Mathematics Challenge

GRADE 5 FINAL ROUND
16 OCTOBER 2002

NOTE:

- Answer the questions according to the instructions on the answer sheet.
- You may use a calculator.
- The questions test insight. Complex calculations will therefore not be necessary.
- We hope you enjoy it!

1. This open box is 8 cm long, 4 cm wide and 2 cm high. How many of the small 1 cm by 1 cm by 1 cm cubes can be packed into the box?

(A) 32 (B) 14

2. Which one of the following numbers will appear in the sequence
6; 12; 18; 24; ...?

(A) 2733 (B) 3526

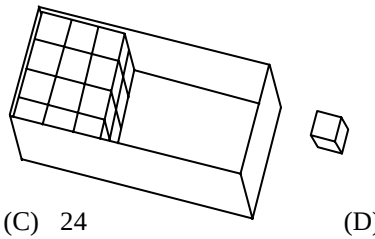
Wiskunde-uitdaging

GRAAD 5 FINALE RONDE
16 OKTOBER 2002

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!

1. Hierdie oop boks is 8 cm lank, 4 cm breed en 2 cm hoog. Hoeveel van die klein 1 cm by 1 cm by 1 cm blokkies kan in die boks inpas?



(C) 24 (D) 64

2. Watter een van die volgende getalle sal voorkom in die getalry
6; 12; 18; 24; ...?

(C) 4182 (D) 4526

Umceli-mngeni Ngezibalo

GRADE 5 UMJIKELO WOKUGQIBELA
16 OKTHOBHA 2002

QAPHELA:

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

1. Le bhokisi ivulekileyo inobude obusi 8cm, ububanzi obusi 4cm kunye nomphakamo osisi 2cm. Ingaba zingaphi iibhokisana ezinomlinganiselo 1 cm by 1 cm by 1 cm ezinokuthi zifakwe ziyizalise lebhokisi?

(E) 48

2. Leliphi kula manani alandelayo elizakuvela kolu luhlu
6; 12; 18; 24; ...?

(E) 5344

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

RUMEUS
Research Unit for Mathematics Education of the University of Stellenbosch

3. A Train departs from Bellville station at 09:47 and arrives in Cape Town at 10:18. Another train on the same route leaves Bellville at 12:30. At what time does it arrive in Cape Town?

(A) 13:18 (B) 13:01 (C) 01:01 (D) 13:12 (E) 12:51

3. ’n Trein vertrek om 09:47 van Bellville-stasie en kom om 10:18 in Kaapstad aan. ’n Ander trein op dieselfde roete vertrek om 12:30 van Bellville. Hoe laat kom dit in Kaapstad aan?

3. Uloliwe usukela kwisikhululo sase Bellville ngemizuzu engama 09:47 ufike kwisikhululo sase Kapa ngemizuzu engama 10:18. Omnye uloliwe yena uphuma e Bellville nge 12:30. Uyakuthi afike ngabani ixesha eKapa?

4. 500 bottles of wine must be packed into cartons. Each carton holds 12 bottles. How many cartons are needed?

(A) 41 (B) 42 (C) $41\frac{2}{3}$ (D) 41,67 (E) None of these / Nie een hiervan nie / Ayiko kwezi

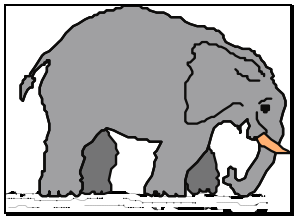
4. 500 Bottels wyn moet in kartonne verpak word. Elke karton hou 12 bottels. Hoeveel kartonne word benodig?

4. Iibhotile zewayini ezingama 500 kufuneka zipakishwe kwiibhokisana. Ibhokisana nganye inokuthwala iibhotile ezili 12. Zingaphi iibhokisana ezifunekayo?

5. This photo of 120 mm × 90 mm is enlarged to 360 mm × 270 mm. The elephant's tail in the smaller photo is 22 mm long. How long is its tail in the larger photo?

(A) 33 mm (B) 44 mm (C) 55 mm (D) 66 mm (E) 99 mm

5. Hierdie foto van 120 mm × 90 mm word vergroot na 360 mm × 270 mm. As die olifant se stert in die klein foto 22 mm lank is, hoe lank is sy stert in die vergroting?



5. Le foto ebukhulu bungma 120 mm × 90 mm iye yakhuliswa yangama 360 mm × 270 mm. Umsila wendlovu kwifoto encinane ungama 22mm ubude. Ingaba uyakubangakanani umsila wayo kwifoto enkulu?

6. In an election 39 218 votes were cast for two candidates. The winner had 1 002 votes more than the loser. How many votes did the winner receive?

(A) 19 108 (B) 20 182 (C) 38 216 (D) 20 110 (E) 19 609

6. In ’n verkiesing is 39 218 stemme uitgebring vir twee kandidate. Die wenner het 1 002 stemme meer as die verloorder gekry. Hoeveel stemme het die wenner gekry?

6. Kuvoto abantu abangama 39 218 bavotela abagqatswa ababini. Owaphumelelayo waphumelela nge 1 002 levoti ukudlula ongazange aphumelele. Ingaba xa zizonke zingaphi iivoti ezifunyenwe ngumntu owaphumelelayo?

7. What fraction is 30 cm of 2 m?

(A) $\frac{1}{600}$ (B) $\frac{3}{20}$ (C) $\frac{1}{150}$ (D) $\frac{3}{200}$ (E) $\frac{1}{15}$

7. Watter breuk is 30 cm van 2 m?

7. I-30 cm, iliqhezu elingakanani le-2 m?

8. You and your friend have the same amount of money. How much should you give her so that she has R10 more than you?

(A) al jou geld / all your money / yonke imali yakho (B) R10 (C) R20 (D) R5 (E) nie een hiervan nie / not one of these / ayikho kwezi

8. Jy en jou maat het ewe veel geld. Hoeveel moet jy haar gee sodat sy R10 meer as jy het?

8. Unemali elinganayo neyo mhlobo wakho. Kufuneka umnike malini ukuze imali yakhe ibengaphezulu kuneyakho nge R10?

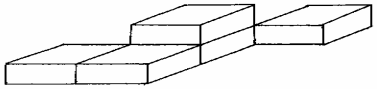
9. Halima is reading a book. Chapter 7 begins on page 246 and ends on page 274. How many pages are there in chapter 7?

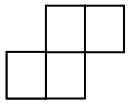
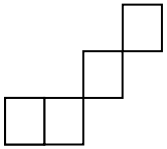
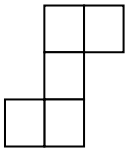
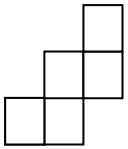
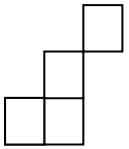
(A) 274 (B) 28 (C) 15 (D) 29 (E) 30

9. Halima lees ’n boek. Hoofstuk 7 begin op bladsy 246 en eindig op bladsy 274. Hoeveel bladsye is daar in hoofstuk 7?

9. UHalima ufunda incwadi. Isahluko sesixhenxe siqala kwiphepha le-246, liphele kwiphepha le-274. Mangaphi amaphepha esi sahluko?

10. What will you see if you look at this block building directly from above?



(A)  (B)  (C)  (D)  (E) 

10. Wat sal jy sien as jy direk van bo na hierdie blokgebou kyk?

10. Ukuba lomfanekiso wesi sakhiwo uwujongele ngqo ngasentla unokubona umzobo onjani?

11. Thomas forgot to take off his shoes when he got onto the scale to weigh himself. The scale showed 41 kg. He then weighed his two shoes and found that they had a mass of 725 g. What was his mass without his shoes?

(A) 40,175 g (B) 40,725 kg (C) 39,275 kg (D) 41,725 kg (E) 40,275 kg

11. Thomas het vergeet om sy skoene uit te trek voor hy op die skaal geklim het om homself te weeg. Die skaal het 41 kg gewys. Toe weeg hy sy twee skoene en vind dat hulle 'n massa van 725 g het. Wat was sy massa sonder sy skoene?

11. U Thomas walibala ukuzikhulula izihlangu zakhe xa wathi wakhwela kwisikali sokulinganisa ubunzima bakhe. Isikali sathi sabonisa ama 41 kg. Wathi wakugqiba walinganisa izihlangu zakhe zozibini wafumanisa ukuba zinobunzima obungama 725 g. Babungakanani ubunzima bakhe ngaphandle kwezihlangu zakhe?

12. To make apricot yoghurt you need 5 parts of yoghurt to 1 part of apricots. How many litres of yoghurt are needed to make 30 litres of apricot yoghurt?

(A) 6 (B) 5 (C) 25 (D) 24 (E) 35

12. Om appelkoosjogurt te maak is 5 dele jogurt nodig vir 1 deel appelkose. Hoeveel liter jogurt is nodig om 30 liter appelkoosjogurt te maak?

12. Ukwenza i-yogathi ye-apricot kufuneka usebenzise isihlanu seeyogathi kwisinye se-apricot. Zingaphi iilitha zeyogathi ezifunekayo ukwenza iilitha eziyi-30 zejogathi ye-apricot?

13. A computer uses a secret rule so that for every *input number* that you type in, it produces an *output number* using that same rule. Here are some examples of the computer's answers:

Input number	0	1	2	3
Output number	2	7	12	17

What is the computer's rule?
(A) *Output number* = *Input number* + 6
(B) *Output number* = *Input number* × 6
(C) *Output number* = *Input number* × 5 + 2
(D) *Output number* = *Input number* + 2 × 5
(E) None of these

13. 'n Rekenaar gebruik 'n geheime formule – vir elke *invoergetal* wat jy intik, gebruik die rekenaar dieselfde formule om 'n *uitvoergetal* te bereken. Hier is 'n paar voorbeelde van die rekenaar se antwoorde:

Invoergetalle	0	1	2	3
Uitvoergetalle	2	7	12	17

Wat is die rekenaar se formule?
(A) *Uitvoergetal* = *Invoergetal* + 6
(B) *Uitvoergetal*= *Invoergetal* × 6
(C) *Uitvoergetal*= *Invoergetal* × 5 + 2
(D) *Uitvoergetal*= *Invoergetal* + 2 × 5
(E) None of these

13. I computer yenziwe ukuba isebenzise umgaqo oyimfihlo ukuze ukwazi ukuthi xa ucofe inani (*input*), ibonise elinye inani (*output*) ikwasebenxisa kwalo mgaqo:

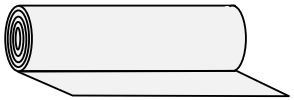
Input number	0	1	2	3
Output number	2	7	12	7

Uthini lo mgaqo we computer?
(A) *Output number* = *Input number* + 6
(B) *Output number* = *Input number* × 6
(C) *Output number* = *Input number* × 5 + 2
(D) *Output number* = *Input number* + 2 × 5
(E) Ayiko kwezi

14. After one-tenth of a roll of material was cut off, 99 m of material remains on the roll. How long was the original roll of material?

(A) 90 m (B) 100 m (C) 110 m (D) 108 m (E) None of these

14. Na een tiende van 'n rol materiaal afgesny is, bly daar 99 m materiaal oor. Hoe lank was die oorspronklike rol materiaal?



(E) Nie een hiervan nie

14. Emva kokuba kusikwe isinye-eshumini selaphu ama 99 m zeli laphu asala engasikwanga. Lalilide kangakanani elilaphu lingekasikwa?

(E) Ayiko kwezi

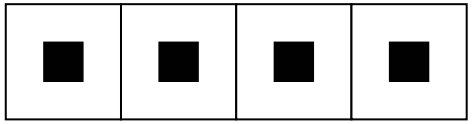
15. Predict which of the following calculations will give the correct answer for 291 ÷ 24. (You do not have to do the calculations.)

(A) 291 ÷ 20 + 291 ÷ 4 (B) 291 ÷ 8 + 291 ÷ 3 (C) 240 ÷ 8 + 51 ÷ 3 (D) 210 ÷ 24 + 81 ÷ 24 (E) 312 ÷ 24 − 21

15. Voorspel watter van die volgende berekenings sal die korrekte antwoord gee vir 291 ÷ 24. (Jy hoef nie die berekenings te doen nie.)

15. Qashela ukuba ngeziphi izivakalisi ezifana nale 291 ÷ 24. (Nokuba awuyisebenzisanga i-calculator.)

16. What fraction of the following figure is shaded?



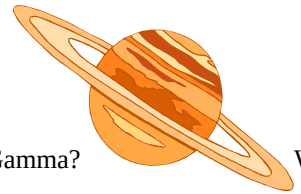
(A) $\frac{1}{4}$ (B) $\frac{4}{32}$ (C) $\frac{4}{28}$ (D) $\frac{1}{9}$ (E) $\frac{1}{8}$

16. Watter breuk van die volgende figuur is verdonker?

16. Liqhezu elingakanani lalomzobo elithe lenziwa mnyama?

17. On the planet Gamma they have a different kind of arithmetic. Here are a few Gamma calculations:

$4 \times 3 = 15$
$6 \times 3 = 21$
$7 \times 5 = 40$
$8 \times 7 = 63$

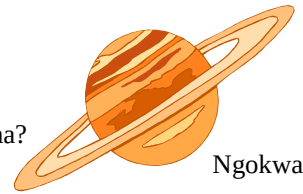


What is the answer of 6×8 on Gamma?

(A) 36 (B) 64 (C) 56 (D) 49 (E) 54

17. Op die planeet Gamma doen hulle ’n ander soort rekenkunde. Hier is ’n paar Gamma-berekeninge:

$4 \times 3 = 15$
$6 \times 3 = 21$
$7 \times 5 = 40$
$8 \times 7 = 63$



Wat is die antwoord van 6×8 op Gamma?

17. Kwi planeti u Gamma banendlela eyahlukileyo yokubala izibalo ze arithmetic. Nantsi imizekelo embalwa yendlela ekubalwa ngabakwa Gamma:

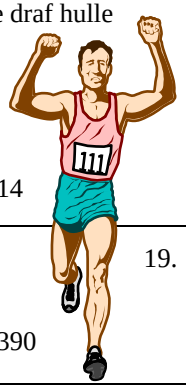
$4 \times 3 = 15$
$6 \times 3 = 21$
$7 \times 5 = 40$
$8 \times 7 = 63$

Ngokwaka Gamma, $6 \times 8 = ?$

18. Thembi and Rashid started a fitness programme, and decided to jog 3 street blocks further each day. On the first day they jogged 5 blocks. Today they jogged 44 blocks. For how many days have they been jogging?

(A) 11 (B) 12 (C) 13 (D) 14 (E) 15

18. Thembi en Rashid het ’n fiksheidsprogram begin, en het besluit om elke dag 3 straatblokke verder te draf. Op die eerste dag het hulle 5 blokke gedraf. Vandag het hulle 44 blokke gedraf. Vir hoeveel dae draf hulle nou al?



18. U Thembi no Rashid baqala ukwenza indlela yokomeleza amalungu omzimba, bagqiba ekubeni ukuba babaleke umgama odlula ibloko yezitalato ezintathu ngemini nganye ukudlula usuku olungaphambili. Kusuku lokuqala babaleka ibloko ezi 5. Namhlanje babaleke ibloko ezingama 44. Ucinga ukuba zingaphi iintsuku abathe babaleka kuzo?

19. In the previous question: How many blocks did they jog in total?

(A) 343 (B) 299

19. In die vorige vraag: Hoeveel blokke het hulle al altesaam gedraf?

(C) 258 (D) 390

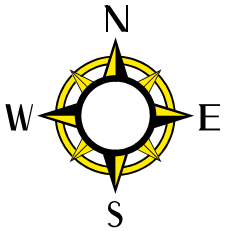
19. Ngokombuzo ongentla: Xa zidityaniswa ibloko abazibalekayo ngosuku zingaphi zizonke?

(E) 83

20. A, B, C, D, E and F are six towns situated as follows:

D is 30 km East of F
B is 20 km West of C
A is 10 km West of E
F is 10 km South of A
D is 20 km North of C

How far is B from E?



(A) 30 km (B) 20 km

20. Ses dorpe A, B, C, D, E en F is soos volg geleë is:

D is 30 km Oos van F
B is 20 km Wes van C
A is 10 km Wes van E
F is 10 km Suid van A
D is 20 km Noord van C

Hoe ver is B van E?

(C) 10 km (D) 40 km

20. U A, B, C, D, E kunye no F zidolophu ezintandathu ezishiyana ngale migama.
I D ungama 30 km kwimpuma ye F
I B ingama 20 km kwintshona ye C
I A ingama 10 km kwintshona ye E
I F ingama 10 km kumazantsi e A
I D ingama 20 km kumantla e C

Ingaba ikude kangakanani idolophu B kwidiolophu E?

(E) 50 km

21. A man starts walking from A towards B, which is 12 km away. Thirty minutes later his wife also starts walking from A to B. If the man walks at 4 km in 1 hour and his wife walks at 6 km in 1 hour, how far from A will she catch up with him?

(A) 6 km (B) 7 km

21. ’n Man begin stap van A na B, wat 12 km weg is. Dertig minute later begin sy vrou ook stap van A na B. As die man loop teen 4 km in 1 uur en sy vrou teen 6 km in 1 uur, hoe ver van A sal sy hom inhaal?

(C) 8 km (D) 9 km

21. Indoda ithi ihambe isukela ku A isiya ku B, okumgama oli 12 km. Emva kwemizuzu engama 30 unkosikazi wakhe naye uthi ahambe esukela ku A esiya ku B. Ukuba isantya sokuhamba sendoda sisi 4 km ngeyure size esenkosikazi sona sibe sisi 6km ngeyure, kuya kuba kukude kangakanani ukusuka ku A apho le nkosikazi iza kuthi ihlangane nendoda yayo?

(E) 10 km

22. Refer to the previous question: On another day the man starts walking from A to B, and his wife at the same time starts walking from B to A. How far from A will they meet?

(A) 4,8 km (B) 7,2 km

22. Verwys na die vorige vraag: Op ’n ander dag begin die man stap van A na B, en sy vrou begin terselftertyd stap vanaf B na A. Hoe ver vanaf A sal hulle ontmoet?

(C) 6 km (D) 5 km

22. Phinda ujonge lo mbuzo ungentla: Ngenye imini lendoda yathi yaqalela ku A isiya ku B, waze yena unkosikazi wayo waqalela ku B esiya ku A. Kuya kube kukude kangakanani ukusukela ku A apho bazokuthi bahlangane khona?

(E) 3 km

23. In the previous question: After how many minutes will they meet?

(A) 68 (B) 62

23. In die vorige vraag: Na hoeveel minute ontmoet hulle?

(C) 108 (D) 90

23. Ngokwalo mbuzo ungentla: Bazakuthi bahlangane emva kwemizuzu emingaphi?

(E) 72

24. At *Pizza Inn* 2 small pizzas and one large pizza costs the same as 5 small pizzas. If a small pizza costs R11,50, what does a large pizza cost?

(A) R28,75 (B) R23 (C) R27,50 (D) R34,50 (E) None of these

24. By *Pizza Inn* kos 2 klein pizzas en een groot pizza net soveel as 5 klein pizzas. As ’n klein pizza R11,50 kos, wat kos ’n groot pizza?

(A) R28,75 (B) R23 (C) R27,50 (D) R34,50 (E) Nie een hiervan nie

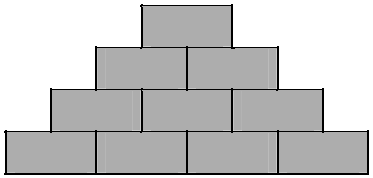
24. Kwivenkile ye Pizza isi2 se pizza ezincinane kunye nenye i pizza enkulu zixabisa ngokufanayo ne pizza ezi 5 ezincinane.. Ukuba i pizza encinane iixabisa i R11,50, ingaba ipizza enkulu ixabisa malini?

(A) R28,75 (B) R23 (C) R27,50 (D) R34,50 (E) Ayiko kwezi

25. Sipho builds “pyramids” with blocks as shown in the sketch below. To build a pyramid 4 blocks high he needs 10 blocks. How many blocks does he need to build a pyramid 50 blocks high?

(A) 2500 (B) 1275 (C) 2401 (D) 2550 (E) 2601

25. Sipho bou “piramides” met blokke soos in die skets getoon. Om ’n piramide 4 blokke hoog te bou, het hy 10 blokke nodig. Hoeveel blokke het hy nodig om ’n piramide 50 blokke hoog te bou?



(A) 2500 (B) 1275 (C) 2401 (D) 2550 (E) 2601

25. USipho wakha ii“phiramidi” ngeebloko njengoko kubonisiwe kumzobo ongezantsi.Ukwakha iphiramidi eziibloko ezi 4 umphakamo udinga iibloko ezili 10. Zingaphi iibloko azidingayo ukwakha iphiramidi eziibloko ezingama 50 umphakamo?

(A) 2500 (B) 1275 (C) 2401 (D) 2550 (E) 2601