Mathematics Challenge

GRADE 6 FINAL ROUND
14 OCTOBER 2003

NOTE:

- Answer the questions according to the instructions on the answer sheet.
- You may use a calculator.
- The questions test insight. Complex calculations will therefore not be necessary.
- We hope you enjoy it!

Wiskunde-uitdaging

GRAAD 6 FINALE RONDE
14 OKTOBER 2003

LET OP:

- Beantwoord die vrae volgens die instruksies op die antwoordblad.
- Jy mag ’n sakrekenaar gebruik.
- Die vrae toets insig. Omslagtige berekeninge is dus onnodig en tydrowend.
- Ons hoop jy geniet dit!

Umceli-mngeni Ngezibalo

GRADE 6 UMJIKELO WOKUGQIBELA
14 OKTHOBHA 2003

QAPHELA:

- Phendula imibuzo ngokwemigaqo ekwiphepha olinikiweyo
- Ungayisebenzisa i-Calculator
- Imibuzo ivavanya ukuqonda kwakho. Izibalo ezide, ezixhakaxhaka aziyomfuneko.
- Siyathemba uyakulonwabela!

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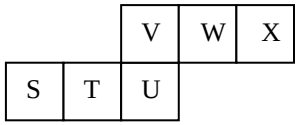
1. If the figure shown is folded to make a cube, then what is the letter opposite the T?

(A) S (B) U

1. As die figuur hieronder gevou word om ’n kubus te vorm, watter letter sal oorkant die T wees?



(C) V (D) W

1. Ukuba lo mzobo uthe wagotywa ukuze wokhe ityhubhu, ingaba kengoko iyakuba ngowuphi unobumba ozakuhlala ujongane nonobumba T?

(E) X

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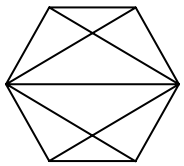
2. How many different triangles (of all sizes) are in this figure?

(A) 8 (B) 10

2. Hoeveel verskillende driehoeke (van alle groottes) is daar in hierdie figuur?



(C) 12 (D) 14

2. Bangaphi oonxantathu abangalinganiyo abakhoyo kulo mzobo?

(E) 16

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3. How many whole numbers divide exactly into 100?

(A) 8 (B) 6

3. Hoeveel heelgetalle deel presies in 100 in?

(C) 7 (D) 10

3. Mangaphi amanani azeleyo ohluleka ngqo kwi 100?

(E) 9

Western Cape
Wes-Kaap
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The Association for Mathematics Education of South Africa

In cooperation with the
Western Cape Education Department
Gauteng Education Department

Nasou Via Afrika

CASIO

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Research Unit for Mathematics Education of the University of Stellenbosch

4. Which of the following divisions has the smallest remainder?

(A) $3 \div 4$ (B) $4507 \div 5$ (C) $6604 \div 6$ (D) $775 \div 7$ (E) $8887 \div 8$

4. Watter van die volgende deelprobleme het die kleinste res?

4. Ingaba yeyiphi kwezi eneyona ntsalela incinci?

5. What is the smallest number (except 1) that leaves a remainder of 1 when divided by any of 2, 3, 4, 5 or 6?

(A) $2\times3\times4\times5\times6 + 1$ (B) $2\times3\times4\times5 + 1$ (C) $3\times4\times5\times6 + 1$ (D) $3\times4\times5 + 1$ (E) $4\times5\times6 + 1$

5. Wat is die kleinste getal (behalwe 1) wat ’n res van 1 laat as dit gedeel word deur enige van 2, 3, 4, 5 of 6?

5. Leliphi elona nani lincinane (lilikhulu kunesi 1) linokushiya intsalela esisi 1 xa lohlulwa ngelinye lalamanani 2, 3, 4, 5 okanye 6?

6. The year 2003 is not divisible by 2, 3, 4, 5, 6, 7, 8 or 9. When is the next year this will happen?

(A) 2005 (B) 2006 (C) 2007 (D) 2009 (E) 2011

6. Die jaar 2003 is nie deelbaar deur 2, 3, 4, 5, 6, 7, 8 of 9 nie. Wat is die volgende jaar waarin dit sal gebeur?

6. Unyaka ka 2003 ulinani elingohlulekiyo nge 2 ,3, 4, 5, 6, 7, 8 okanye isi 9. Ngowuphi unyaka olandelayo ekuya kuphinda kwenzeka lonto?

7. What number is exactly halfway between $\frac{1}{8}$ and $\frac{1}{10}$?

(A) $\frac{1}{80}$ (B) $\frac{9}{40}$ (C) $\frac{1}{18}$ (D) $\frac{1}{9}$ (E) $\frac{9}{80}$

7. Watter getal is presies halfpad tussen $\frac{1}{8}$ en $\frac{1}{10}$?

7. Leliphi elona nani liphakathi kanye kwesi $\frac{1}{8}$ no $\frac{1}{10}$?

8. Which of the following inequalities is *false*?

(A) $\frac{5}{12} < \frac{16}{36}$ (B) $\frac{4}{5} < \frac{25}{30}$ (C) $\frac{3}{7} < \frac{16}{35}$ (D) $\frac{7}{13} < \frac{22}{39}$ (E) $\frac{10}{11} < \frac{29}{33}$

8. Watter van die volgende ongelykhede is *onwaar*?

8. Ingaba ngowuphi kule milinganiso *ongeyonyani*?

9. From a batch of 3 000 light bulbs a sample of 100 were randomly selected and tested. If five of the light bulbs in the sample were found to be defective, about how many defective light bulbs would be expected in the entire batch?

(A) 60 (B) 150 (C) 300 (D) 600 (E) One cannot say / Onmoontlik om te sê / Asinakukwazi kakuhle ukuchaza

9. In ’n besending van 3 000 gloeilampe is ’n monster van 100 willekeurig gekies en getoets. As vyf van die gloeilampe foutief was, hoeveel foutiewe gloeilampe kan ’n mens in die hele besending verwag?

9. Kuma 3 000 ezibane zombane kwakhethwa i 100 laza lavavanywa. Ukuba isi 5 sezibane kwezi zikhethiweyo kwafunyaniswa lineziphene, zingangaphi izibane ezineziphene ezingafunyanwayo xa zizonke ezi zibane?

10. Thirty equally spaced points on a circle are labelled in order with the numbers 1 to 30. Which number is directly opposite to 7?

(A) 21 (B) 22 (C) 23 (D) 24 (E) 20

10. Dertig punte op ’n sirkel, almal ewe ver van mekaar, word opeenvolgend genommer van 1 tot 30. Watter getal is presies oorkant 7?

10. Amachokoza angama 30 abekwe akwimiganyana elinganayo kwisangqa aze abhalwa elandelelaniswa ngamanani isi 1 ukuya kuma 30. Leliphi inani elijongene ngqo nesi 7 likumgca wombindi wesangqa?

11. The table represents the relationship between *x* and *y*. What is the missing number in the table?

x	*y*
2	3
3	5
4	?
6	17

(A) 6 (B) 7 (C) 8 (D) 9 (E) 10

11. Die tabel stel die verband tussen *x* en *y* voor. Wat is die ontbrekende getal in die tabel?

11. Le tafile ibonisa ukuzalana okukhoyo phakathi ko *x* kunye no *y*. Lingubani inani elingachazwanga kule tafile?

12. Peter, Tom, Dick and Harry are standing in a queue at the post office. If Peter leaves, Tom is in the second place. If Dick leaves, Peter is first in the queue. Who is fourth in the queue?

(A) Harry (B) Peter (C) Dick (D) Tom (E) Not enough information / Te min inligting / Ingxelo enikiweyo ayonelanga

12. Peter, Tom, Dick en Harry staan in ’n tou in die poskantoor. As Peter loop, is Tom in die tweede plek. As Dick loop, is Peter voor in die tou. Wie is vierde in die tou?

12. U Peter, u Tom, u Dick kunye no Harry bame kuluhlu kwikhawuntala yase Posini.Ukuba u Peter uye wahamba u Tom uba kwindawo yesibini. Ukuba u Dick uye wahamba u Peter uba kwindawo yokuqala kuluhlu. Ngubani okwindawo yesine kuluhlu?

13. Three consecutive numbers multiplied together give 3360. What is the sum of the three numbers?

(A) 45 (B) 40 (C) 65 (D) 80 (E) 29

13. Drie opeenvolgende getalle word met mekaar vermenigvuldig en die antwoord is 3360. Wat is die som van die drie getalle?

13. Isithathu samanani alandelelanayo xa ephindaphindiwe akhupha ama 3360. Xa edityanisiwe akhupha eliphi inani?

14. Study the following pattern.
What is P_{30}?

$P_1 = 5$ $P_2 = 7$ $P_3 = 9$

(A) 90 (B) 61 (C) 63 (D) 36 (E) 65

14. Bestudeer die volgende patroon.
Wat is P_{30}?

14. Funda olu luhlu lulandelayo.
Liliphi elingu P_{30}?

15. If a glass is full of milk, the total mass is 370 g. When the glass is half full of milk, the mass is 290 g. What is the mass of the glass?

(A) 80 g (B) 100 g (C) 160 g (D) 210 g (E) None of these / Nie een hiervan nie / Ayiko kwezi

15. Wanneer ’n glas vol melk is, is die totale massa 370 g. Wanneer die glas halfvol melk is, is die massa 290 g. Wat is die massa van die glas?

15. Ukuba iglasi izele lubisi, ubunzima bayo bungama 370 g. Xa leglasi izele sisiqingatha sobisi ubunzima bayo buba ngama 290 g. Kengoko ingaba ubunzima balegilasi xa ingenalo ubisi bungakanani?

16. Of the 35 learners in the Grade 6A class, 18 learners have a dog and 24 have a cat, while 6 have no pets. How many of the learners have a dog and a cat?

(A) 13 (B) 7 (C) 6 (D) 3

16. Daar is 35 leerlinge in die graad 6A-klas. 18 Leerlinge het ’n hond en 24 het ’n kat, terwyl 6 geen troeteldier het nie. Hoeveel leerlinge in die klas het ’n hond én ’n kat?

16. Kubafundi abangama 35 kwiklasi yebanga lesi 6A, abafundi abali 18 bafuye inja baze abangama 24 bafuya ikati, ngelixa aba 6 bengafuyanga zilwanyana zasekhaya. Bangaphi kubafundi abafuye inja nekati?

(E) None of these / Nie een hiervan nie / Ayiko kwezi

17. Jane has a bottle of orange juice concentrate. If she mixes one part concentrate with four parts water she gets 60 glasses of orange juice. If she mixed one part concentrate with five parts water how many glasses of orange juice could she make?

(A) 61 (B) 72

17. Jane het ’n bottel lemoensapkonsentraat. As sy een deel konsentraat met vier dele water meng, kry sy 60 glase lemoensap. As sy een deel konsentraat met vyf dele water sou meng, hoeveel glase lemoensap kan sy maak?

(C) 75 (D) 80

17. UJane unebhotile yomxube wokwenza i orange-juice. Ukuba uxuba isinye salo mxube nesine samanzi kuphuma iiglasi ezingama 60 ze orange juice. Ukuba uxube isinye salo mxube nesihlanu samanzi zingaphi iglasi ze orange juice anokuzenza?

(E) 81

18. 2000 – 1999 + 1998 – 1997 + … + 2 – 1 =

(A) 2000 (B) 1999

18. 2000 – 1999 + 1998 – 1997 + … + 2 – 1 =

(C) 1000 (D) 0

18. 2000 – 1999 + 1998 – 1997 + … + 2 – 1 =

(E) 1

19. What is the sum of all the numbers in the sequence

1, 2, 3, 4, 5, 6, 7, …, 99, 100?

(A) 500 (B) 4800

19. Wat is die som van al die getalle in die ry

1, 2, 3, 4, 5, 6, 7, …, 99, 100?

(C) 5000 (D) 5050

19. Ngubani isiphumo sokudibanisa onke amanani akolu luhlu?

1, 2, 3, 4, 5, 6, 7, …, 99, 100?

(E) 5100

20. What is the sum of all the digits in the sequence

1, 2, 3, 4, 5, 6, 7, …, 99, 100?

Note: the sum of the *digits*, not the *numbers*!

(A) 460 (B) 855

20. Wat is die som van al die syfers in die ry

1, 2, 3, 4, 5, 6, 7, …, 99, 100?

Let op: die som van die *syfers*, nie die *getalle* nie!

(C) 857 (D) 900

20. Ngubani isiphumo sokudibanisa zoonke iidijithi zalamanani onke akolu luhlu?

1, 2, 3, 4, 5, 6, 7, …, 99, 100?

Qwalasela: isiphumo sokudityaniswa kwee dijithi, hayi amanani!

(E) 901

21. One article costs R6 more than another. Two of each of them cost R22 in total. How much does the cheaper article cost?

(A) R8,50 (B) R3,25

21. Een artikel kos R6 meer as ’n ander. Twee van elk van die artikels kos R22 in totaal. Hoeveel kos die goedkoper artikel?

(C) R3,85 (D) R3,95

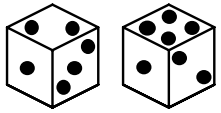
21. Into ethile ixabisa ngaphezulu nge R6 kunenye. Xa kudityaniswa ixabiso lezimbini kwinto nganye kufumaneka ama R22. Ingaba ixabiso leyona nto ixabisa ngezantsi kwezi liyimalini?

(E) None of these / Nie een hiervan nie / Ayiko kwezi

22. If two dice are thrown, what is the most likely difference between the top two numbers?

(A) 0 (B) 1 (C) 2 (D) 3 (E) One cannot say / Onmoontlik om te sê / Asinakukwazi kakuhle ukuchaza

22. As twee dobbelstene gegooi word, wat is die mees waarskynlike verskil tussen die boonste twee getalle?



22. Ukuba ama dayisi amabini aphosiwe, ingangubani owona mahluko mkhulu phakathi kwamanani amabini ahleli ngaphezulu?

23. Study this pattern:

$1 = 1 \times 1$
$1 + 3 = 2 \times 2$
$1 + 3 + 5 = 3 \times 3$
$1 + 3 + 5 + 7 = 4 \times 4$

Now calculate:

$1 + 3 + 5 + 7 + \ldots + 25 + 27 + 29$

(A) 841 (B) 196 (C) 144 (D) 225 (E) None of these / Nie een hiervan nie / Ayiko kwezi

23. Bestudeer hierdie patroon:

$1 = 1 \times 1$
$1 + 3 = 2 \times 2$
$1 + 3 + 5 = 3 \times 3$
$1 + 3 + 5 + 7 = 4 \times 4$

Bereken nou:

$1 + 3 + 5 + 7 + \ldots + 25 + 27 + 29$

23. Fundisisa le pateni:

$1 = 1 \times 1$
$1 + 3 = 2 \times 2$
$1 + 3 + 5 = 3 \times 3$
$1 + 3 + 5 + 7 = 4 \times 4$

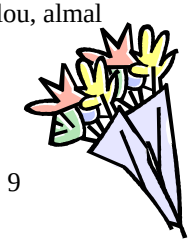
Bala apha:

$1 + 3 + 5 + 7 + \ldots + 25 + 27 + 29$

24. I picked a bunch of white, blue and yellow flowers. All but 6 were white, all but 6 were blue, all but 6 were yellow. How many flowers were in the bunch?

(A) 12 (B) 18 (C) 24 (D) 9 (E) Not enough information / Nie genoeg inligting nie / Akukho nkcazelo yaneleyo

24. Ek pluk ’n bos wit, blou en geel blomme. Almal behalwe ses is wit, almal behalwe ses is blou, almal behalwe ses is geel. Hoeveel blomme is daar in die bos?



24. Ndathi ndakha umxube wentyatyambo ezimhlophe, eziluhlaza kunye nezimthubi. Zonke ngaphandle kwezi 6 zazimhlophe, zonke ngaphandle kwezi 6 zaziluhlaza, zonke ngaphandle kwezi 6 zazimthubi. Zazingaphi iintyatyambo endandinazo kulo mxube?

25. In question 24, how many white flowers were in the bunch?

(A) 6 (B) 9 (C) 12 (D) 3 (E) Not enough information / Nie genoeg inligting nie / Akukho nkcazelo yaneleyo

25. In vraag 24, hoeveel wit blomme is daar in die bos?

25. Kumbuzo 24, zingaphi iintyatyambo ezimhlophe ezazikulomxube?