** ✓ $\left(\frac{\sqrt{3}}{2}\right)^2$ ✓ $\sqrt{2} \cdot \frac{2}{\sqrt{2}}$ ✓ answer/*antwoord*	(4)
5.3		Distance/*Afstand* DB: $\tan21° = \frac{DB}{30}$ $\qquad DB = 11{,}515 \ldots \ m$ Distance/*Afstand* BC: $\tan15° = \frac{BC}{30}$ $\qquad BC = 8{,}038 \ldots \ m$ $\therefore DC = 11{,}515 \ m - 8{,}038 \ m$ $\qquad \therefore DC = 3{,}48$	✓ $\tan21° = \frac{DB}{30}$ ✓ DB = 11,515 *m* ✓ $\tan15° = \frac{BC}{30}$ ✓ BC = 8,038 *m* ✓ DC = 11,515 *m* − 8,038 *m* ✓ answer/*antwoord*	(6)
				[16]

MARKING GUIDELINES/ *NASIENRIGLYNE*	**MATHEMATICS/***WISKUNDE* **(PAPER/***VRAESTEL* 2) **GRADE/***GRAAD* 10

QUESTION/*VRAAG* 6

QUESTION/ *VRAAG*	Suggested solution/ *Voorgestelde oplossing*	Explanation/ *Verduideliking*	*Punte/* Marks
6.1	$a = 1$	✓ 1	(1)
6.2	$y \in [0;2]$ **OR/***OF* $0 \leq y \leq 2; \ y \in R$ **NOTE/***NOTA* In this type of answers – look at values and give the mark. Then look at inequalities. If values are wrong, then ZERO marks *In hierdie tipe antwoorde – kyk na waardes en gee die punt. Kyk dan na ongelykhede. As waardes verkeerd is, dan NUL*	✓ critical values/*kritieke waardes* ✓ notation/*notasie*	(2)
6.3	1	✓ 1	(1)
6.4	$90° \leq x \leq 180°$ **OR/***OF* $x \in [90°;180°]$ See note above *Sien nota hierbo*	✓ values/*waardes* ✓ inequality signs/ *ongelykheidstekens*	(2)
6.5	$x = 0°$ or/*of* $x = 270°$ or/*of* $x = 360°$	✓ $x = 0°$ ✓ $x = 270°$ ✓ $x = 360°$	(3)
6.6	$h(x) = -sinx$	✓answer/*antwoord*	(1)
			[10]

7

MARKING GUIDELINES/ *NASIENRIGLYNE*	MATHEMATICS/*WISKUNDE* (PAPER/*VRAESTEL* 2) GRADE/*GRAAD* 10

QUESTION/*VRAAG* 7

QUESTION/ *VRAAG*		Suggested solution/ *Voorgestelde oplossing*	Explanation/ *Verduideliking*	*Punte/* Marks
7.1	7.1.1	$AH^2 = 0,8^2 + 1,5^2$ $AH^2 = 2,89$ $AH = 1,7$ m	✓ $AH^2 = 0,8^2 + 1,5^2$ ✓ answer/*antwoord*	(2)
	7.1.2	Surface area of roof/*Buite-oppv van dak* $= 4 \times \dfrac{1}{2}(3 \times 1,7)$ $= 10,2\ m^2$	✓ $4 \times \dfrac{1}{2}(3 \times 1,7)$ ✓ answer/*antwoord*	(2)
	7.1.3	Surface area of walls/*Buite-oppv van mure* $= 4 \times 3 \times 2,1$ $= 25,2\ m^2$ Total surface area/*Totale oppv* $= 10,2\ m^2 + 25,2\ m^2 = 35,4\ m^2$	✓ $= 25,2\ m^2$ ✓ answer/*antwoord*	(2)

8

QUESTION/ *VRAAG*		Suggested solution/ *Voorgestelde oplossing*	Explanation/ *Verduideliking*	*Punte/* Marks
7.2	7.2.1	Volume $= \frac{4}{3}\pi r^3$ $= \frac{4}{3}\pi \times 8^3$ $= 2\,144{,}62\ m^3$	$\checkmark = \frac{4}{3}\pi \times 8^3$ $\checkmark$ answer/*antwoord*	(2)
	7.2.2	New volume/*Nuwe volume* : Orig volume/*Oorspronklike volume* $= 2^3 : 1$ $= 8:1$	$\checkmark 2^3$ $\checkmark$ answer/*antwoord*	(2)
	7.2.3	Volume including silver/*Volume met silwer ingesluit* $= \frac{4}{3}\pi \times 9^3 = 3\,053{,}66\ mm^3$ Volume of silver/*Volume van silwer* $= 3\,053{,}66 - 2\,144{,}62 = 908,\ mm^3$	$\checkmark \frac{4}{3}\pi \times 9^3$ $\checkmark$ answer/*antwoord*	(2)
				[12]

QUESTION/*VRAAG* 8

8.1	$\hat{P}_1 = \hat{P}_2 = x$ $\hat{S}_1 = \hat{S}_2 = y$ $x + x + y + y = 180°$ $2x + 2y = 180°$ $\therefore x + y = 90°$	[given/*gegee*] [given/*gegee*] [co-interior $< $ s PQ // SR/ *ko-binne* $<^e$; PQ // SR]	$\checkmark$ S $\checkmark$ S $\checkmark$ S $\checkmark$ R	(4)
8.2	$\hat{W}_1 + x + y = 180°$ $\hat{W}_1 = 90°$ PWST is a parallelogram/ PWST *is 'n parallelogram* $\therefore$ PWST is a rectangle PWST *is 'n reghoek*	[sum int $<$ of $^\Delta$/ *som binne* $<^e$ *van* Δ] [both pairs of opp sides parallel/*albei pare teenoorstaande sye ewewydig*] [$\hat{W}_1 = 90°$ and PWST is a parm $\hat{W}_1 = 90°$ *en* PWST *is 'n parm*]	$\checkmark$ S/R $\checkmark$ S $\checkmark$ S $\checkmark$ R 	(4)
				[8]

9

MARKING GUIDELINES/ *NASIENRIGLYNE*	MATHEMATICS/*WISKUNDE* (PAPER/*VRAESTEL* 2) GRADE/*GRAAD* 10

QUESTION/*VRAAG* 9

$BD = BD$	[common/*gemeenskaplik*]	✓ S	
$\hat{D}_1 = \hat{B}_2$	[alternate < s AD // BC/ *verw.binne* $<^e$; AD // BC]	✓ S/R	
$\hat{B}_2 = \hat{D}_1$	[alternate < s AB // DC *verw.binne* $<^e$; AB // DC]	✓ S	
$\therefore \Delta ABC \equiv \therefore \Delta CBD$	[AAS/*HHS*]	✓ S	
$\therefore \Delta AD = BC, AB = DC$	$\Delta^{'s}/\Delta'^e \equiv$	✓ R	(5)
			[5]

QUESTION/*VRAAG* 10

$DE \mathbin{//} BC$	[midpoint theorem/*middelpunt stelling*]	✓ S ✓ R	
$\hat{D}_2 = \hat{A}$	[corresponding < s DE // BC *ooreenkomstige* $<^e$; DE // BC]	✓ S/R	
$\hat{B}_1 = \hat{A}$	[< s opp = sides /$<^e$ *teenoor gelyke sye*]	✓ S/R	
$\hat{D}_2 = \hat{B}_1$			
DR = RB	[sides opp equal $\angle^s$ / *sye teenoor gelyke* $\angle^e$]	✓ S/R	
ΔRDB is isosceles ΔRDB is gelykbenig	[two equal angles/*twee gelyke hoeke]*		
			(5)
			[5]
		TOTAL/*TOTAAL*:	**100**