

Graad/Grade 8  
Wiskunde Eerste Vraestel  
Mathematics First Paper  
Eksaminator/Examinator:

November/November 2016  
Punte/Marks: 100  
Tyd/Time: 2 uur/hours

Moderator:

**INSTRUKSIES AAN KANDIDATE**  
**INSTRUCTIONS TO CANDIDATES**

- Hierdie vraestel bestaan uit TWEE vrae. Beantwoord ALTWEE die vrae.  
*This question paper consists of TWO questions. Answer BOTH questions*
- Beantwoord Vraag 2.8.2 op Diagramblad. Skryf jou naam in die spasie wat voorsien word en handig dit saam met jou antwoordstel in.  
*Answer Question 2.8.2 on Diagram sheet. Write your name in the space and submit with your answer sheets.*
- Nommer presies soos op die vraestel.  
*Number the answers exactly as on the paper*
- Begin elke vraag op 'n nuwe bladsy en trek 'n lyn na elke vraag. Laat 'n spasie oop na elke nommer.  
*Start each question on a new page and draw a line at the end of each question. Leave a space between each number.*
- GEEN SAKREKENAAR mag gebruik word nie.  
*NO CALCULATOR may be used.*
- Wys al jou bewerkings en dit is tot jou voordeel om netjies te werk.  
*Show all your calculations and it is in your own interest to work neatly.*
- Sterkte!  
*Good luck!*

**VRAAG 1**  
**QUESTION 1**

1.1

1	2	3	4	5	6	7	8
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Uit die lys van getalle hierbo skryf neer ALLE getalle wat  
From the list of numbers above, write down ALL numbers that...

- 1.1.1 faktore van 6 is.  
*are factors of 6.*
- 1.1.2 veelvoude van 3 is.  
*are multiples of 3.*
- 1.1.3 deelbaar deur 2 is.  
*divisible by 2.*
- 1.1.4 priemgetalle is.  
*are prime numbers.* (8)

- 1.2 Vul die ontbrekende getal in om die kante gelyk te maak hieronder  
*Write the missing number to make the sides equal.*

$$467\,940 + (1\,670 + 357\,865) + 2\,678\,879 = (467\,940 + 1\,670) + \underline{\hspace{2cm}} + 357\,865 \quad (1)$$

- 1.3 Bestudeer die vier getalle hieronder.  
*Study the four numbers below.*

30	2	8	10
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Plaas die getalle in die spasies hieronder sodat die vergelyking korrek is.  
*Organise these numbers so that each equation is correct.*

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} - \underline{\hspace{1cm}} = 24$$

Gebruik elke getal slegs een keer. Skryf die hele vergelyking neer.  
*Use each number only once per equation. Write down the whole equation.* (4)

- 1.4 Bereken die volgende en wys al jou bewerkings  
*Calculate the following and show all calculations*

1.4.1  $\sqrt{36} \times (3^2 - 2^3)$  (5)

1.4.2  $(4 + 3)^2 - \sqrt[3]{64}$  (4)

1.4.3  $(0,2)^2 + \sqrt{0,25}$  (3)

- 1.5 Skryf van groot na klein.  
Write from biggest to smallest.  
 $\frac{11}{100}$  ;  $\frac{5}{10}$  ;  $\frac{43}{100}$  ;  $\frac{4}{5}$  ;  $\frac{3}{20}$  ;  $\frac{9}{25}$  (3)
- 1.6 Watter een is die kleinste? Wenk: Skryf eers getalle in gewone vorm.  
Which is the smallest? Tip: Write numbers in normal notation first  
 $1,123 \times 10^5$  of  $9,2 \times 10^4$  (3)
- 1.7 Bepaal  $\sqrt{1764}$  deur priemfaktore te gebruik (leermetode of faktorboom of enige ander metode).  
Determine  $\sqrt{1764}$  by using prime factors (ladder method or factor tree or any other method). (4)
- 1.8 Skryf die volgende verhouding in sy eenvoudigste vorm deur die nodige berekeninge te doen:  
Write the following ratio in its simplest form by doing the necessary calculations:  
 $0,5 \text{ m} : 250 \text{ cm}$  (2)
- 1.9 Vermeerder R45 in die verhouding  $9 : 5$   
Increase R45 in the ratio  $9 : 5$  (3)
- 1.10 Verdeel R450 in die verhouding  $4 : 5$   
Divide R450 in the ratio  $4 : 5$  (4)
- 1.11 'n Meubileerder koop 'n stoel teen 'n kosprys van R250 by 'n groot handelaar en verkoop dit dan teen R325.  
A furnisher buys a chair at a cost price of R250 at a wholesaler and sells it at R325.
- 1.11.1 Bereken sy wins in rand.  
Calculate his profit in rand. (1)
- 1.11.2 Bereken die wins as 'n persentasie van die kosprys.  
Calculate the profit as a percentage of the cost price. (3)
- 1.12 Die nommers 1 tot 15 word in 'n hoed geplaas. Wat is die waarskynlikheid om 'n priemgetal te trek?  
The numbers 1 to 15 are placed in a hat. What is the probability to draw a prime number (2)

**VRAAG 2**  
**QUESTION 2**

- 2.1 Bestudeer die volgende uitdrukking en beantwoord die vrae wat volg:  
Consider the following expression and answer the questions that follow.

$$-2xy - x^2y^2 + 3x^2y^3 - 4$$

- 2.1.1 Hoeveel terme is daar in die uitdrukking voor vereenvoudiging?  
How many terms does the expression have before simplifying? (1)
- 2.1.2 Gee die graad van die uitdrukking.  
Give the degree of the expression (1)
- 2.1.3 Skryf die konstante in die uitdrukking neer.  
Write down the constant in the expression (1)
- 2.1.4 Skryf die koëffisiënt van  $xy$  neer.  
Write down the coefficient of  $xy$  (1)
- 2.1.5 Wat is die eksponent van  $x$  in die eerste term?  
What is the exponent of  $x$  in the first term? (1)
- 2.1.6 Bepaal die waarde van die uitdrukking indien  $x = -1$  en  $y = 2$   
Determine the value of the expression if  $x = -1$  and  $y = 2$  (4)
- 2.2 Vereenvoudig:  
Simplify:
- 2.2.1  $\frac{p^4q^5 \cdot q^2p^4}{q^4}$  (2)
- 2.2.2  $(-8x^4y^2)(5x^3y^4)(-2x)$  (3)
- 2.2.3  $-5(2x^2 + x - 20) + 12x^2 + 3x$  (3)
- 2.2.4  $12p + 3q - 5p - 6q$  (2)
- 2.2.5  $(-2ab^2)^3$  (3)

2.3 Los op vir  $x$   
Solve for  $x$

2.3.1  $4x + 5 = 5x - 9$  (2)

2.3.2  $5(x - 1) - (1 - 2x) = 8$  (4)

2.3.3  $2^x + 1 = 9$  (2)

2.4 Die som van drie opeenvolgende natuurlike getalle is 33. Bepaal die drie getalle.  
The sum of three consecutive natural numbers is 33. Determine the three numbers (4)

2.5 Vind die waardes van  $x$  en  $y$  in die volgende ry:  
Find the values of  $x$  any in the following sequence:  
3; 5; 7;  $x$ ;  $y$ ; ... (2)

2.6 Ondersoek die gegewe  $x$  en  $y$  waardes en bepaal die verwantskap tussen  $x$  en  $y$ .  
Vind dan die waardes van  $a$  en  $b$ .  
Examine the given  $x$  and  $y$  values and determine the relationship between  $x$  and  $y$ . Then find the values of  $a$  and  $b$ .

$x$	1	2	3	4	$a$	10
$y$	4	7	10	13	22	$b$

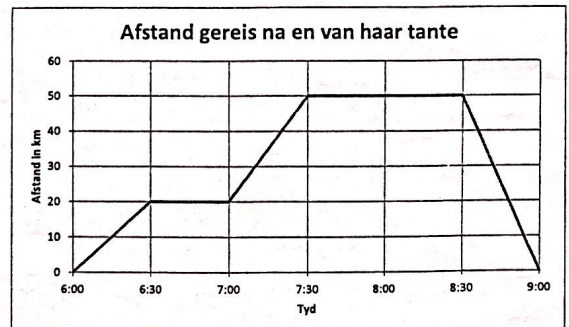
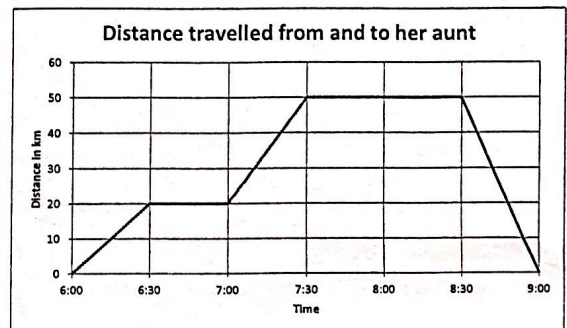
2.6.1  $y =$  (2)

2.6.2  $a =$  (1)

2.6.3  $b =$  (1)

2.7 Ilne het haar tante besoek wat 50 km van haar huis woon. Die grafiek toon die afstand wat Ilne van haar huis weg is tydens die besoek.

Ilne visited her aunt who stays 50km from their house. The graph below shows how she travelled.



- 2.7.1 Hoe laat het Ilne haar huis verlaat? (1)  
*What time did Ilne leave her home?*
- 2.7.2 Hoe laat het Ilne by haar tante se huis aangekom? (1)  
*What time did she arrive at her aunt's house?*
- 2.7.3 Hoeveel tyd het Ilne by haar tante deurgebring? (1)  
*For how long did she stay at her Aunt's house?*
- 2.7.4 Hoe laat het Ilne weer tuis gekom? (1)  
*What time did she get back home eventually?*

DIAGRAMBLAD  
 DIAGRAM SHEET

NAAM VAN LEERDER: .....

GRADE 8 ( )

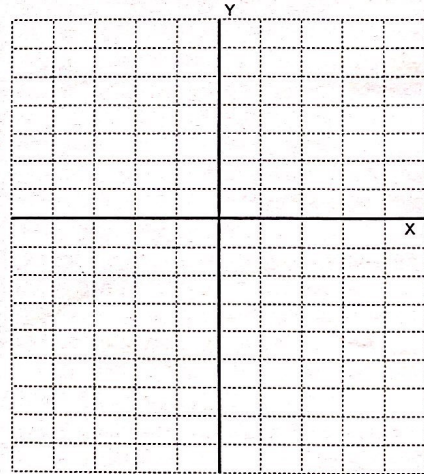
- 2.8 Gegee  $y = 2x - 3$ .  
 Given  $y = 2x - 3$ .

x	-1	0	1	2	3
y			-1		

- 2.8.1 Kopieër en voltooi die table (2)  
*Copy and complete the table*

- 2.8.2 Op die diagramblad steek die punte van die ~~table~~<sup>table</sup> op die Cartesies vlak af. (4)  
 Teken die grafiek [50]  
*On the diagram sheet plot the points on the Cartesian plane. Draw the graph.*

TOTAAL 100



MEMORANDUM

HOERSKOOL NOVEMBER 2016  
 GRAAD 8 PUNTE: 100  
 WISKUNDE [EERSTE VRAESTEL] TYD: 2 uur  
 EKSAMINATOR: MODERATOR:

- 1.1.1) 1; 3; 3; 6 ✓✓  
 1.1.2) 3; 6 ✓✓  
 1.1.3) 2; 4; 6; 8 ✓✓  
 1.1.4) 2; 3; 5; 7 (8) ✓✓ [-1 per punt]
- 1.2) 2 678 879 (1) ✓ antw
- 1.3)  $30 + 8 \div 2 = 10$  ✓<sup>30</sup> ✓<sup>8</sup> ✓<sup>2</sup> platte NB.  
 (4) ✓<sup>10</sup> (4 of 0)
- 1.4.1)  $6 \times (9 - 8)$  ✓<sup>6</sup> ✓<sup>9</sup> ✓<sup>8</sup>  
 $6 \times 1$  ✓<sup>1</sup>  
 6 (5) ✓<sup>6</sup>
- 1.4.2)  $7^2 - 4$  ✓<sup>7</sup> ✓<sup>4</sup>  
 $49 - 4$  ✓<sup>49</sup>  
 45 (4) ✓<sup>45</sup>
- 1.3.2)  $0,04 + 0,5$  ✓<sup>0,04</sup> ✓<sup>0,5</sup>  
 0,54 (3) ✓<sup>0,54</sup>
- 1.5)  $\frac{11}{100}, \frac{50}{100}, \frac{43}{100}, \frac{80}{100}, \frac{15}{100}, \frac{36}{100}$  ✓ almal dies means  
 $\frac{4}{5}, \frac{5}{10}, \frac{43}{100}, \frac{9}{25}, \frac{3}{20}, \frac{11}{100}$  (3) ✓✓ [-1 per punt]
- 1.6) 1.12300 of 92000 ✓<sup>112300</sup> ✓<sup>92000</sup>  
 $\therefore 9,2 \times 10^4$  (3) ✓ antw.

- 1.7) 2 1764 ✓<sup>2^2</sup>  
 2 882 ✓<sup>3^2</sup>  
 $= \sqrt{2^2 \times 3^2 \times 7^2}$  3 441 ✓<sup>7^2</sup>  
 $= 2 \times 3 \times 7$  3 147 ✓ antw 42  
 $= 42$  7 49  
 7 7 (4)
- 1.8) 0,5 m : 250 cm ✓  
 50 cm : 250 cm ✓ albei cm  
 1 : 5 (2) ✓ 1:5
- 1.9)  $\frac{9}{8} \times \frac{65}{1} = 81$  ✓<sup>9</sup> ✓<sup>65</sup> ✓<sup>81</sup>  
 (3) ✓ antw
- 1.10)  $\frac{4}{7} \times \frac{450}{1} = 200$  ✓<sup>4</sup> ✓<sup>200</sup>  
 $\frac{5}{9} \times \frac{450}{1} = 250$  (4) ✓<sup>5</sup> ✓<sup>250</sup>
- 1.11.1) Wms = 325 - 250  
 = 75 (1) ✓ antw
- 1.11.2)  $\frac{75}{250} \times \frac{100}{1} = 30\%$  ✓<sup>75</sup> ✓<sup>250</sup> ✓<sup>100</sup> ✓<sup>30</sup>  
 (3) ✓ 30
- 1.12)  $\frac{6}{15} = \frac{2}{5}$  ✓<sup>6</sup> ✓<sup>2</sup>  
 (2) ✓<sup>2</sup>  
 [50]

- 2.1.1) 4 (1) ✓ 4  
 2.1.2) 5 (1) ✓ 5  
 2.1.3) -4 (1) ✓ -4  
 2.1.4) -2 (1) ✓ -2  
 2.1.5) 1 (1) ✓ 1  
 2.1.6)  $-2(-1)(2) - (-1)^2(2)^2 + 3(-1)^2(2)^3 - 4$  ✓ insitel  
 $-2(-1)(2) - (-1)(4) + 3(1)(8) - 4$  ✓ magis  
 $4 + 4 + 24 - 4$  ✓ verm  
 28 (4) ✓ antw

- 2.2.1)  $p^8 q$  ✓  $p^8$   
 (2) ✓  $q$   
 2.2.2)  $80x^8 y^6$  ✓  $80$   
 ✓  $x^8$   
 (3) ✓  $y^6$   
 2.2.3)  $-10x^2 - 5x + 100 + 12x^2 + 3x$  ✓  $vsim()$   
 $2x^2 - 2x + 100$  (3) ✓ ✓ -1 per foot

- 2.2.4)  $7p - 3q$  ✓  $7p$   
 (2) ✓  $-3q$   
 2.2.5)  $-8a^3 b^6$  ✓  $-8$   
 (3) ✓  $a^3$   
 ✓  $b^6$

- 2.3.1)  $4x + 5 = 5x - 9$   
 $4x - 5x = -9 - 5$  ✓ manipulasi  
 $-x = -14$   
 $x = 14$  (2) ✓ antw

- 2.3.2)  $5x - 5 = 1 + 2x = 8$  ✓  $x5$   
 $7x = 8 + 6$  ✓  $x-1$   
 $7x = 14$  ✓ manipulasi  
 $x = 2$  (4) ✓ antw

- 2.3.3)  $2^x + 1 = 9$   
 $2^x = 8$  ✓ manipulasi  
 $2^x = 2^3$   
 $\therefore x = 3$  (2) ✓ antw

- 2.4)  $x + x + 1 + x + 2 = 33$  ✓ ugl  
 $3x = 30$  ✓ manipulasi  
 $x = 10$  ✓  $x=10$   
 10 11 12 (4) ✓ antw

- 2.5)  $x = 9$  ✓  $x=9$   
 $y = 11$  (2) ✓  $y=11$

- 2.6.1)  $y = 3x + 1$  (2) ✓  $3x$  ✓  $+1$   
 2.6.2)  $a = (22 - 1) \div 3 = 7$  (1) ✓  $a=7$   
 2.6.3)  $b = 30 + 1 = 31$  (1) ✓  $b=31$

- 2.7.1) 6:00 (1) ✓ 6 uur  
 2.7.2) 7:30 (1) ✓ half 8  
 2.7.3) 1 uur (1) ✓ 1 uur  
 2.7.4) 9:00 (1) ✓ 9 uur

- 2.8.1) 

-1	0	1	2	3
-5	-3	-1	1	3

 (2) ✓ ✓ -1 per foot

