

Mathematics Challenge

GRADE 6 FIRST ROUND
6-10 SEPTEMBER 2004

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!

Wiskunde-uitdaging

GRAAD 6 EERSTE RONDE
6-10 SEPTEMBER 2004

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 tydrowend.
- Ons hoop jy geniet dit!

Umceli-mnjeni Ngezibalo

GRADE 6 UMJIKELO WOKUQALA
6-10 SEPTEMBHA 2004

QAPHELA:

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

1. Which of the following fractions is closest to $\frac{2}{5}$?

(A) $\frac{399}{1000}$

(B) $\frac{199}{500}$

(C) $\frac{41}{100}$

(D) $\frac{21}{50}$

(E) $\frac{39}{100}$

2. The sum of 7 consecutive numbers is 63. Which is the largest of the 7 numbers?

(A) 63

(B) 9

(C) 13

(D) 12

(E) 10

1. Watter van die volgende breuke is die naaste aan $\frac{2}{5}$?

1. Leliphi kula maqhezu alandelayo elisondele kwi $\frac{2}{5}$?

(C) $\frac{41}{100}$

(D) $\frac{21}{50}$

(E) $\frac{39}{100}$

2. Die som van 7 opeenvolgende getalle is 63. Watter een is die grootste van die 7 getalle?

2. Isiphumo sokudityaniswa kwamanani asi 7 alandelelanayo ngama 63. Ingaba elona nani likhulu kulamanani asi 7 leliphi?



In cooperation with the
Western Cape Education Department
Gauteng Education Department

Nasou Via Afrika



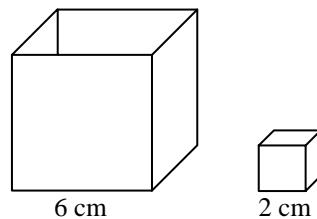
RUMEUS

Research Unit for Mathematics Education
of the University of Stellenbosch

3. How many of the small cubes fit exactly into the big cube?

(A) 9

(B) 12



(C) 20

(D) 21

(E) 27

4. What is the next number in this pattern?

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

(A) 50

(B) 1

4. Wat is die volgende getal in die getallyery?

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

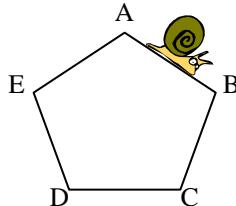
(C) 8

(D) 10

(E) 0

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

5. 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?



(A) AB

(B) BC

(C) CD

(D) DE

(E) EA

6. Refer to question 5.

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

(A) 16 cm

(B) 16,25 cm

6. Verwys na vraag 5.

As elke sy van die vyfhoek 5 cm lank is, hoe ver moet hy dan nog gaan?

(C) 9 cm

(D) 8,75 cm

(E) 7 cm

3. Zingaphi ityhubhu ezincinci ezingena twatse kule tyhubhu inkulu?

4. Leliphi inani elilandelayo kulo mfuziselo?

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

(E) 0

5. U Shane ongumnyiki wesegadini 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?

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

(A) 8

(B) 10

(C) 12

(D) 14

(E) 16

8. The figure is formed by successively joining the midpoints of the sides of a square. What fraction of the whole figure is shaded?

(A) $\frac{1}{3}$

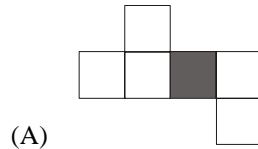
(B) $\frac{1}{4}$

(C) $\frac{1}{2}$

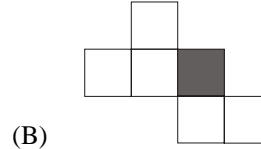
(D) $\frac{2}{9}$

(E) $\frac{3}{8}$

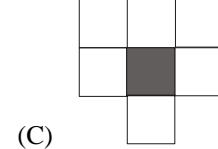
9. Which one of the following figures below *cannot* be folded along the lines to form a cube with the shaded square as the base?



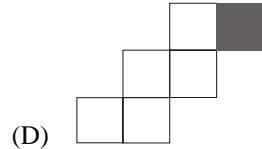
(A)



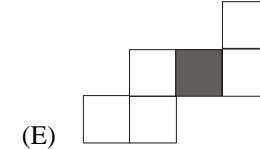
(B)



(C)



(D)



(E)

10. Samara opens a book. The product of the two page numbers is 1332. What is the left-hand page number?

(A) 666

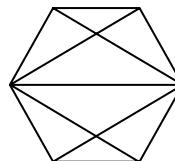
(B) 36

(C) 667

(D) 37

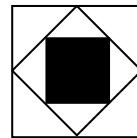
(E) 1331

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



7. Bangaphi oonxantathu abangalinganiyo abakhoyo kulo mzobo?

8. Lo mzobo wensiwe ngokuthi kudityaniswe ngokulandelelana iincam eziphakathi kwicala ngalinye lesikwere. Ingaba indawo eyenziwe mnyama iliqhezu elingakanani lalo mzobo uwonke?



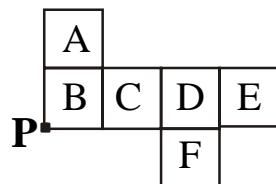
8. Die figuur is gevorm deur die middelpunte van opeen-volgende vierkante te verbind. Watter breukdeel van die hele figuur is verdonker?

9. Ngowuphi kulemizobo ingezantsi ongenakusongwa kakuhle emigceni ukuze ukhuphe ibloko enomzantsi wesikwere owensiwe mnyama?

9. Watter een van die volgende figure kan *nie* langs die lyne gevou word om 'n kubus te vorm, met die verdonkerde vierkant as die basis nie?

10. USamara uvula incwadi. Isiphumo sokuphindaphinda iinombolo zombini zalamatphepha ngama 1332. Ingaba inombolo yephepha elikwisandla sasekholo ingubani?

11. The net shown is folded to form a cube. Which three faces will meet at P?
11. Die net wat gewys word, moet gevou word om 'n kubus te vorm. Watter drie sykante sal by P ontmoet?
11. Lo mnatha ubonisiwego usongiwe wenziwa ityhubhu. Mangaphi amacala ayakuthi adibane ku P?



(A) B E F

(B) A B C

(C) B D F

(D) A B E

(E) A B F

12. Two whole numbers, Δ and ∇ are chosen from this sequence of numbers:
1; 2; 3; 4; ...; 2004

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

(A) 4000

(B) 2002

(C) 2005

(D) 4008

(E) 4007

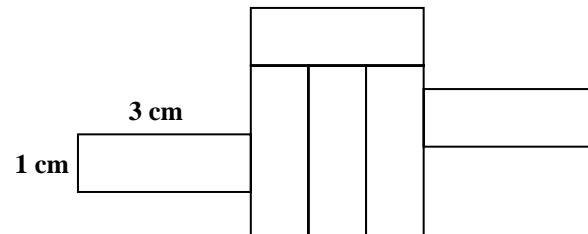
13. A rectangle with sides 3 cm and 1 cm is used to make the figure below. How far is it once around the figure?

13. 'n Reghoek, met sye 3 cm en 1 cm word gebruik om die onderstaande figuur te vorm. Hoe ver is dit een keer rondom die figuur?

12. Twee heelgetalle Δ en ∇ word uit hierdie getalry gekies:
1; 2; 3; 4; ...; 2004

12. Amanani amabini u Δ kunye no ∇ akhethwe kolu luhlu lwamanani:
1; 2; 3; ---; ---; ; 2004

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



(A) 24 cm

(B) 48 cm

(C) 26 cm

(D) 14 cm

(E) 32 cm

14. The scale shows that 4 books are balanced by 2 of the same books plus 6 kg. What is the mass of one book?

14. Die skaal toon dat 4 boeke gebalanseer word deur 2 van dieselfde boeke plus 6 kg. Wat is die massa van een boek?

14. Isikali sibonisa ukuba iincwadi ezi 4 zilinganiswe nobunzima beencwadi ezi 2 ezikwafana nazo kwaza kwezi zimbini kwadityaniswa ubunzima obuyi 6kg. Buyintoni ubunzima bencwadi nganye?

(A) $1\frac{1}{2}$ kg (B) 6 kg (C) 3 kg (D) 2 kg (E) $2\frac{1}{2}$ kg

15. This string of beads was made according to a certain pattern. How many beads are hidden inside the box?

15. Die string krale is volgens 'n sekere patroon gemaak. Hoeveel krale is in die doos versteek?

15. Kumzobo ongezantsi wamaso (beads). Amaso abekwe ngohlobo oluthile ukuze enze umzobo (pattern) othile. Mangaphi amaso (beads) ase bhokisini?

(A) 16 (B) 17 (C) 18 (D) 19

One cannot say
(E) Jy kan nie sê nie
Ubani akanakho ukuchaza

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?

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?

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

(A) 4 (B) 8 (C) 16 (D) 24 (E) 36

17. The sum of two numbers is 18. What is the greatest possible product of the two numbers?

17. Die som van twee getalle is 18. Wat is die grootste moontlike produk van die twee getalle?

17. Isiphumo samanani amabini xa edityanisiwe li 18. Singubani esona siphumo sikhulu sala manani xa ephinda phindiwe?

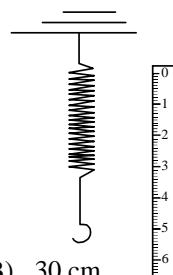
(A) 36 (B) 81 (C) 80 (D) 90 (E) 100

18. The numbers in the pattern 2, 7, 12, 17, 22, ... increase by five. The numbers in the pattern 3, 10, 17, 24, 31... increase by seven. The number 17 occurs in both patterns. If the two patterns are continued, what is the next number that will be seen in both patterns?

(A) 17

(B) 27

19. The following table shows the readings of the mass hung on a spring and the corresponding length of the spring. What will the length of the spring be if a mass of 15 kg is hung on it?



(A) 24 cm

(B) 30 cm

20. You have ten blue socks, ten red socks and ten brown socks all mixed up in a drawer in a dark room. How many socks must you take from the drawer to be *sure* that you have a pair of the same colour?

(A) 11

(B) 20

21. Refer to the previous question. How many socks must you take from the drawer to be *sure* that you have a pair of blue socks?

(A) 11

(B) 20

18. Die getalle in die patroon 2, 7, 12, 17, 22, ... neem toe met vyf. Die getalle in die patroon 3, 10, 17, 24, 31... neem toe met sewe. Die getal 17 kom in albei patrone voor. As die twee patrone voortgesit word, wat sal die volgende getal wees wat in albei patrone voorkom?

(C) 38

(D) 42

(E) 52

19. Die volgende tabel gee die lesings van die massas wat aan 'n veer gehang word met die ooreenstemmende lengte van die veer. Wat sal die lengte van die veer wees as 'n massa van 15 kg daaraan gehang word?

Mass (kg)	0	1	2	3	4	5
Massa (kg)						
Ubunzima (kg)						
Length (cm)	12	14	16	18	20	22
Lengte (cm)						
Ubude (cm)						

(C) 32 cm

(D) 42 cm

(E) 66 cm

20. Jy het tien blou sokkies, tien rooi sokkies en tien bruin sokkies wat deurmekaar in 'n laai in 'n donker kamer lê. Hoeveel sokkies moet jy uit die laai uithaal om *seker* te wees dat jy 'n paar van dieselfde kleur sal hê?

(C) 21

(D) 4

(E) 22

21. Verwys na die vorige vraag. Hoeveel sokkies moet jy uit die laai haal om *seker* te wees dat jy 'n paar blou sokkies het?

(C) 21

(D) 4

(E) 22

18. Amanani akoluluhlu Iwamanani alandeleanayo isi 2, 7, 12, 17, 22 ... anda ngesi 5. Amanani akuluhlu Iwamanani alandeleanayo isi 3, 10, 17, 24, 31 ... wona anda ngesi xhenxe. Inani i17 livela kuzo zombini izintlu zamanani alandeleanayo. Ukuba ezi zinthu zimbini zithi ziqhubekke, leliphi inani elilandelayo eliyakuthi livele kuzo zombini ezi zintlu?

19. Letafile yamanani ibonisa amanani obunzima bentsinjana encinci exhonywe kwisipringi kwakunye nobude obuhambelanayo bokutsaleka kwestisipringi athi athatyathwa kufaniso Iwenzululwazi. Kengoko ngokwale tafile siyakube siside kanganani esi sipringi ukuba intsijana enobunzima obuli 15 kg buxhonywe kuso?

20. Unekawusi ezilishumi ezinombala oluhlaza Iwesibhakabhaka, ubi neshumi lekawusi ezibomvu kwakunye neshumi lekawusi ezimbala omdaka ezithe zadityaniswa nje kwilayi (I drawer) yekhabhati ekwigumbi elingenakukhanya. Ingaba kengoko zongaphi iiperi(isibini sekawusi) zekawusi anokuziphakulelayi ukuba ufuna iperi enombala ofanayo?

21. Jonga umbuzo ongentla. Zingaphi iikawusi onokuzikhupha kule layi ukuqinisekisa ukuba uyakuba unayo iperi enye yekawusi ezinombala oluhlaza Iwesibhakabhaka?

22. 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

22. 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

22. 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

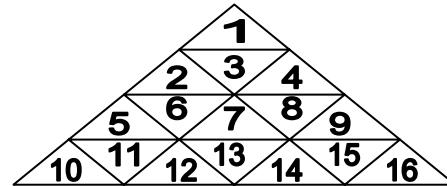
(E) Nie een hiervan nie
Abukho kule

23. This big triangle has four rows. There is one small triangle in the first row, three in the second row and five in the third row. If such a triangle has 50 rows, how many small triangles are there in the 50th row?

(A) 99

(B) 101

23. Die groot driehoek het vier rye. Daar is een klein driehoekie in die eerste ry, drie in die tweede ry en vyf in die derde ry. As so 'n driehoek 50 rye het, hoeveel driehoekies is in die 50 ste ry?



(C) 51

(D) 151

(E) 150

23. Oyena mzobo mkhulu kanxantathu unemiqolo emine. Ekuqaleni kulo mzobo kanxantathu kukho unxantathu omnye omncinane. Kumqolo wesibini kukho onxantathu abathathu. Kumqolo wesithathu kukho onxantathu abahlau. Kumqolo wamashumi amahlanu bangaphi onxantathu?

24. Refer to question 23. In such a big triangle with 50 rows, how many small triangles are there altogether?

(A) 2450

(B) 2500

24. Verwys na vraag 23. Hoeveel klein driehoekies is daar altesaam in so 'n driehoek met 50 rye?

(C) 99

(D) 2000

24. Sebenzisa umzobo okunamba 23. Kumzobo ongentla kunxantathu omkhulu onemiqolo angamashumi amahlanu. Bangaphi onxantathu abancinane abakhoyo?

None of these
(E) Nie een hiervan nie
Ayikho kwezi

25. Refer to question 23. The last number in the fourth row is 16. If this pattern is continued, what will the last number in the 50th row be?

(A) 800

(B) 2500

25. Verwys na vraag 23. Die laaste getal in die vierde ry is 16. Wat sal die laaste getal in die 50ste ry wees as die patroon voortgesit word?

(C) 100

(D) 1600

25. Sebenzisa umzobo okunamba 23. Inani lokugqibela kumqolo wesine ngu-16. Ingaba lakuba ngubani kumqolo 50?

None of these
(E) Nie een hiervan nie
Ayikho kwezi