

Mathematics Challenge

GRADE 6 FIRST ROUND
10 OCTOBER 2001

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
10 OKTOBER 2001

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
10 OKTHOBHA 2001

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

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

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

(C) 13

(D) 12

(E) 10

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

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



Western Cape
Wes-Kaap
Ntshona-Koloni

In cooperation with the
Western Cape
Education Department



Nasou Via Afrika

CASIO

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?

(A) AB

(B) BC

(C) CD

(D) DE

(E) EA

6. Refer to the previous question.

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

(A) 16 cm

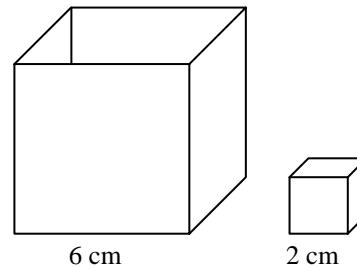
(B) 16,25 cm

(C) 9 cm

(D) 8,75 cm

(E) 7 cm

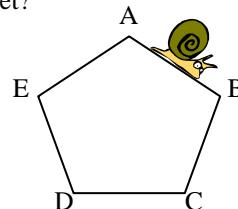
3. Hoeveel van die klein kubusse pas presies in die groot kubus in?



4. Wat is die volgende getal in die getallyery?

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

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?



3. Zingaphi ityhubhu ezincinci ezingena twatse kule tyhubhu inkulu?

4. Leliphi inani elilandelayo kulo mfuziselo?

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

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

7. This flag has 7 regions. You want to colour the flag so that no two touching regions are the same colour. What is the least number of colours you need?

(A) 2

(B) 3

(C) 4

(D) 5

(E) 6

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

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

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

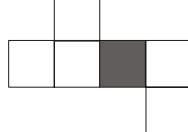
$$(C) \frac{1}{2}$$

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

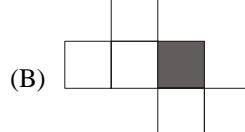
$$(E) \frac{3}{8}$$

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?

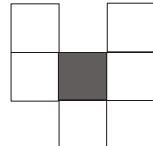
(A)



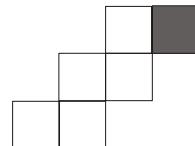
(B)



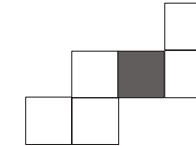
(C)



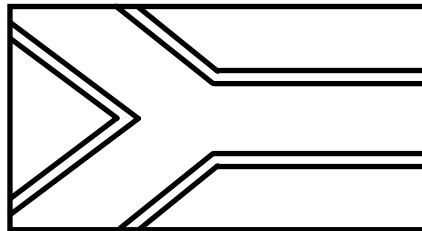
(D)



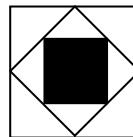
(E)



7. Hierdie vlag het 7 gebiede. Jy wil dit inkleur sodat geen aangrensende gebiede dieselfde kleur het nie. Wat is die minste getal kleure wat jy nodig het?



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



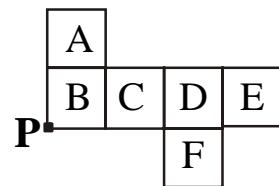
7. Le flegi inamacandelo asi 7. Ufuna ukufaka imibala kule flegi ukuze kungabikho macandelo asondeleleneyo anombala ofanayo. Ingaba mingaphi eyona mibala imbalwa unokuyisebenzisa?

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

10. The net shown is folded to form a cube. Which three faces will meet at P?

(A) B E F

(B) A B C



(C) B D F

(D) A B E

(E) A B F

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

(A) 666

(B) 36

11. Samara maak 'n boek oop. Die produk van die nommers van die twee bladsye is 1332. Wat is die bladsynommer aan die linkerkant?

(C) 667

(D) 37

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

(E) 1331

12. A class was divided into 2 teams for a charity collection (the RED team and the BLUE team). The RED team collected 3c for every 5c that the BLUE team collected. If the BLUE team collected R90, how much did the RED team collect?

(A) R120

(B) R60

12. 'n Klas word in twee spanne verdeel vir 'n fondsinsameling (die ROOI span en die BLOU span). Die ROOI span het 3c ingesamel vir elke 5c wat die BLOU span ingesamel het. As die BLOU span R90 ingesamel het, hoeveel het die ROOI span ingesamel?

(C) R150

(D) R54

- 12 Iklasi yathi yohlulwahlulwa yaba ngamaqela amabini ukuba baqokelele ingxowa yembedlenge (Iqela BOMVU neqela LUHLAZA). Iqela BOMVU laqokelela I 3c kwi 5c nganye eyayiqokelewe liqela LUHLAZA. Ukuba iqela LUHLAZA laqokelela ama R90, ingaba bomvu laqokelela malini?

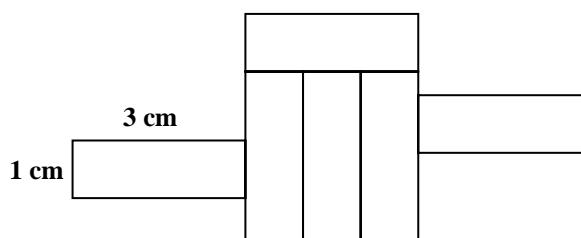
(E) R18

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?

(A) 24 cm

(B) 48 cm

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?



(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?

(A) $1\frac{1}{2}$ kg

(B) 6 kg

(C) 3 kg

(D) 2 kg

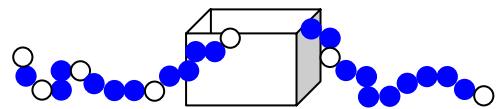
(E) $2\frac{1}{2}$ kg

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

(A) 16

(B) 17

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



(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?

(A) 4

(B) 8

(C) 16

(D) 24

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

(A) 36

(B) 81

(C) 80

(D) 90

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?

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

15. Mr. 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 kuhphela idijiti ezi 4. Wakhumbula ukuba ezi dijithi sisi 3, isi5, isi7 kunye nesi 9, kodwa walibala indlela ezilandelelana ngayo. Kengoko zingaphi iindlela ezingafaniyo anokuzibenzisa edwelisa lamanani ukuze afumane eyona ndlela eyiyo yokuvula isefu yakhe?

(E) 36

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?

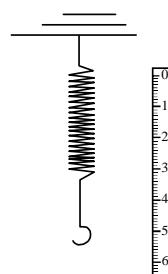
(E) 100

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
Length (cm)	12	14	16	18	20	22
Massa (kg)						
Ubunzima (kg)						
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 livele kuzo zombini izintlu zamanani alandeleanayo. Ukuba ezi zintlu 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 kwesisipringi athi athatyathwa kufaniso lwenzululwazi. Kengoko ngokwale tafile siyakube siside kanganani esi sipringi ukuba intsinjana enobunzima obuli 15 kg buxhonywe kuso?

20. Unekawusi ezilishumi ezinombala oluhlaza Iwesibhakabhaka, ube neshumi lekawusi ezibomvu kwakunye neshumi lekawusi ezimbala omdaka ezithe zadityaniswa nje kwilayi (I drawer) yekhabhati ekwigumbi elingenakukhanya. Ingaba kengoko zongaphi iiperi(isibini sekawusi) zekawusi anokuziphaphulelayi 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

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

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

(A) 2450

(B) 2500

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

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

(C) 51

(D) 151

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

(C) 99

(D) 2000

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?

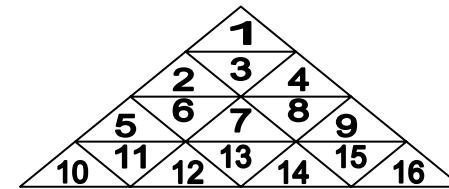
(C) 100

(D) 1600

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



(E) 150

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. 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