Province of the
EASTERN CAPE
SENIOR CURRICULUM MANAGEMENT
NELSON MANDELA DISTRICT

Grade 9 Mathematics Term 3 Test 2023

Total: 75 **Time: 1 ½ hour**

Information and Instructions:

1. The paper consists of THREE questions.
2. Answer all the questions.
3. Show all your working.
4. Only answers will not necessarily be awarded full marks.
5. Number your answers correctly according to numbering system used in this paper.
6. A calculator may be used unless stated otherwise.
7. Write neatly and legible.

QUESTION 1

1.1 In which quadrant does the point (–4; –3) lie? (1)

1.2 Choose the correct word to correct the statement:

1.2.1 If the gradients of two straight lines are equal, the lines are (parallel / perpendicular) (1)

1.2.2 If the gradient of a line is negative, then the line is said to be (increasing / decreasing) (1)

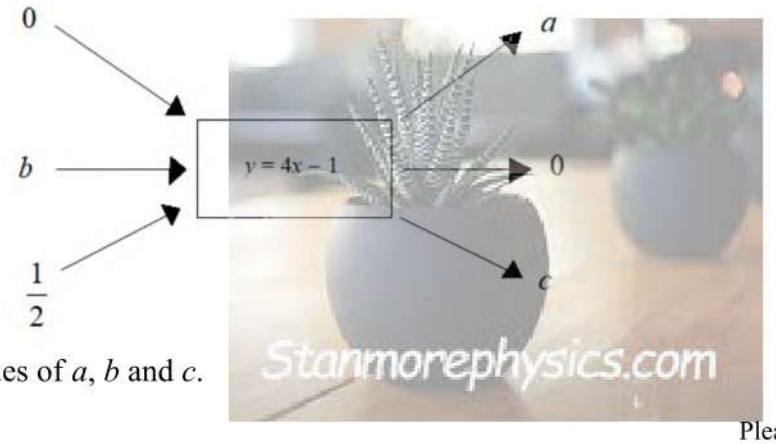
1.3 Write down the equation of a vertical line that cuts the x-axis at 2. (1)

1.4 Consider the points (1; –1) and (3; 5):

1.4.1 Calculate the gradient between the points (3)

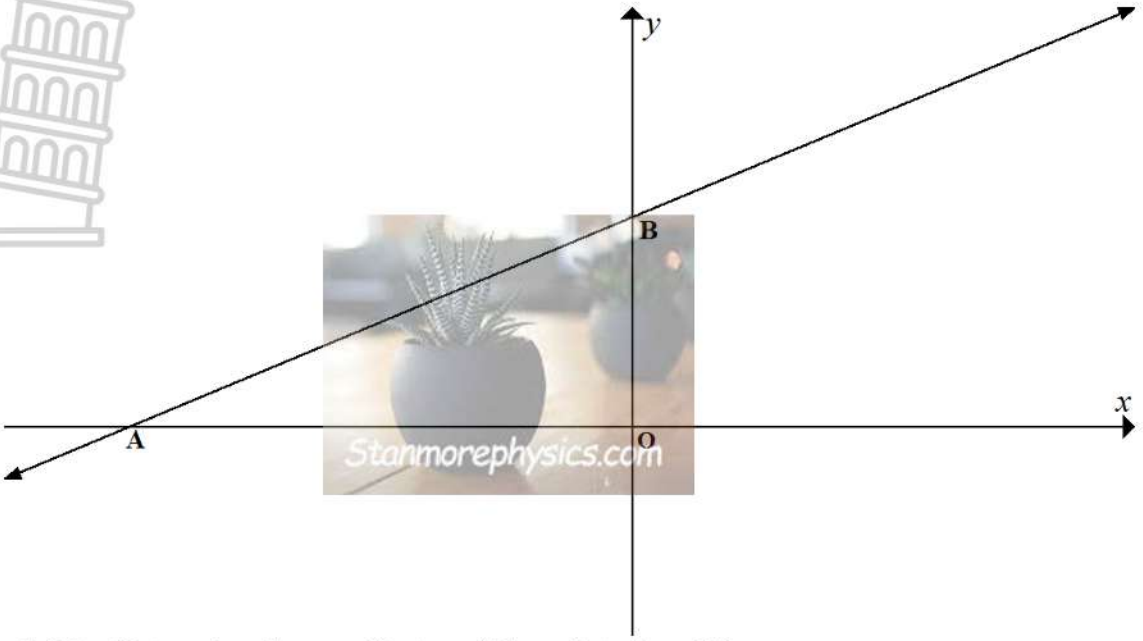
1.4.2 Write down the equation of the line through these points if the y-intercept of the line –4. (1)

1.5 Consider the flow diagram below:



Write down the values of a, b and c. (2×3 = 6)

1.6 A sketch of the line $2y = x + 2$ is shown below.



1.6.1 Determine the coordinates of the points A and B. (4)

1.6.2 Hence, or otherwise write down the gradient of the line AB. (1)

1.7 Sketch the graph of the function $3x + 6y - 12 = 0$ (4)

1.8 Consider the equation of the line given by $y = mx + c$.
Sketch the graph if $m > 0$ and $c < 0$. (2)

[25]

QUESTION 2

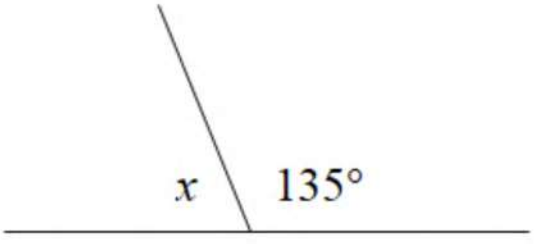
2.1 Complete each of the following statements:

2.1.1 Supplementary angles have a sum of …. (1)

2.1.2 If two lines cuts, then the … angles are equal. (1)

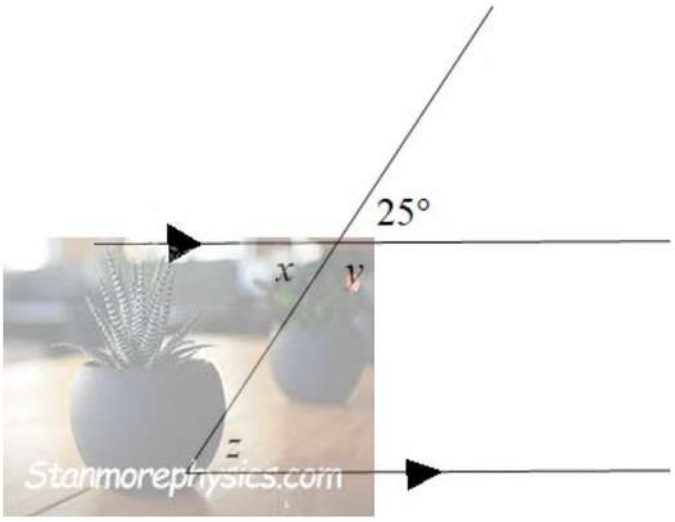
2.2 Determine the value of the unknown variables in the following diagrams, giving reasons for your statements.

2.2.1



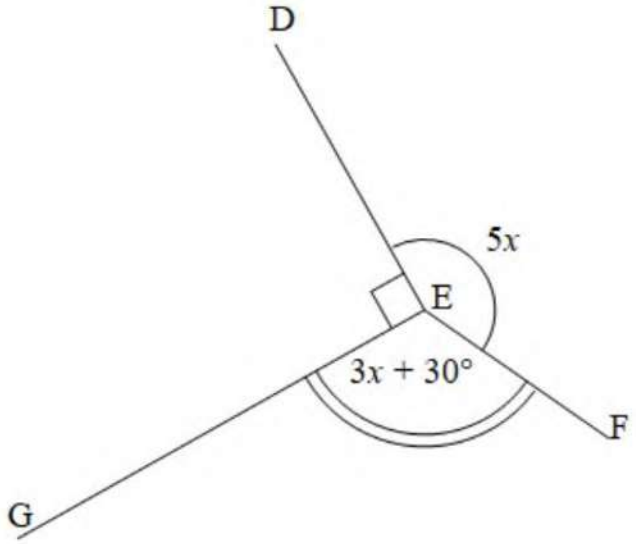
(2)

2.2.2



(5)

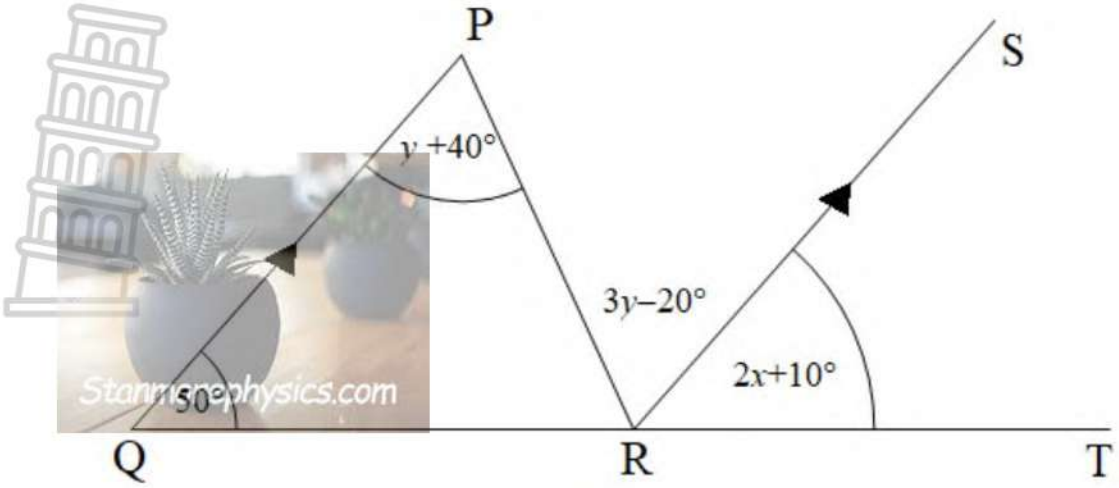
2.3 In the diagram below $D\hat{E}G = 90°$, $D\hat{E}F = 5x$ and $G\hat{E}F = 3x + 30°$.



Calculate, stating reasons, the size of $G\hat{E}F$

(5)

2.4 In the diagram below, line PQ is parallel to RS.

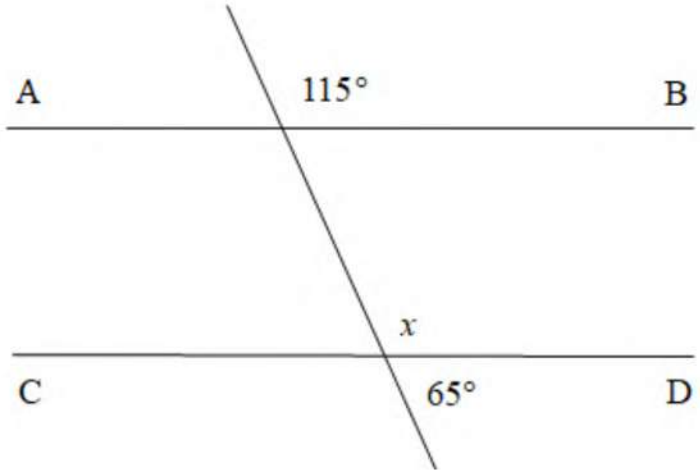


Determine, stating reasons, the value of:

2.4.1 x (3)

2.4.2 y (4)

2.5 In the diagram below, prove, stating reasons, that AB || CD.



(2)
[23]

QUESTION 3

3.1 Complete the following statements:

3.1.1 The sum of the interior angles in a triangle is … (1)

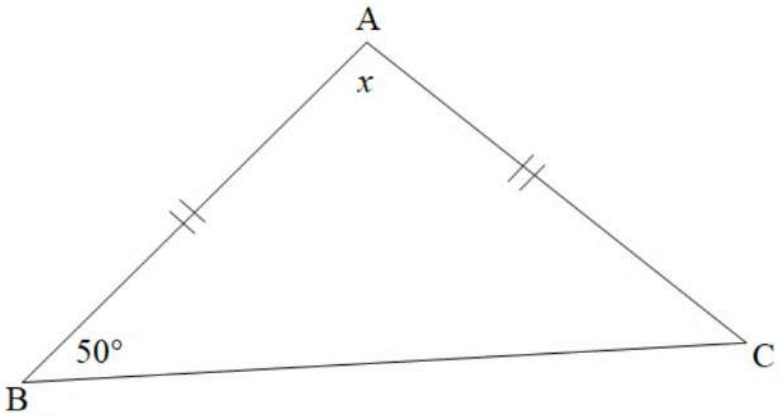
3.1.2 A triangle with all sides and all angles equal is an … triangle. (1)

3.1.3 The sum of the angles in a quadrilateral is … (1)

3.1.4 The opposite … of a parallelogram are equal and parallel. (1)

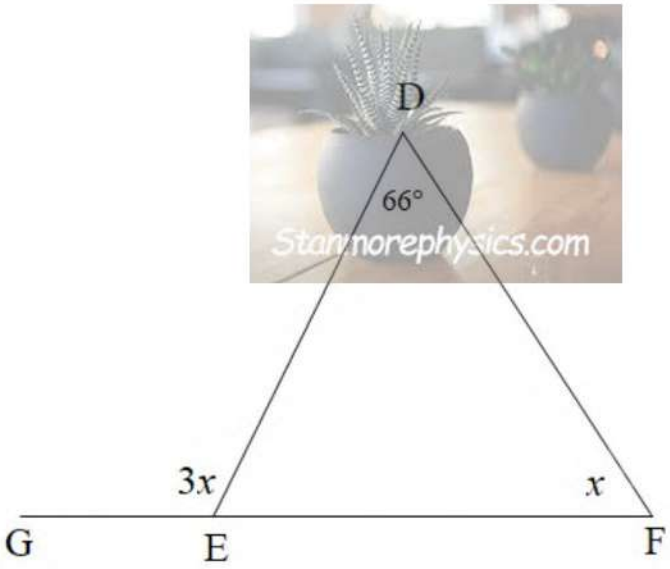
3.2 Determine the value of the unknown variables in the following diagrams, giving reasons for your statements.

3.2.1



(4)

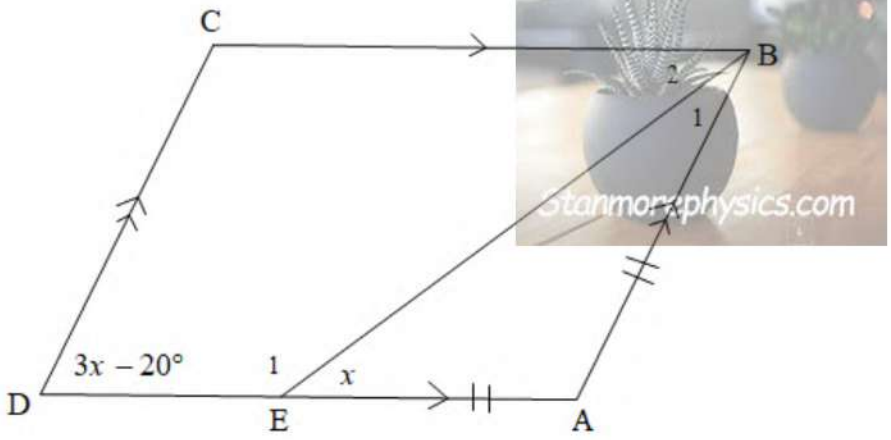
3.2.2



(4)

3.3 In the figure below, ABCD is a parallelogram.

- AB = AE
- $\hat{A}\hat{E}B = x$ and $\hat{D} = 3x - 20°$

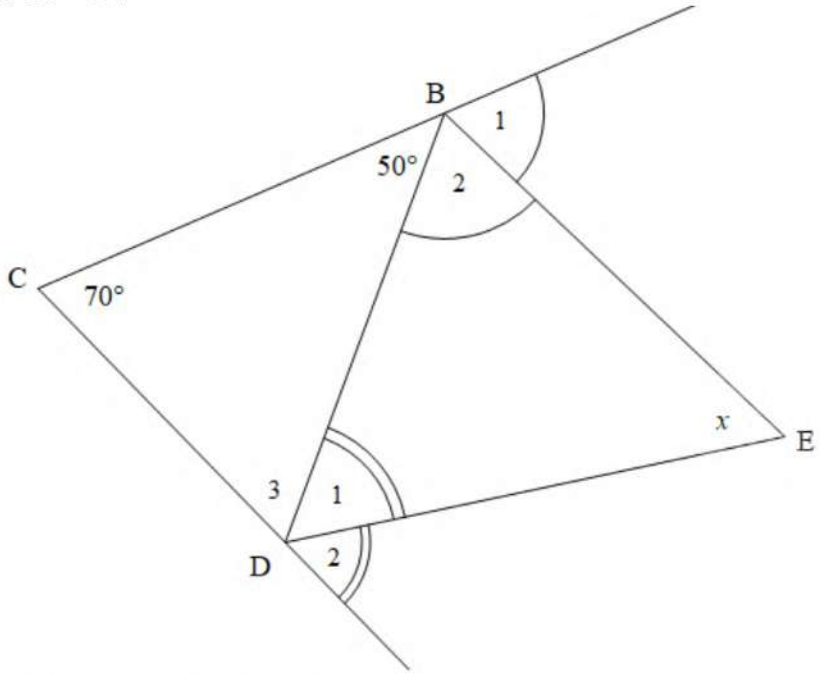


Determine, with reasons:

3.3.1 Two angles that are equal to x. (4)

3.3.2 Hence, or otherwise calculate the size of x. (3)

3.4 In the diagram below $\hat{C} = 70°$, $C\hat{B}D = 50°$ and $\hat{E} = x$.
$\hat{B}_1 = \hat{B}_2$ and $\hat{D}_1 = \hat{D}_2$



Determine, with reasons, the size of x. (8)

[27]

TOTAL: 75

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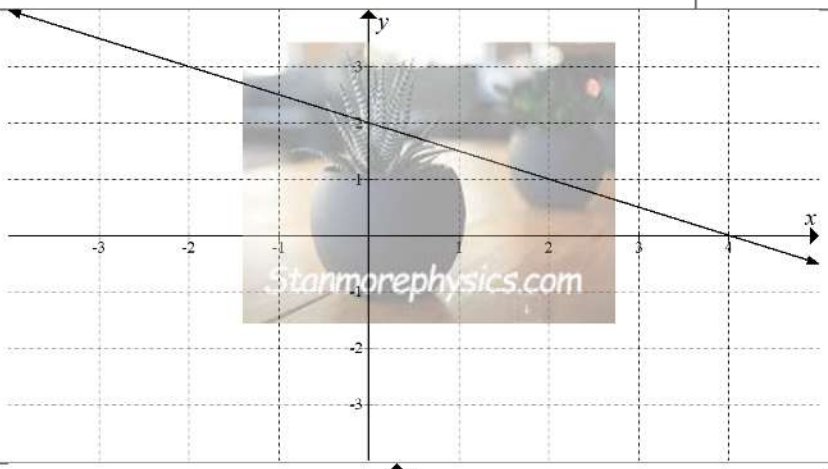
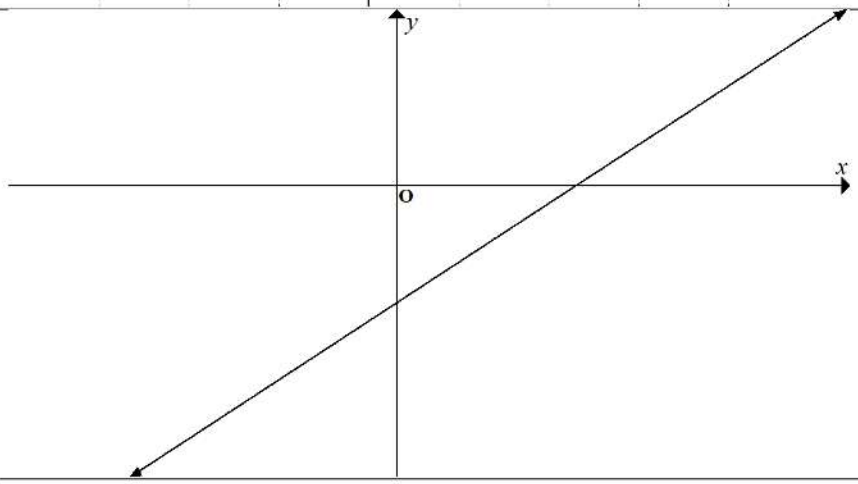
Grade 9 Mathematics Term 3 Test *Graad 9 Wiskunde Kwartaal 3 toets* 2023

Marking guidelines / *Nasienriglyne*

Total/ *Totaal*: 75 **Time / *Tyd*: 1,5 hour/*uur***

Question/ *Vraag* 1

1.1	3rd quadrant / *kwadrant*	✓ answer / *antwoord* (1)
1.2.1	Parallel / *ewewydig*	✓ answer / *antwoord* (1)
1.2.2	Decreasing / *dalend*	✓ answer / *antwoord* (1)
1.3	$x=2$	✓ answer / *antwoord* (1)
1.4.1	$m=\frac{y_2-y_1}{x_2-x_1}$ $=\frac{5-(-1)}{3-1}$ $=\frac{6}{2}$ $=3$	✓ formula / *formule* ✓ substitute into formula / *vervang in formule* ✓ answer / *antwoord* (3)
1.4.2	$y=3x-4$	✓ answer / *antwoord* (1)
1.5	$a=3(0)-4=-4$ $0=3b-4$ $b=\frac{4}{3}$ $c=3\left(\frac{1}{2}\right)-4=-2,5$	✓ substitution / *vervang* ✓ value of / *waarde van a* ✓ substitution / *vervang* ✓ value of / *waarde van b* ✓ substitution / *vervang* ✓ value of / *waarde van c* (6)
1.6.1	Let/ *Laat* $x=0$ $\therefore 2y=0+2$ $\therefore y=1$ $\therefore \text{B}(0;1)$	✓✓ $\text{B}(0;1)$ ✓✓ $\text{A}(0;-2)$ (4)

	Let/ *Laat* $y=0$ $\therefore 2(0)=x+2$ $\therefore x=-2$ $\therefore A(0;-2)$	
1.6.2	$m=\frac{1}{2}$	✓ answer / *antwoord* (1)
1.7	Let/*Laat* $x=0$ $\therefore 3(0)+6y-12=0$ $\therefore y=2$ Let/*Laat* $y=0$ $\therefore 3x+6(0)-12=0$ $\therefore x=4$ **OR / *OF*** $6y=-3x+12$ $y=-\frac{1}{2}x+2$	✓ x-intercept / *afsnit* ✓ y-intercept / *afsnit* **OR / *OF*** ✓✓ standard form / *standaardvorm*
		✓ shape / *vorm* ✓ intercepts / *afsnitte* (4)
1.8		✓ increasing function / *stygende funksie* ✓ negative y-intercept / *negatiewe y-afsnit* (2)
		[25]

Question / *Vraag* 2

2.1.1	180°	✓ answer / *antwoord* (1)
2.1.2	Vertical opposite / *regoorstaande*	✓ answer / *antwoord* (1)
2.2.1	$x = 45°$ (∠s on a str line / *∠e op 'n reguitlyn*)	✓ statement / *bewering* ✓ reason / rede (2)
2.2.2	$x = 25°$ (vertical opp ∠s / *regoorst ∠e*) $y = 155°$ (∠s on a str line / *∠e op 'n reguitlyn*) $z = 25°$ (co-interior ∠s / *ko – binne ∠e*) (alt ∠s / *verw ∠e*) (corr ∠s / *ooreenk ∠e*)	✓ statement / *bewering* ✓ reason / rede ✓ statement & reason / *bewering en rede* ✓ statement / *bewering* ✓ reason / rede (5)
2.3	$90° + 5x + 3x + 30° = 360°$ (∠s around a pt / *∠e om 'n pt*) $\therefore 8x = 240°$ $\therefore x = 30°$ $G\hat{E}F = 3x + 30° = 3(30°) + 30° = 120°$	✓ statement / *bewering* ✓ reason / rede ✓ simplification / *vereenvoudiging* ✓ value / *waarde x* ✓ size / *grootte* $G\hat{E}F$ (5)
2.4.1	$2x + 10° = 50°$ (corresp ∠s; PQ ∥ SR / *ooreenk ∠e; PQ ∥ SR*) $\therefore x = 20°$	✓ statement / *bewering* ✓ reason / rede ✓ size / *grootte x* (3)
2.4.2	$y + 40° = 3y - 20°$ (alt ∠s; PQ ∥ SR / *verw ∠e; PQ ∥ SR*) $\therefore 60° = 2y$ $\therefore y = 30°$	✓ statement / *bewering* ✓ reason / rede ✓ simplification / *vereenvoudiging* ✓ size / *grootte y* (4)
2.5	$x = 115°$ (∠s on a str line / *∠e op 'n reguitlyn*) $\therefore$ AB ∥ CD (corr.sp ∠s = / *ooreenk ∠e =*)	✓ statement & reason / *bewering en rede* ✓ reason / *rede* (2)
		[23]

Question / *Vraag* 3

3.1.1	180°	✓ answer / *antwoord* (1)
3.1.2	Equilateral / *gelyksydige*	✓ answer / *antwoord* (1)
3.1.3	360°	✓ answer / *antwoord* (1)
3.1.4	Sides / *sye*	✓ answer / *antwoord* (1)
3.2.1	$\hat{C} = 50°$ (∠s opp = sides / *∠e teenoor = sye*) $x = 80°$ (int ∠s of Δ / *binne∠e van Δ*)	✓ statement / *bewering* ✓ reason / rede ✓ statement / *bewering* ✓ reason / rede (4)
3.2.2	$3x = x + 66°$ (ext ∠ of Δ / *buite ∠ van Δ*) $\therefore 2x = 66°$ $\therefore x = 33°$	✓ statement / *bewering* ✓ reason / rede ✓ simplification / *vereenvoudiging* ✓ size / *grootte x* (4)
3.3.1	$\hat{B}_1 = x$ (∠s opp = sides / *∠e teenoor = sye*) $\hat{B}_2 = x$ (alt ∠s; CB ∥ DA / *verw.∠e; CB∥DA*)	✓ statement / *bewering* ✓ reason / rede ✓ statement / *bewering* ✓ reason / rede (4)
3.3.2	$3x - 20° = 2x$ (opp ∠s of a parm / *teenoorst ∠e van parm*) $\therefore x = 20°$	✓ statement / *bewering* ✓ reason / rede ✓ size / *grootte x* (3)
3.4	$\hat{B}_1 + \hat{B}_2 + 50° = 180°$ (∠s on str line / *∠e op reguitlyn*) $\therefore 2\hat{B}_2 = 130°$ $\therefore \hat{B}_2 = 65°$ $\hat{D}_1 + \hat{D}_2 = 70° + 50°$ (ext ∠ of Δ / *buite ∠ van Δ*) $\therefore 2\hat{D}_1 = 120°$ $\therefore \hat{D}_1 = 60°$ $\therefore x + 65° + 60° = 180°$ (Int ∠s of Δ / *binne ∠e van Δ*) $\therefore x = 55°$	✓ statement / *bewering* ✓ simplification / *vereenvoudiging* ✓ size / *grootte* $\hat{B}_2$ ✓ statement / *bewering* ✓ simplification / *vereenvoudiging* ✓ size / *grootte* $\hat{D}_1$ ✓ statement / *bewering* ✓ size / *grootte x* (8)
		[27]

TOTAL / *TOTAAL*: 75