

Mathematics Challenge

GRADE 6 FIRST ROUND

SEPTEMBER 2005

NOTE:

- Answer the questions according to the instructions on the answer sheet.
- You may use a calculator.
- The questions test insight. Complex calculations are therefore unnecessary and time consuming.
- We hope you enjoy it!

1. Which of these numbers is closest to 8?

(A) 7,93

(B) 8,08

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

(A) S

(B) U

3. What is the next number in this pattern?

302 400; 50 400; 7 200; 900; 100; ...

(A) 50

(B) 1

Wiskunde-uitdaging

GRAAD 6 EERSTE RONDE

SEPTEMBER 2005

LET OP:

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

1. Watter van hierdie getalle is die naaste aan 8?

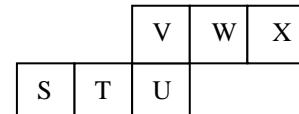
(C) 7,8

(D) 8,1

1. Leliphi elona nani lisondeleyo kwi 8?

(E) 7,9

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



(C) V

(D) W

(E) X

3. Wat is die volgende getal in die getallery?

302 400; 50 400; 7 200; 900; 100; ...

(C) 8

(D) 10

3. Leliphi inani elilandelayo kulo mfuziselo?

302 400; 50 400; 7 200; 900; 100, ...

(E) 0



In cooperation with the
Western Cape Education Department
Gauteng Education Department

Umceli-mnjeni Ngezibalo

GRADE 6 UMJIKELO WOKUQALA

SEPTEMBA 2005

QAPHELA:

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

1. Leliphi elona nani lisondeleyo kwi 8?

(E) 7,9

2. Ukuba lo mzobo uthe wagotya ukuze wokhetiyhubhu, ingaba kengoko iyakuba ngowuphi unobumba ozakuhlala ujongane nonobumba T?

Nasou Via Afrika



CASIO



RUMEUS

Research Unit for Mathematics Education
of the University of Stellenbosch

4. Shane the snail starts at corner A and crawls clockwise once around the regular pentagon (a figure with 5 sides of equal length). On what side will he be when he has crawled $\frac{13}{20}$ of the distance around the pentagon?

(A) AB

(B) BC

(C) CD

(D) DE

(E) EA

5. Refer to the previous question.
If each side of the pentagon is 5 cm long, how far has he still got to go?

(A) 16 cm

(B) 16,25 cm

6. Yolanda found that the warehouse was full, so she stacked a truckload of boxes outside. The stack was 6 m high, 10 m wide, and 8 m long. Yolanda now needs a rectangular tarp (sheet) to cover the boxes for protection. What size tarp would cover the stack exactly?

(A) 14 m \times 16 m(B) 24 m \times 24 m(C) 20 m \times 20 m(D) 22 m \times 22 m(E) 20 m \times 22 m

7. If you begin with a one-digit number, multiply it by 3, then add 8, then divide by 2 and then subtract 6, you will get the original number back. What is the number?

(A) 2

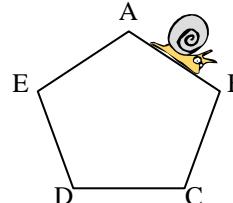
(B) 8

(C) 6

(D) 5

(E) 4

4. Shane die slak begin by hoek A en seil kloksgewys een keer rondom die gelyksydige vyfhoek ('n figuur met vyf sye wat almal ewe lank is). Op watter sy sal hy wees wanneer hy $\frac{13}{20}$ van die afstand rondom die vyfhoek afgelê het?



4. U Shane ongumnyiki weseгадини waqalisa wayirhubuluza ngokupheleleyo kanye le pentagoni (umzobo onamacala amahlanu anobude obulinganayo) efanisa indlela yewotshi yamasiba Uyakuba ekweliphi icala emva kokuba erhubuluze I $\frac{13}{20}$ somgama wale pentagoni?

5. Verwys na die vorige vraag.
As elke sy van die vyfhoek 5 cm lank is, hoe ver moet hy nog gaan?

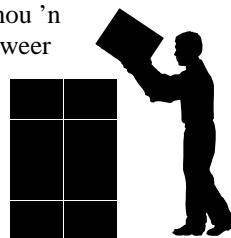
(C) 9 cm

(D) 8,75 cm

5. Jonga umbuzo ongentla. Ukuba icala ngalinye lepentagoni lisi 5 cm, ungakanani umgama ekusafuneka ewuhambile?

(E) Nie een hiervan nie

6. Die pakhuis was vol, toe laat Yolande 'n vrag bokse buite opstapel. Die stapel bokse was 6 m hoog, 10 m breed, en 8 m lank. Yolanda benodig nou 'n reghoekige seil om die bokse teen die weer te beskerm. Watter grootte seil sal die stapel presies bedek?



6. U Yolanda ufumanise ukuba umzi wokugcina izinto awusenandawo yokugcina ezinye iibhokisi, wazizalisa kwi traka engaphandle kwesakhiwo. Umphakamo wokuzizalisa kwakhe ezi bhokisi kule traka wawu sisi 6 m ukuphakama, I 10 m ububanzi kunye nesi 8 m ubude. U Yolanda kwakufuneka efune isivalo esifana nebokisi yoxande ukuze akwazi ukugquma ginci ezi bhokisi ukuze zikhuseleke. Ingaba umlinganiselo wesi sivalo uyakuba ngakanani?

7. As jy begin met 'n eensyfergetal, dit vermening-vuldig met 3, dan 8 bytel, dan deel deur 2 en dan 6 aftrek, sal jy die oorspronklike getal kry. Wat is die getal?

7. Ukuba uqalela ngenani elinedijiti enye, liphindaphinde nge 3, uze udibanise isi 8, wandule ukohlula ngesi 2 emva koko uthabathe isithandathu uyakuthi ufumane isiphumo esifana kwanelanani obuqale ngalo. Ingaba lingubani eli nani?

8. The sum of three consecutive numbers (e.g. 4, 5 and 6) is 54. What is the product of the three numbers?
- (A) 120 (B) 5832 (C) 2916 (D) 5202 (E) None of these
8. Die som van drie opeenvolgende getalle (bv. 4, 5 en 6) is 54. Wat is die produk van die drie getalle?
8. Isiphumo sokudityaniswa kwamanani amathathu athile alandeelanayo (umzekelo i4,i5 kunye ne6) singama 54. Siyakuba ngubani isiphumo sokuphindiphindwa kwalamanani?
9. A reservoir is $\frac{5}{8}$ full. If 135 ℥ of water is added, the reservoir is $\frac{8}{11}$ full. What is the capacity of the reservoir when full?
- (A) 16 ℥ (B) 88 ℥ (C) 729 ℥ (D) 1320 ℥ (E) 3520 ℥
9. 'n Watertenk is $\frac{5}{8}$ vol. Nadat nog 135 ℥ water bygetap is, is die tenk $\frac{8}{11}$ vol. Hoeveel water hou die tenk?
9. Idama lokugcina amanzi linomthamo osi $\frac{5}{8}$. Ukuba i135 lelitha zamanzi aye ongezwa eli dama liba nomthamo osisi $\frac{8}{11}$. Ingaba ungakanani umthamo weli dami xa lizele?
10. The scale shows that 4 books are balanced by 2 of the same books plus 6 kg. What is the mass of one book?
- (A) $1\frac{1}{2}$ kg (B) 6 kg (C) 3 kg (D) 2 kg (E) 4 kg
10. Die skaal toon dat 4 boeke gebalanseer word deur 2 van dieselfde boeke plus 6 kg. Wat is die massa van een boek?
10. Isikali sibonisa ukuba iincwadi ezi 4 zilinganiswe nobunzima beencwadi ezi 2 ezikwafana nazo kwaza kwezi zimbini kwadityaniswa ubunzima obuyi 6kg. Buyintoni ubunzima bencwadi nganye?
11. A wooden cube, 2 cm long on each side, has a mass of 100 grams. Another cube of the same wood is 6 cm long on each side. What is its mass?
- (A) 1 000 g (B) 2 700 g (C) 800 g (D) 900 g (E) 300 g
11. 'n Houtkubus, 2 cm lank aan elke kant, het 'n massa van 100 gram. 'n Ander kubus van dieselfde hout is 6 cm lank aan elke kant. Wat is sy massa?
11. Ityhubhu eyenziwe ngokhuni inobude becala ngalinye obusi 2 cm nobunzima be 100 grams. Enye ityhubhu nayo ekwenziwe ngokhuni olunye nolu lwalena ingentla yona inobude obusi 6 cm kwicala ngalinye. Inobunzima obungakanani?

12. Which of these fractions is the largest?

(A) $\frac{7}{15}$

(B) $\frac{3}{7}$

12. Watter van hierdie breuke is die grootste?

(C) $\frac{11}{23}$

(D) $\frac{4}{9}$

12. Ingaba kula maqhezu leliphi elona likhulu?

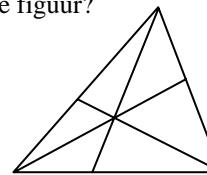
(E) $\frac{5}{11}$

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

(A) 12

(B) 13

13. Hoeveel verskillende driehoede (van alle groottes) is daar in hierdie figuur?



(C) 14

(D) 15

13. Bangaphi oonxantathu abangafaniyo (benobukhulu obungafaniyo) abakhoyo kulo mzobo?

(E) 16

14. Jackie interviewed 50 Grade 6 learners about their TV preferences. 41 said they like comedy, 35 said they enjoy action films and 30 said they like both. How many of the learners like neither?

(A) 11

(B) 20

14. Jackie het 50 graad 6-leerders ondervra oor hul TV voorkeure. 41 sê hulle hou van komedies, 35 sê hulle geniet aksieflikes en 30 sê hulle hou van beide. Hoeveel van die leerders hou nie van een van die twee nie?

(C) 16

(D) 4

14. U Jackie wathi wenza udlivano ndlebe nabafundi bebanga lesithandathu abangashumi amahlanu ebaibuza ngenkubo zikamabonakude abazithandayo. Abangama 41 bathi bathanda inkqubo ezihlekisayo, abangama 35 bathi bonwatyiswa zinkqubo apho kuliwayo kuzo baze abangama 30 bona bathi bazithanda zombini ezindidi zenkubo. Bangaphi abafundi ekungekho nenye kwezindidi zenkubo abayithandayo?

(E) 0

15. James is twice as old as his brother John, who is 5 years old. How old will James be when John is 20 years old?

(A) 20

(B) 25

15. James is twee keer so oud soos sy broer John, wat nou 5 jaar oud is. Hoe oud sal James wees as John 20 jaar oud is?

(C) 30

(D) 35

15. Iminyaka ka James yobudala iyiphindaphinda kabini eyomfo wabo u John, oneminyaka emihlanu. Uyakuba emdala kanganani u James xa u John eneminyaka engama 20 ubudala?

(E) 40

16. Mr Safe has a 4-digit combination that opens his lock. He remembers that the four digits are 3, 5, 7 and 9, but he has forgotten the correct order. What is the most different combinations that he must try to open the safe?

(A) 4

(B) 8

16. Mn. Kluis het 'n vier-syfer kombinasie wat sy slot oopmaak. Hy onthou dat die vier syfers 3, 5, 7 en 9 is, maar hy kan nie die volgorde onthou nie. Wat is die meeste verskillende kombinasies wat hy sal moet probeer om die slot oop te maak?

(C) 16

(D) 24

16. Umnu Safe uyivula iloko yakhe esebeenzisa kuphela idijiti ezi 4. Wakhumbula ukuba ezi dijithi sis 3, isi5, isi7 kunye nesi 9, kodwa walibala indlela ezilandelelana ngayo. Kengoko zingaphi iindlela ezingafaniyo anokuzisebenzia edwelisa lamanani ukuze afumane eyona ndlela eyiyo yokuvula isefu yakhe?

(E) 36

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

(A) 6

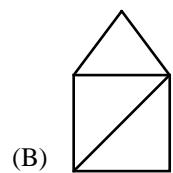
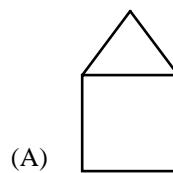
(B) 7

(C) 8

(D) 9

(E) 10

18. Four of these five figures can be traced without lifting your pencil and without tracing the same line twice. Which one *cannot*?



19. 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) 180 g

(E) 210 g

20. Two whole numbers, Δ and ∇ (Δ and ∇ are not equal) are chosen from the sequence of numbers:

1; 2; 3; 4; ...; 2005

What is the largest possible value of $\frac{\Delta + \nabla}{\Delta - \nabla}$?

(A) 2006

(B) 2007

(C) 4008

(D) 4009

(E) 4010

21. $2000 - 1999 + 1998 - 1997 + \dots + 2 - 1 =$

(A) 2000

(B) 1999

(C) 1000

(D) 0

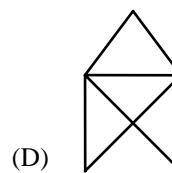
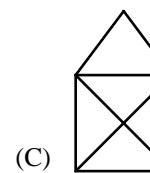
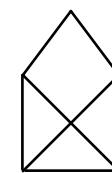
(E) 1

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

x	y
2	3
3	5
4	?
6	17

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

18. Uganakho ukuyikhuphela (trace) lemizobo ungakhange uyiphakamise ipensile yakho. Ngowuphi kule mizobo ongenakho ukuwuphela?



19. 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?

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

20. Twee heelgetalle Δ en ∇ (Δ en ∇ is nie gelyk nie), word uit die volgende ry gekies:

1; 2; 3; 4; ...; 2005

Wat is die grootste moontlike waarde van $\frac{\Delta + \nabla}{\Delta - \nabla}$?

20. Amanani amabini u Δ kunye no ∇ (angalinganiyo) akhethwe kolu luhlu lwamanani:

1; 2; 3; 4; ...; 2005

Sesiphi esona siphumo sikhulu sika $\frac{\Delta + \nabla}{\Delta - \nabla}$?

22. Mandy can afford to buy either 6 cans of Coke and 7 packets of chips or 8 cans of Coke and 4 packets of chips. Both options leave her with no change whatsoever. If, however, she bought only chips, how many packets could she afford?

(A) 11

(B) 12

23. In the two-digit number 57, the two digits 5 and 7 are both odd. How many two-digit numbers consist only of odd digits?

(A) 30

(B) 35

24. Study the following pattern.
What is P_{20} ?

(A) 77

(B) 79

25. Sixteen rectangular paving slabs of the same size are laid as shown in the figure to form a rectangular floor with a perimeter of 800 cm. What is the perimeter of each slab?

(A) 50 cm

(B) 100 cm

22. Mandy het genoeg geld om of 6 blikkies Coke en 7 pakkies chips te koop of 8 blikkies Coke en 4 pakkies chips. In albei gevalle het sy geen geld oor nie. As sy egter *net* chips koop, hoeveel pakkies kan sy bekostig?

(C) 13

(D) 16

(E) 25

23. In die tweesyfer-getal 57, is die twee syfers 5 en 7 albei onewe. Hoeveel tweesyfer-getalle bestaan net uit onewe syfers?

(C) 25

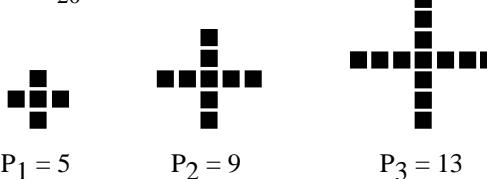
(D) 15

23. Kweli nani linemivo emibini elingama 57, le mivo mibini isi 5 kunye nesi 7 ayiminqakathi. Mangaphi ke ngoko amanani anemivo emibini eyiminqakathi?

None of these

(E) Nie een hiervan nie
Abukho kule

24. Bestudeer die volgende patroon.
Wat is P_{20} ?



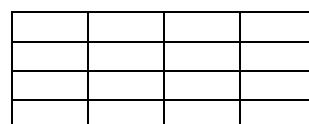
(C) 80

(D) 81

(E) 83

24. Funda ola luhlu lulandelayo.
Sithini isiphumo sika P_{20} ?

25. Sestien reghoekige teëls wat ewe groot is, word gelê soos in die figuur getoon, om 'n reghoekige vloer met 'n omtrek van 800 cm te vorm. Wat is die omtrek van elke teël?



(C) 150 cm

(D) 200 cm

(E) 180 cm

25. Iizilebhu ezizingxande ezilishumi elinesithandathu ezilinganayo zibekiwe njengoko kubonisiwe kumzobo ongezantsi owenza umgangatho oluxande onobude bomphandle obungama 800 cm. Buyintoni ubude bomphandle wesi lebhu ngasinye?