GAUTENG PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

GAUTENG DEPARTMENT OF EDUCATION/

GAUTENGSE DEPARTEMENT VAN ONDERWYS

PROVINCIAL EXAMINATION/

PROVINSIALE EKSAMEN

NOVEMBER 2020

GRADE/*GRAAD* 9

MATHEMATICS/*WISKUNDE*

(PAPER 2/*VRAESTEL 2*)

MARKING GUIDELINES/*NASIENRIGLYNE*

6 pages/*bladsye*

QUESTION/*VRAAG 1*

1.1	C✓	(1)
1.2	A✓	(1)
1.3	C✓	(1)
1.4	D✓	(1)
1.5	A✓	(1)
		[5]

QUESTION/*VRAAG 2*

2.1.1

Statement/*Bewering*	**Reason/*Rede***
$x = 45°$	alt. $\angle s$ & AB ∥ CD/ *verw.* $\angle e$ *&* $AB \parallel CD$✓

1 mark for statement & reason/
1 punt vir bewering & rede
(1)

2.1.2

Statement/*Bewering*	**Reason/*Rede***
$\hat{C}_1 + 60° + 45° = 180°$ $\hat{C}_1 = 180° - 105° = 75°$✓	sum int. $\angle s$ of Δ/ *som binne* $\angle e$ *van* Δ✓
$A\hat{C}D = \hat{C}_1 + \hat{C}_2 = 120°$✓	
$A\hat{C}D = y$	corr. $\angle s$ & AB ∥ CD/ *ooreenkomstige.* $\angle e$ *&* $AB \parallel CD$✓
$y = 120°$✓	

1 mark for statement & reason/
1 punt vir bewering & rede
1 mark for $\hat{C}_1 = 75°$/
1 punt $\hat{C}_1 = 75°$
1 mark for $A\hat{C}D = 120°$/
1 punt vir $A\hat{C}D = 120°$
1 mark for statement & reason/
1 punt vir bewering & rede
1 mark for answer/
1 punt vir antwoord

OR/*OF*

Statement/*Bewering*	**Reason/*Rede***
$\hat{C}_1 = 180° - \hat{C}_2 - \hat{A}_2$ $\hat{C}_1 = 180° - 105° = 75°$✓	co-int. $\angle s$ & AB ∥ CD/ *ko-binne* $\angle e$ *&* $AB \parallel CD$ ✓
$A\hat{C}D = \hat{C}_1 + \hat{C}_2 = 120°$✓	
$A\hat{C}D = y$	corr. $\angle s$ & AB ∥ CD/ *ooreenkomstige.* $\angle e$ *&* $AB \parallel CD$✓
$y = 120°$✓	

1 mark for statement & reason/
1 punt vir bewering & rede
1 mark for $\hat{C}_1 = 75°$/
1 punt $\hat{C}_1 = 75°$
1 mark for $A\hat{C}D = 120°$/
1 punt vir $A\hat{C}D = 120°$
1 mark for statement & reason/
1 punt vir bewering & rede
1 mark for answer /
1 punt vir antwoord
(5)

2.1.3

Statement/*Bewering*	**Reason/*Rede***
$A\widehat{C}D = z = 120°$✓	corr. $\angle s$ & EF ∥ CD/ *ooreenkomstige.* $\angle e$ *&* EF ∥ CD

1 mark for statement/ *1 punt vir bewering* (1)

2.2.1

Statement/*Bewering*	**Reason/*Rede***
$K\widehat{L}N = K\widehat{N}L$	$\angle s$ opp. = sides/ $\angle e$ *teenoor* = *sye* ✓
$\therefore K\widehat{L}N = 45^0$✓	
$K\widehat{L}N = L\widehat{N}M$	Alt. $\angle s$ & KL ∥ NM/ *verw.* $\angle e$ & KL ∥ NM ✓
$\therefore L\widehat{N}M = 45^0$	
$45^0 + 2x + 20^0 + 3x - 35^0 = 180^0$✓	sum int. $\angle s$ of Δ/ *som binne* $\angle e$ *van* Δ
$5x = 180^0 - 30^0$	
$5x = 150^0$	
$x = 30^0$✓	

1 mark for reason/ *1 punt vir rede*

1 mark for $K\widehat{L}N = 45^0$/ *1 punt vir* $K\widehat{L}N = 45^0$

1 mark for reason/ *1 punt vir rede*

1 mark for substitution/ *1 punt vir vervanging*

1 mark for answer/ *1 punt vir antwoord* (5)

2.2.2

Statement/*Bewering*	**Reason/*Rede***
$N\widehat{L}M = 2x + 20^0$	
$N\widehat{L}M = 2(30^0) + 20^0$✓	$x = 30^0$
$N\widehat{L}M = 80^0$✓	

1 mark for substitution/ *1 punt vir vervanging*

1 mark for answer/ *1 punt vir antwoord* (2)

[14]

QUESTION/*VRAAG 3*

3.1.1

Statement/*Bewering*	**Reason/*Rede***
AB = DC	= sides of square/=*sye van vierkant*✓
PB = DR	opp. sides of $\parallel^m$/*teenoorst. sye van* $\parallel^m$✓
$\hat{A} = \hat{C} = 90°$	$\angle s$ of a square/$\angle e$ *van vierkant*✓
∴ ΔABP ≡ ΔCDR	RHS/90°/Hs ✓

1 mark for statement & reason/ *1 punt vir bewering & rede*
1 mark for statement & reason/ *1 punt vir bewering & rede*
1 mark for statement & reason/ *1 punt vir bewering & rede*
1 mark for statement & reason/ *1 punt vir bewering & rede*
(4)

3.2.1

Statement/*Bewering*	**Reason/*Rede***
$\frac{TR}{YZ}$✓ $= \frac{SR}{XZ}$✓	

1 mark for $\frac{TR}{YZ}$ & 1 mark for $\frac{SR}{XZ}$/
1 punt vir $\frac{TR}{YZ}$ *& 1 punt vir* $\frac{SR}{XZ}$
(2)

3.2.2

$\frac{ST}{XY} = \frac{3}{15} = \frac{1}{5}$✓

$\frac{TR}{YZ} = \frac{4}{x} = \frac{1}{5}$✓

$x = 4 \times 5 = 20$✓

$\frac{SR}{XZ} = \frac{y}{10} = \frac{1}{5}$✓

$y = \frac{10}{5} = 2$✓

1 mark for constant ratio $\frac{1}{5}$/
1 *punt vir konstante verhouding* $\frac{1}{5}$
1 mark for statement & substitution/*1 punt vir bewering & vervanging*
1 mark for answer/*1 punt vir antwoord/*$x = 20$
1 mark for statement & substitution/*1 punt vir bewering & vervanging*
1 mark for answer/*1 punt vir antwoord/*$y = 2$
(5)

[11]

QUESTION/*VRAAG 4*

4.1.1	$Area/Oppervlak\ \Delta MNR = \frac{1}{2}b \times\perp h$✓ $Area/Oppervlak\ \Delta MNR = \frac{1}{2}9\ mm \times 12\ mm$✓ $Area/Oppervlak\ \Delta MNR = 54\ mm^2$✓	1 mark for formula/ *1 punt vir formule* 1 mark for substitution/ *1 punt vervanging* 1 mark for answer/ *1 punt vir antwoord* (3)
4.1.2	$NM^2 = NR^2 + MR^2$✓ $NM^2 = (9\ mm)^2 + (12\ mm)^2$✓ $NM^2 = 81\ mm^2 + 144\ mm^2$ $NM^2 = 81\ mm^2 + 144\ mm^2$ $NM^2 = 225\ mm^2$ $NM = 15\ mm = ST$✓ Perimeter $/Omtrek\ MNST\ = 2(15\ mm) + 2(39\ mm)$✓ Perimeter $/Omtrek\ MNST\ = 2(15\ mm) + 2(39\ mm)$ Perimeter$/Omtrek\ MNST\ = 108\ mm$✓	1 mark for formula/*1 punt vir formule* 1 mark for substitution/*1 punt vir vervanging* 1 mark for answer/*1 punt vir antwoord* 1 mark for substitution/*1 punt vir vervanging* 1 mark for answer/*1 punt vir antwoord* (5)
4.2.1	V= $l \times b \times h$✓ V= $30 \times 20 \times 10$✓ V= 6 000 cm^3✓	1 mark for formula/*1 punt vir formule* 1 mark for substitution/*1 punt vir vervanging* 1 mark for answer/*1 punt vir antwoord* (3)
4.2.2	$d = 14 \rightarrow r = 7\ cm$✓ $V = \pi r^2 \times h$✓ $V = \frac{22}{7}(7)^2 \times 10$✓ $V = 1540\ cm^3$✓ $V = 6\ 000\ cm^3 - 1540\ cm^3$✓CA $V = 4460\ cm^3$✓	1 mark for *r = 7cm*/1 *punt* *r = 7cm* 1 mark for formula/*1 punt vir formule* 1 mark for substitution/*1 punt vervanging* 1 mark for answer/*1 punt vir antwoord* 1 mark for statement/*1 punt vir stelling* 1 mark for answer/*1 punt vir antwoord* (6)

4.2.3	$SA = 2(l + b) \times H + 2 \times l \times b$✓ $SA = 2(30\ cm + 20\ cm) \times 10\ cm + 2 \times 30\ cm \times 20\ cm$✓ $SA = 2200\ cm^2$✓	1 mark for formula/*1 punt vir formule* 1 mark for substitution/*1 punt vir vervanging* 1 mark for answer/*1 punt vir antwoord* (3)
		[20]
		TOTAL/*TOTAAL*: 50