# Mathematics Challenge

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

# Umceli-mngeni Ngezibalo

**GRADE 7 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!

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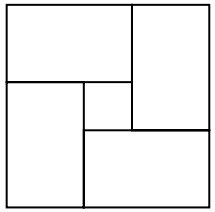
1. Four rectangles and a square are arranged as shown below. Each of the four rectangles is 5 cm long and 3 cm wide. What is the area of the square at the centre?

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 $cm^2$ (B) 4 $cm^2$ (C) 8 $cm^2$ (D) 9 $cm^2$ (E) 16 $cm^2$

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Western Cape
Wes-Kaap
Ntshona-Koloni
AMESA
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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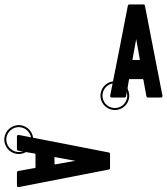
Research Unit for Mathematics Education of the University of Stellenbosch

2. The letter A is rotated 180° about O. What will the position of A be now?

(A)  (B) 

2. Die letter A word deur 180° om O geroteer. Wat is die posisie van A nou?

(C)  (D) 

2. Unobumba u A ujikeleziswa I 180° ku O. Uyakuba ejonge kweliphi icala u A ke ngoku?

(E) 

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 uitverkoping 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

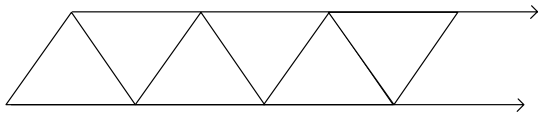
4. Ishishini elivelisa ilokhwe neehempe, ilokhwe ezintathu nehehempe ezine ziyenziwa ngeveki, Eli shishini mveliso livelisa malunga ne-420 yempahla. Kule mveliso kungabe zingaphi iilokwe?

(E) Nie een hiervan nie
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

6. Which is the next number in this number pattern?

216 ; 125 ; 64 ; 27 ; . . .

(A) 8 (B) 12

6. Wat is die volgende getal in hierdie ry?

216 ; 125 ; 64 ; 27 ; . . .

(C) 11 (D) 10

6. Leliphi inani elilandelayo kolu luhlu?

216 ; 125 ; 64 ; 27 ; . . .

(E) 15

7. Four people ordered a pizza. One person ate $\frac{1}{3}$ of the pizza and left before anyone else had a piece. The rest of the pizza was then divided equally among the other three people. What part of the whole pizza did each of these three get?

(A) $\frac{1}{3}$ (B) $\frac{1}{4}$

7. Vier mense het ’n pizza bestel. Een van hulle het $\frac{1}{3}$ van die pizza geëet en vertrek voordat die ander iets gekry het. Die res van die pizza is gelykop verdeel tussen die ander drie. Watter deel van die hele pizza het elkeen van hierdie drie gekry?

(C) $\frac{4}{9}$ (D) $\frac{2}{9}$

7. Abantu abane bathe bathenga ipitsa. Omnye kubo utye isi $\frac{1}{3}$ waza wahamba phambi kokuba abanye batye awabo amaqhekeza. I pitsa eseleyo yathi yohlulelwa abantu abathathu abaseleyo. Yinxalenye engakanani yale pitsa athe omnye kwaba bathathu wayizuza?

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

8. A reservoir is $\frac{5}{8}$ full. If 135 litres of water is added, the reservoir is $\frac{8}{11}$ full. What is the capacity of the reservoir when full?

(A) 16 $\ell$ (B) 88 $\ell$

8. ’n Watertenk is $\frac{5}{8}$ vol. Nadat nog 135 liter water bygetap is, is die tenk $\frac{8}{11}$ vol. Hoeveel water hou die tenk?

(C) 729 $\ell$ (D) 1 320 $\ell$

8. Idama lokugcina amanzi linomthamo osi $\frac{5}{8}$. Ukuba i 135 lelitha zamanzi aye ongezwa eli dama liba nomthamo osi $\frac{8}{11}$. Ingaba yintoni umthamo weli dami xa lizele?

(E) 3 520 $\ell$

9. Numbers are arranged in the following pattern:

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | **row 1** |
| 7 | 8 | 9 | 10 | 11 | 12 | **row 2** |
| 13 | 14 | 15 | 16 | 17 | 18 | **row 3** |
| … | … | … | … | … | … | **row 4** |

What will the third number in row 81 be

(A) 480 (B) 486

9. Getalle word in die volgende patroon rangskik:

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | **ry 1** |
| 7 | 8 | 9 | 10 | 11 | 12 | **ry 2** |
| 13 | 14 | 15 | 16 | 17 | 18 | **ry 3** |
| … | … | … | … | … | … | **ry 4** |

Wat sal die derde getal in ry 81 wees??

(C) 483 (D) 485

9. Amanani adwelisiwe kolu luhlu lulandelayo

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | **umqolo 1** |
| 7 | 8 | 9 | 10 | 11 | 12 | **umqolo 2** |
| 13 | 14 | 15 | 16 | 17 | 18 | **umqolo 3** |
| … | … | … | … | … | … | **umqolo 4** |

Ingaba inani lesethathu kumqolo wama 81 liyakuba ngubani?

(E) 241

10. In three years Jane will be three times as old as she was three years ago. How old is Jane now?

(A) 18 (B) 12

10. Oor drie jaar sal Jane drie keer so oud wees as wat sy drie jaar gelede was. Hoe oud is Jane nou?

(C) 9 (D) 6

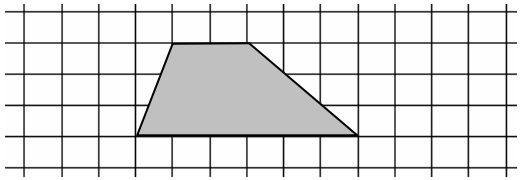
10. Kwiminyaka emithathu ezayo, uJane uyakube eyiphinda- kathathu iminyaka abe enayo kwiminyaka emithathu edlulileyo. Mingaphi iminyaka ka Jane?

(E) 3

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

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

11. Bungakanani ukukhulu bendawo eyenziwe mnyama kumfanekiso ukuba isikwere esinye simele i1 $cm^2$?

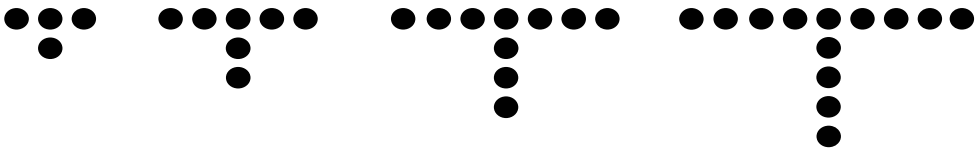


(A) 9 $cm^2$ (B) 10 $cm^2$ (C) 11 $cm^2$ (D) 12 $cm^2$ (E) 13 $cm^2$

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

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

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



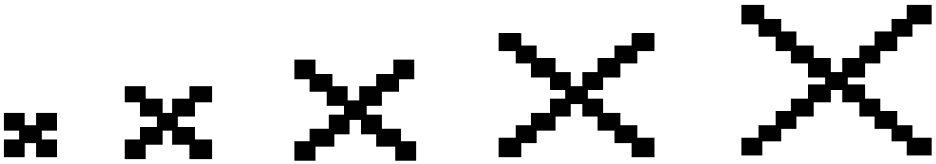
$T_1$ $T_2$ $T_3$ $T_4$

(A) 101 (B) 201 (C) 500 (D) 151 (E) None of these / Nie een hiervan nie / Alikho kula?

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

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

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



$X_1$ $X_2$ $X_3$ $X_4$ $X_5$

(A) 202 (B) 201 (C) 200 (D) 210 (E) None of these / Nie een hiervan nie / Alikho kula

14. The average petrol consumption of a car is 7,6 ℓ/100 km. If a car starts with a full tank of 45 ℓ, how many litres of petrol will be in the tank after the car has travelled 325 km?

(A) 37,4 (B) 5,92 (C) 20,3 (D) 24,7 (E) None of these / Nie een hiervan nie / Ayiko kwezi

14. Die gemiddelde brandstofverbruik van ’n motor is 7,6 ℓ/100 km. As ’n motor begin met ’n vol tenk van 45 ℓ, hoeveel liter petrol sal in die tenk wees nadat die motor 325 km gery het?

14. I average ye petroli ethi isetyenziswe yimoto izi 7,6 ℓ/100 km. Ukuba imoto iqalisa uhambo nge tanki elizeleyo lwama 45 ℓ, iyakube ingakanani ipetroli emva kokuba ihambe umgama wama 325 km?

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?

(A) 32 (B) 30 (C) 12 (D) 200 (E) None of these / Nie een hiervan nie / Ayikho kwezi

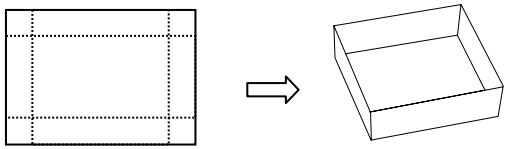
15. Die prys van ’n artikel word met 10% verhoog. Daarna word die nuwe prys met 20% verhoog. Hoeveel persent is die finale prys meer as die oorspronklike prys?

15. Ixabiso lwemphahla luthi lonyuswe nge 10%. Emva koko eli xabiso lonyuswe ngama 20%. Ngokwepesenti ixabiso lokugqibela lulwedlula kangakanani ixabiso lokuqala?

16. Four squares are cut from the corners of a rectangular sheet of cardboard. It is then folded up to make a box that is 15 cm long and 8 cm wide with a volume of 120 $cm^3$. What was the area of the original sheet of cardboard?

(A) 144 $cm^2$ (B) 143 $cm^2$ (C) 170 $cm^2$ (D) 120 $cm^2$ (E) 240 $cm^2$

16. Vier vierkante word uit die hoeke van ’n reghoekige stuk karton gesny. Die karton word dan opgevou om ’n boks te maak wat 15 cm lank en 8 cm wyd is met ’n volume van 120 $cm^3$. Wat was die oppervlakte van die oorspronklike stuk karton?



16. Izikwere ezine zathi zasikwa kwiikona zephepha elenza uxande. Eli phepha lathi lasongwa lenza ibhokisi enobude obuli 15 cm kunye nobubanzi obusisi 8 cm kwaye inomthamo oli 120 $cm^3$. Ingaba i eriya yolu xande yayingakanani phambi kokuba lisikwe?

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?

(A) 100 (B) 90 (C) 202 (D) 240 (E) None of these / Nie een hiervan nie / Ayiko kwezi

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?

17. Ngamanye amaxesha uthi xa wohlula usuku ngenyanga ufumane inani elizeleyo, umzekelo umhla we15 ku Meyi unika I15 elohlulwe ngesi 5 elikhupha isiphumo esi 3. Zingaphi kengoko intsuku zonyaka ezithi zikhuphe inani elizeleyo?

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 (C) 20 (D) 21 (E) 22

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?

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?

19. $(1-\frac{1}{2})\times(1-\frac{1}{3})\times(1-\frac{1}{4})\times \ldots \times(1-\frac{1}{2004}) =$

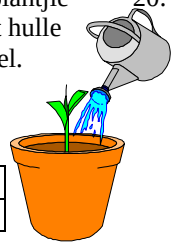
(A) $\frac{1}{2004}$ (B) $\frac{1}{1002}$ (C) $\frac{1}{668}$ (D) $\frac{24}{2004}$ (E) $\frac{2003}{2004}$

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?

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 O) njengokuba kubonisiwe kwitafile yamanani. Ingaba ubude besisithole buzakuba ngakanani emva kweentsuku ezili D?

| 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 (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 (C) R20 (D) R22 (E) R24

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?

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?

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 (C) 34 (D) 23 (E) 43

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?

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?

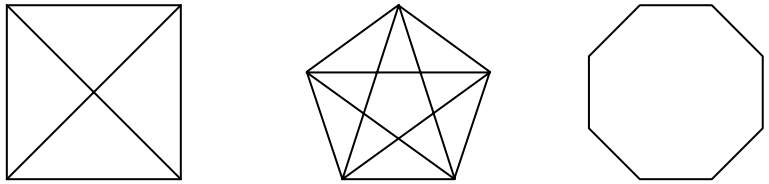
23. The average of seven numbers is 49. If 1 is added to the first number, 2 is added to the second number, 3 is added to the third number and so on up to the seventh number, what is the new average?

(A) 53 (B) 52 (C) 51 (D) 54 (E) 56

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?

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 matsha okugqibela uza kuba ngubani?

24. A square has 2 diagonals and a pentagon has 5. How many diagonals does an octagon have? (An octagon has 8 sides.)



(A) 20 (B) 28 (C) 16 (D) 24 (E) 40

24. 'n Vierkant het 2 hoeklyne en 'n vyfhoek het 5. Hoeveel hoeklyne het 'n agthoek?

24. Isikwere sineedayagonali ezi 2 ize ipentagoni ibe nedayagonali ezi 5. Zingaphi idayagonali ezifumaneka kwi oktagoni (i oktagoni inamacala asi 8)?

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 (C) 18:00 (D) 17:00 (E) 68

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?

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?