

# Mathematics Challenge

GRADE 7 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 7 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 berekeninge is dus onnodig en tydrowend.
- Ons hoop jy geniet dit!

# Umceli-mngeni Ngezibalo

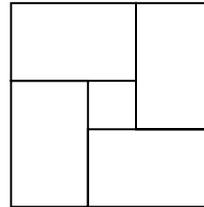
GRADE 7 UMJIKELO WOKUQALA  
10 OKTHOBHA 2001

## QAPHELA:

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

1. Four rectangles and a square are arranged as shown below. Each of the four rectangles is 5 cm long and 3 cm wide. What is the area of the square at the centre?

1. Vier reghoeke en 'n vierkant word gerangskik soos hieronder getoon. Elkeen van die vier reghoeke is 5 cm lank en 3 cm breed. Wat is die oppervlakte van die vierkant in die middel?



1. Iingxande ezine kunye nesikwere zilungiswe njengokuba kubonisiwe ngezantsi. Uxande ngalunye kula mane lusi 5 cm ubude luze lube si 3 cm ububanzi. Ingaba ingakanani I area yesikwere esisesizikithini?

(A)  $1 \text{ cm}^2$

(B)  $4 \text{ cm}^2$

(C)  $8 \text{ cm}^2$

(D)  $9 \text{ cm}^2$

(E)  $16 \text{ cm}^2$



In cooperation with the  
**Western Cape  
Education Department**

Nasou Via Afrika



**CASIO**

**RUMEUS**

Research Unit for Mathematics Education  
of the University of Stellenbosch

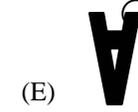
2. The letter A is rotated  $180^\circ$  about O. What will the position of A be now?



2. Die letter A word deur  $180^\circ$  om O geroteer. Wat is die posisie van A nou?



2. Unobumba u A ujikeleziswa I  $180^\circ$  ku O. Uyakuba ejonge kweliphi icala u A ke ngoku?



3. During a sale all prices are reduced according to a set rule. A R100 sweater sells for R80 and a R300 jacket sells for R240. For how much would a R700 suit sell?

- (A) R560 (B) R620

3. Alle pryse op 'n uitverkoop word volgens 'n vasgestelde reël verminder. 'n Sweetpak van R100 word teen R80 verkoop en 'n R300 baadjie teen R240. Teen watter prys sal 'n R700 pak verkoop word?

- (C) R500 (D) R400

3. Xa kukho isaphulelo onke amaxabiso athi athotywe ngokomgaqo othile. Ijezi ye R100 ithengiswa nge R80 size isilamba se R300 sithengiswe nge R240. Ingaba isuthi yama R700 iyakuthengiswa ngamalini?

- (E) R460

4. A factory manufactures dresses and shirts: 3 dresses are manufactured for every 4 shirts. In a week the factory produced a total of 420 dresses and shirts. How many of these were dresses?

- (A) 180 (B) 240

4. 'n Fabriek vervaardig rokke en hemde: vir elke 3 rokke word 4 hemde vervaardig. Gedurende 'n week word altesaam 420 rokke en hemde vervaardig. Hoeveel hiervan is rokke?

- (C) 140 (D) 315

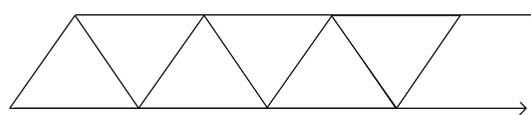
4. Ishishini elivelisa ilokhwe nehempe, ilokhwe ezintathu nehempe ezine ziyenziwa ngeveki, Eli shishini mveliso livelisa malunga ne-420 yempahla. Kule mveliso kungabe zingaphi iilokwe?

- Nie een hiervan nie  
(E) none of these  
ayikho kwezi

5. A figure is formed by placing 25 equilateral triangles, each with sides 2 cm long, next to each other as shown in the sketch. (The sketch shows 6 triangles.) What is the perimeter of the figure?

- (A) 150 cm (B) 54 cm

5. 'n Figuur word gevorm deur 25 gelyksydige driehoeke, elk met sylengte 2 cm, langs mekaar te plaas soos in die skets. (Die skets toon 6 driehoeke.) Wat is die omtrek van die figuur?



- (C) 56 cm (D) 52 cm

5. Umzobo uye wenziwa ngokuthi kudityaniswe ama 25 onxantathu abanamacala alinganayo, ngamnye kubo usisi 2 cm ubude, njengokuba kubonisiwe kulo mzobo. (Umzobo ubonisa onxantathu aba 6.) Buyintoni ubude bomphandle balo mzobo?

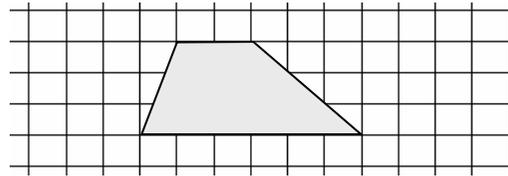
- (E) 50 cm



11. What is the area of the shaded figure below if one square represents  $1 \text{ cm}^2$ ?

11. Wat is die oppervlakte van die verdonkerde figuur hieronder as een vierkantjie  $1 \text{ cm}^2$  voorstel?

11. Bungakanani ukukhulu bendawo eyenziwe mnyama kumfanekiso ukuba isikwere esinye simele i  $1 \text{ cm}^2$ ?



(A)  $9 \text{ cm}^2$

(B)  $10 \text{ cm}^2$

(C)  $11 \text{ cm}^2$

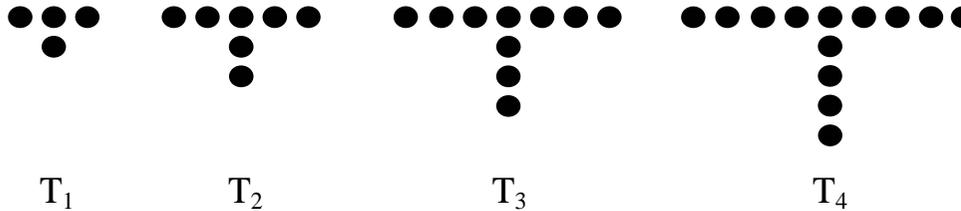
(D)  $12 \text{ cm}^2$

(E)  $13 \text{ cm}^2$

12. Siphso uses dots to build T-shapes as shown below. How many dots will he use for  $T_{50}$ ?

12. Siphso bou T-vorms met kolletjies soos hieronder. Hoeveel kolletjies sal hy gebruik vir  $T_{50}$ ?

12. U Siphso usebenzisa amachokoza ukwakha imizobo engonobumba T njengokuba kubonisiwe ngasezantsi. Kengoko mangaphi amachokoza anokuwasebenzisa ukwakha unobumba  $T_{50}$ ?



(A) 101

(B) 201

(C) 500

(D) 151

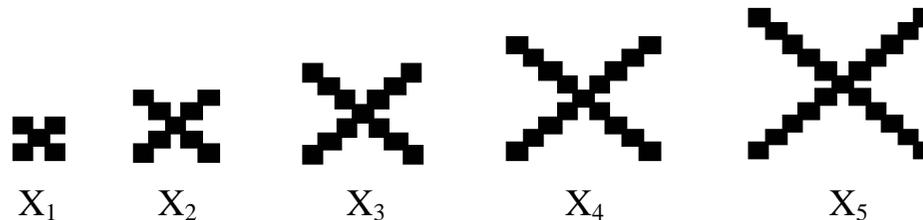
None of these

(E) Nie een hiervan nie Alikho kula?

13. Siphso uses tiles to build crosses as shown below. How many tiles will he use for  $X_{50}$ ?

13. Siphso bou kruise met teëls soos hieronder. Hoeveel teëls sal hy gebruik vir  $X_{50}$ ?

13. U Siphso usebenzisa ii tayile ukwakha le mifanekiso ibonisiweyo ngezantsi. Kengoko zingaphi iitayile anokuzisebenzisa ukwakha umfanekiso  $X_{50}$ ?



(A) 202

(B) 201

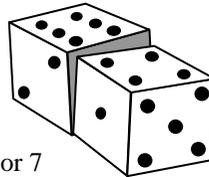
(C) 200

(D) 210

None of these

(E) Nie een hiervan nie Alikho kula

- |  |   |   |
|--|---|---|
| <p>14. The average petrol consumption of a car is <math>7,6 \ell/100 \text{ km}</math>. If a car starts with a full tank of <math>45 \ell</math>, how many litres of petrol will be in the tank after the car has travelled <math>325 \text{ km}</math>?</p> | <p>14. Die gemiddelde brandstofverbruik van 'n motor is <math>7,6 \ell/100 \text{ km}</math>. As 'n motor begin met 'n vol tenk van <math>45 \ell</math>, hoeveel liter petrol sal in die tenk wees nadat die motor <math>325 \text{ km}</math> gery het?</p> | <p>14. I average ye petroli ethi isetyenziswe yimoto izi <math>7,6 \ell/100 \text{ km}</math>. Ukuba imoto iqalisa uhambo nge tanki elizeleyo lwama <math>45 \ell</math>, iyakube ingakanani ipetroli emva kokuba ihambe umgama wama <math>325 \text{ km}</math>?</p> |
| <p>(A) 37,4                      (B) 5,92</p>  | <p>(C) 20,3                      (D) 24,7</p>   | <p>None of these<br/>(E) Nie een hiervan nie<br/>Ayiko kwezi</p>  |
| <p>15. The price of an article is increased by 10%. After that the new price is increased by 20%. What percentage is the final price more than the original price?</p>   | <p>15. Die prys van 'n artikel word met 10% verhoog. Daarna word die nuwe prys met 20% verhoog. Hoeveel persent is die finale prys meer as die oorspronklike prys?</p>  | <p>15. Ixabiso lwemphahla luthi lonyuswe nge 10%. Emva koko eli xabiso lonyuswe ngama 20%. Ngokwepesenti ixabiso lokugqibela lulwedlula kangakanani ixabiso lokuqala?</p>   |
| <p>(A) 32                          (B) 30</p>  | <p>(C) 12                          (D) 200</p>  | <p>None of these<br/>(E) Nie een hiervan nie<br/>Ayikho kwezi</p>   |
| <p>16. The sum of the numbers on opposite sides of a dice is always 7, e.g. <math>2 + 5 = 7</math>. In the picture below, what is the sum of the numbers on the two sides facing each other?</p>   | <p>16. Die som van die getalle op teenoorgestelde kante van 'n dobbelsteen is altyd 7, bv. <math>2 + 5 = 7</math>. In die prentjie hieronder, wat is die som van die getalle op die twee kante wat na mekaar toe wys?</p>                                     | <p>16. Isiphumo sokudityaniswa kwamanani akumacala amabini edayisi afulatheleneyo, umz <math>2 + 5 = 7</math>. Kulo mzobo ungezantsi ingaba isphumo sokudityaniswa samanani akumacala amabini ajongeneyo singubani?</p>   |
| <p>(A) 5 or 6                      (B) 4 or 7</p>  | <p>(C) 3 or 7                      (D) 4 or 8</p>   | <p>Not enough information<br/>(E) Nie genoeg inligting nie<br/>Akukho nkcazelo yaneleyo</p>   |
| <p>17. Sometimes when you divide the day by the month you get a whole number, for instance 15 May gives 15 divided by 5 which is 3. How many days in a year give whole numbers?</p>  | <p>17. As 'n mens die dag deel deur die maand kry 'n mens soms 'n heelgetalantwoord. Bv. 15 Mei gee 15 gedeel deur 5, wat 3 is. Hoeveel dae in die jaar gee sulke heelgetalantwoorde?</p>   | <p>17. Ngamanye amaxesha uthi xa wohlula usuku ngenyanga ufumane inani elizeleyo, umzekelo umhla we 15 ku Meyi unika 15 elohlulwe ngesi 5 elikhupha isiphumo esi 3. Zingaphi kengoko intsuku zonyaka ezithi zikhuphe inani elizeleyo?</p>                             |
| <p>(A) 100                          (B) 90</p>   | <p>(C) 202                          (D) 240</p>   | <p>None of these<br/>(E) Nie een hiervan nie<br/>Ayiko kwezi</p>  |



18. When a number is multiplied by itself, the result is a *square number*. For example,  $3 \times 3 = 9$  and  $6 \times 6 = 36$  are square numbers.  $12 \times 12 = 144$  is a *3-digit square number* because it has 3 digits. How many 3-digit square numbers are there?

- (A) 31 (B) 961

18. As 'n getal met homself vermenigvuldig word, is die resultaat 'n volkome *vierkant*. Byvoorbeeld,  $3 \times 3 = 9$  en  $6 \times 6 = 36$  is vierkante.  $12 \times 12 = 144$  is 'n *3-syfer vierkant* want dit het 3 syfers. Hoeveel 3-syfer vierkante is daar?

- (C) 20 (D) 21

18. Xa inani lithi liphindaphindwe kwangalo isiphumo siba linani ekuthiwa sisikwere. Umzekelo,  $3 \times 3 = 9$  kunye ne  $6 \times 6 = 36$  ngamanani azizikwere.  $12 \times 12 = 144$  linani elinedijiti ezintathu, ingaba kengoko mangaphi amanani azizikwere aneedijiti ezintathu nawo?

- (E) 22

19. I divided a whole number by another whole number and the answer was 0.4705882 on my eight-digit calculator display. Both numbers were less than 20. What was the larger number?

- (A) 7 (B) 19

19. Ek het 'n heelgetal deur 'n ander heelgetal gedeel en die antwoord op my agt-syfer sakrekenaarskerm was 0.4705882. Albei getalle was kleiner as 20. Wat was die grootste getal?

- (C) 11 (D) 17



19. Ndathi ndohlula inani elizeyo ngelinye inani elizeyo saza isiphumo sami saba ngama 0.4705882 xa ndandisebenzisa I calculator enokubonisa iidijiti ezisibhozo. Omabini lamanani ayengaphantsi kwama 20. Elona nani likhulu lalingubani?

- (E) 13

20. The science class measured the growth of a seedling over a two-week period, starting from the day they planted the seedling (Day 0) as shown in the table. What is the height of the seedling after D days?

Day	0	2	4	6	8	10	12	14
Height (mm)	0	3	6	9	12	15	18	21

- (A)  $D + 3$  mm (B)  $3 \times D$  mm (C)  $3 \times D - 3$  mm (D)  $1,5 \times D$  mm

20. Die wetenskapklas meet die hoogte van 'n plantjie oor 'n twee-week tydperk, vanaf die dag dat hulle die saad geplant het (Dag 0), soos in die tabel. Wat is die hoogte van die plant na D dae?



20. Abafundi abenza ezenzululwazi balinganisa ukukhula kwesithole kwisithuba esingangeveki ezimbini, beqalela kusuku abathi basityala ngaso esi sithole (usuku 0) njengokuba kubonisiwe kwitafile yamanani. Ingaba ubude besisithole buzakuba ngakanani emva kweentsuku ezili D?

- (E)  $2 \times D - 1$  mm

21. A family of 5 sisters, all of different ages, share R100 in such a way that each sister receives R2 more than her next younger sister. How much does the oldest receive?

- (A) R16 (B) R18

21. 'n Gesin van 5 susters, almal van verskillende ouderdom, verdeel R100 tussen hulle sodat elke suster R2 meer kry as die suster net jonger as sy. Hoeveel kry die oudste suster?

- (C) R20 (D) R22

21. Usapho olunentombi ezi 5, zonke zineminyaka eyohlukeneyo, kwafuneka zabelane nge R100 ukuze nganye kuzo intombi ifumane isiR2 ngaphezulu ukodlula lo dade wayo uyalamayo. Ingaba kengoko intombi eyeyona indala yafumana malini?

- (E) R24

22. A teacher has enough sheets of paper to give each learner in the class 3 sheets and have 31 sheets left, or to give each learner 4 sheets and have 8 sheets left. How many sheets of paper does he have?

- (A) 100 (B) 91

22. 'n Onderwyser het genoeg papier om aan elke leerling 3 velle te gee en dan het hy nog 31 velle oor. Hy sou ook aan elke leerling 4 velle kon gee en dan 8 velle oorhou. Hoeveel velle papier het hy?

- (C) 34 (D) 23

22. I titshala inamaphepha awaneleyo okunika umfundi ngamnye eklasini amaphepha ama 3 kuze kusale ama31 amaphepha, okanye athi anike umfundi ngamnye amaphepha ama 4 ukuze kusale amaphepha asi 8. Ingaba unamaphepha amangaphi?

- (E) 43

23. The average of seven numbers is 49. If 1 is added to the first number, 2 is added to the second number, 3 is added to the third number and so on up to the seventh number, what is the new average?

(A) 53

(B) 52

23. Die gemiddelde van sewe getalle is 49. As 1 by die eerste getal getel word, 2 by die tweede getal, 3 by die derde getal, ens. tot by die sewende getal, wat is die nuwe gemiddelde?

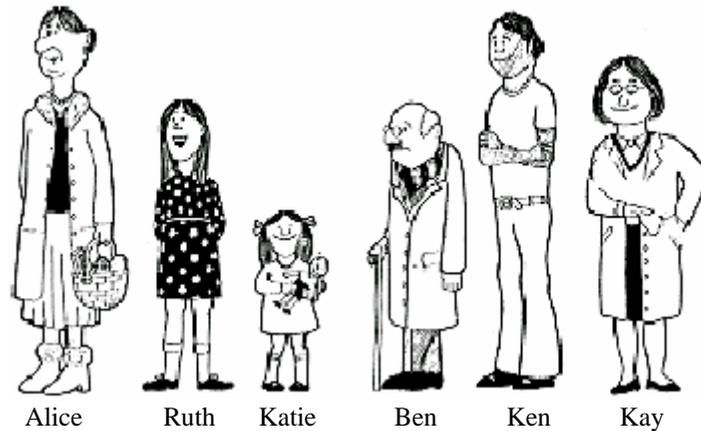
(C) 51

(D) 54

23. Umyinge (average) wamanani asixhenxe ngama 49. Ukuba i1 sidityaniswe kwelokuqala inani, isi2sidityaniswe kwelesibini inani, isi3 sidityaniswe kwelesithathu njalonjalo kufikelelwe kwelesixhenxe, Ingaba kengoko umyinge walamanani matssha okugqibela uza kuba ngubani?

(E) 56

24. Below is a picture of a family and a point-graph showing their heights and ages. Which point on the graph shows Ruth's height and age?



Alice

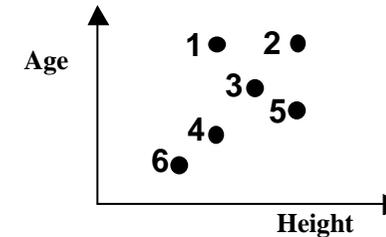
Ruth

Katie

Ben

Ken

Kay



(A) 1

(B) 2

24. Hieronder is 'n prent van 'n familie en 'n punt-grafiek van hul lengtes en ouderdomme. Watter punt op die grafiek toon Ruth se lengte en ouderdom?

(C) 3

(D) 4

24. Ngezantsi ngumfanekiso wosapho kunye negrafu ebonisa iminyaka nobude belungu ngalinye lolu sapho. Kukweyiphi indawo kule grafu ebonakalisa ubude neminyaka ka Ruth?

(E) 5

25. Bus A leaves Worcester at 10:00 and travels north along the N1 at 50 km/h. Bus B leaves Worcester at 12:00 along the same route at 70 km/h. At what time will bus B pass bus A?

(A) 11:30

(B) 15:00

25. Bus A vertrek om 10:00 vanaf Worcester op die N1 noordwaarts teen 50 km/h. Bus B vertrek om 12:00 op dieselfde roete vanaf Worcester en ry teen 70 km/h. Hoe laat sal bus B by bus A verbygaan?

(C) 18:00

(D) 17:00

25. IBhasi u A ishiye i Worcester ngo 10:00 yanyukela emantla ihamba ngo N1 ngesantya esingama 50 km/h. IBhasi u B ishiya i Worcester ngo 12:00 yahamba ngendlela efanaya ngesantya esingama 70 km/h Ingaba ibhasi B iyakudlula ngabani ixesha kwibhasi A?

(E) 68