Mathematics Challenge

GRADE 6 FINAL ROUND
31 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 will therefore not be necessary.
- We hope you enjoy it!

1. What number is exactly halfway between 5,6 and 5,65?

   (A) 5,025 (B) 5,625 (C) $5{,}62\frac{1}{2}$ (D) 5,605 (E) 5,655

2. Today, 31 October 2001, falls on a Wednesday. On what day of the week will 31 October 2010 fall?

   (A) Monday / Maandag / Mvulo
   (B) Tuesday / Dinsdag / Lwesibini
   (C) Friday / Vrydag / Lwesihlanu
   (D) Saturday / Saterdag / Mgqibelo
   (E) Sunday / Sondag / Cawa

Wiskunde-uitdaging

GRAAD 6 FINALE RONDE
31 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!

1. Watter getal is presies halfpad tussen 5,6 en 5,65?

2. Vandag, 31 Oktober 2001, val op ’n Woensdag. Op watter dag van die week sal 31 Oktober 2010 val?

Umceli-mngeni Ngezibalo

GRADE 6 UMJIKELO WOKUGQIBELA
31 OKTHOBHA 2001

QAPHELA:

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

1. Leliphi elona nani liphakathi kanye kwesi 5,6 nesi 5,65?

2. Namhlanje, ama 31 Oktobha 2001, aya kuba ngolwe Thathu. Uyakuba koluphi usuku lweveki umhla wama 31 Oktobha 2010?

Western Cape
Wes-Kaap
Ntshona-Koloni
AMESA
The Association for Mathematics Education of South Africa

In cooperation with the
Western Cape
Education Department

Nasou Via Afrika

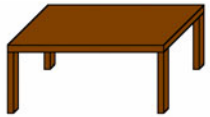
CASIO

RUMEUS
Research Unit for Mathematics Education
of the University of Stellenbosch

3. A rectangular kitchen table is three times as long as it is wide. If it were 3 m shorter and 3 m wider, it would be a square. How long is the table?

(A) 4 m (B) 3 m

3. 'n Reghoekige kombuistafel is drie keer so lank as wat dit breed is. As dit 3 m korter en 3 m breër was, sou dit 'n vierkant wees. Hoe lank is die tafel?



(C) 2 m (D) 9 m

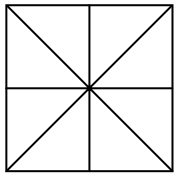
3. Ubude betafile yoxande yekhitshi bubuphindaphinda kathathu ububanzi bayo. Ukuba ubude bayo bebu bufutshane nge 3 m ububanzi buvuleke nge 3 m yongezelelweyo letafile ibiya kuba yeyesikwere. Ingaba kengoko letafile inde kanganani?

(E) 10 m

4. How many different triangles are there in this figure?

(A) 10 (B) 12

4. Hoeveel verskillende driehoeke is daar in hierdie figuur?



(C) 14 (D) 16

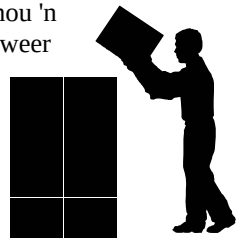
4. Bangaphi oonxantathu abangalinganiyo abakhoyo kulo mzobo?

(E) 8

5. Yolanda found that the warehouse was full, so she stacked a truckload of boxes outside. The stack was 6 m high, 10 m wide, and 8 m long. Yolanda now needs a rectangular tarp (sheet) to cover the boxes for protection. What size tarp would cover the stack exactly?

(A) 14 m × 16 m (B) 24 m × 24 m

5. Die pakhuis was vol, toe laat Yolande 'n vrag bokse buite opstapel. Die stapel bokse was 6 m hoog, 10 m breed, en 8 m lank. Yolanda benodig nou 'n reghoekige seil om die bokse teen die weer te beskerm. Watter grootte seil sal die stapel presies bedek?



(C) 20 m × 20 m (D) 22 m × 22 m

5. U Yolanda ufumanise ukuba umzi wokugcina izinto awusenandawo yokugcina ezinye iibhokisi, wazizalisa kwi traka engaphandle kwesakhiwo. Umphakamo wokuzizalisa kwakhe ezi bhokisi kule traka wawu sisi 6 m ukuphakama, i 10 m ububanzi kunye nesi 8 m ubude. U Yolanda kwakufuneka efune isivalo esifana nebhokisi yoxande ukuze akwazi ukugquma ginci ezi bhokisi ukuze zikhuseleke. Ingaba umlinganiselo wesi sivalo uyakuba ngakanani?

(E) 20 m × 22 m

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

(A) 16 ℓ (B) 88 ℓ

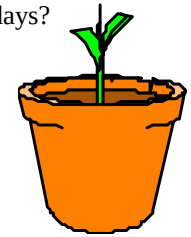
6. ‘n Watertenk is $\frac{5}{8}$ vol. Nadat nog 135 ℓ water bygetap is, is die tenk $\frac{8}{11}$ vol. Hoeveel water hou die tenk?

(C) 729 ℓ (D) 1320 ℓ

6. Idama lokugcina amanzi linomthamo osi $\frac{5}{8}$. Ukuba i135 lelitha zamanzi aye ongezwa eli dama liba nomthamo osisi $\frac{8}{11}$. Ingaba ungakanani umthamo weli dami xa lizele?

(E) 3520 ℓ

7. The science class measured the growth of a plant over a two-week period, as shown in the table. What was the height of the plant after 11 days?



7. Die wetenskapklas het die groei van ‘n plantjie oor ‘n periode van twee weke gemeet, soos in die tabel getoon. Wat was die hoogte van die plantjie na 11 dae?

Days Dae IIntsuku	0	2	4	6	8	10	12	14
Height Hoogte (mm) Ubude	0	3	6	9	12	15	18	21

7. Abafundi abenza ezenzululwazi balinganisa ukukhula kwesityalo kwisithuba seveki ezimbini. Le nkcukacha ilandelayo ithe yabhalwa phantsi?

(A) 15 mm (B) 18 mm (C) 16 mm (D) 17 mm (E) None of these / Nie een hiervan nie / Ayiko kwezi

8. Refer to the previous question. If the plant continued to grow at the same rate, after how many days would it be 60 mm high?

8 Verwys na die vorige vraag. As die plant aanhou om teen dieselfde tempo te groei, na hoeveel dae sal dit 60 mm hoog wees?

8. Jonga umbuzo ongentla. Ukuba esi sityalo siqhubekeka sikhula ngesantya esifanayo, kusemva kwentsuku ezingaphi apho siyakuba sinobude obungama 60 mm?

(A) 20 (B) 30 (C) 40 (D) 50 (E) None of these / Nie een hiervan nie / Ayiko kwezi

9. 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?

9. A, B, C, D, E en F is ses dorpe wat 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?

9. 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?

(A) 30 km (B) 20 km (C) 10 km (D) 40 km (E) 50 km

10. Manuel must number the 100 room doors in a new hotel with plastic digits, from room 1 to room 100. How many digits 7 does he need?

10. Manuel moet die 100 kamerdeure in 'n nuwe hotel met plastieksyfers nommer, van kamer 1 tot kamer 100. Hoeveel syfers 7 het hy nodig?

10. U Manuel kwakufuneka abhale iinombolo zamagumbi ali 100 kwihotele entsha esebenzisa idijiti ezenziwe ngeplastiki ukusukela kwigumbi loku 1 ukuya kwigumbi lekhulu. Zingaphi idijithi ezisisi 7 ekufuneka enazo?

(A) 18 (B) 20 (C) 19 (D) 10 (E) 11

11. Which one of these is *not* true?

(A) $(1 + 1) \div (1 + 1) = 1$ (B) $2 \div 2 + 2 \div 2 = 2$ (C) $3 \times 3 - 3 + 3 = 3$ (D) $(4 - 4) \div 4 + 4 = 4$ (E) $5 + 5 \times (5 - 5) = 5$

11. Watter een hiervan is *nie* waar nie?

11. Ingaba yeyiphi kwezi engeyonyani?

12. In the Cango Caves dripping water containing calcium forms stalactites growing down from the roof and stalagmites growing up from the floor. A stalactite grows 3 mm in 100 years on average and a stalagmite 5 mm in 100 years. After how many years will a stalactite and a stalagmite reach each other at a point where the cave is 15 m high?

(A) 187 500 (B) 24 750 (C) 1 875 (D) 18 750 (E) None of these / Nie een hiervan nie / Ayikho kwezi

12 In die Kango Grotte vorm druppende water wat kalk bevat stalaktiete (wat van die dak af ondertoe groei) en stalagmiete (wat van die vloer boontoe groei). 'n Stalaktiet groei gemiddeld 3 mm in 100 jaar, en 'n stalagmiet 5 mm in 100 jaar. Na hoeveel jaar sal 'n stalaktiet en 'n stalagmiet se punte mekaar bereik as die grot daar 15 m hoog is?

12. Kwimiqolomba ye Cango Caves amanzi avuzayo ane calcium akha i stalactites ezikhula zisukela eluphahleni kunye ne stalacmites ezikhula zisukela emgangathweni. I stalactite ikhula ngokomyinge we 3 mm kwi 100 leminyaka size i stalacmite sikhule ngokomyinge we 5 mm kwi 100 leminyaka. Kusemva kweminyaka emingaphi apho i stalactite kunye nestalacmite zithi zikhule ngokulinganayo kwindawo apho umqolomba uphakame nge 15 m?

13. Mary uses $\frac{2}{5}$ cup sugar to bake a milk tart. How many whole milk tarts can she bake with $7\frac{1}{2}$ cups of sugar?

(A) 18 (B) 3 (C) 19 (D) 15 (E) 20

13. Mary gebruik $\frac{2}{5}$ koppies suiker om ’n melktert te bak. Hoeveel heel melkterte kan sy bak met $7\frac{1}{2}$ koppies suiker?

13. U Mary usebenzisa isi $\frac{2}{5}$ sekomityi zeswekile ukubhaka i tart yobisi. Zingaphi itart zobisi eziphelelelyo anokuzibhaka nge $7\frac{1}{2}$ zekomityi zeswekile?

14. Refer to the previous question: How many cups of sugar are left over?

(A) $\frac{3}{10}$ (B) $\frac{3}{4}$ (C) $\frac{3}{8}$ (D) 3 (E) $\frac{1}{5}$

14. Verwys na die vorige vraag: Hoeveel koppies suiker is oor?

14. Kulombuzo ungentla zingaphi iikomityi zeswekile ezithe zashiyeka?

15. Of the 35 learners in the Grade 6A class, 18 learners have a dog and 24 have a cat, while 6 have no pets. How many of the learners have a dog and a cat?

(A) 13 (B) 7 (C) 6 (D) 3 (E) Not enough information / Te min inligting / Ingxelo enikiweyo ayonelanga

15. Daar is 35 leerlinge in die graad 6A-klas. 18 Leerlinge het 'n hond en 24 het 'n kat, terwyl 6 geen troeteldier het nie. Hoeveel leerlinge in die klas het 'n hond én 'n kat??

15. Kubafundi abangama 35 kwiklasi yebanga lesi 6A, abafundi abali 18 bafuye inja baze abangama 24 bafuya ikati, ngelixa aba 6 bengafuyanga zilwanyana zasekhaya. Bangaphi kubafundi abafuye inja nekati?

16. You want to enlarge the rectangle in the figure so that the side PS is 6 cm long. How long will side PQ be in the enlargement?

16. Jy wil die reghoek in die figuur vergroot sodat die sy PS 6 cm lank is. Hoe lank sal die sy PQ in die vergroting wees?

16. Ufuna ukwenza uxande olukumzobo lubelikhulu ngokwenza icala PS lube nobude obuzi 6 cm. Ingaba Icala u PQ liyakuba nobude obungakanani emva kolu tshintsho?

(A) 7 cm (B) 8 cm (C) 9 cm (D) 10 cm (E) 12 cm

17. One's weight is less on the Moon than on Earth. The table shows the corresponding weights of different objects on the Earth and on the Moon.

17. 'n Mens se gewig is minder op die Maan as op die Aarde. Die tabel toon die ooreenstemmende gewigte van verskillende voorwerpe op die Aarde en op die Maan.

17. Enyangeni ubunzima obuyi weight yakho bubabuncinane. Apha kukho uluhlu olubonisa ii weight zezinto ezahlukeneyo ezisemhlabeni nezisenyangeni.

Weight on Earth (kg)	5	10	15	20	25	30
Weight on Moon (kg)	0,83	1,66	2,49	3,32	4,15	4,98

. If an object has a weight of 40 kg on Earth, what is its weight on the Moon?

As 'n voorwerp 'n gewig van 40 kg op die Aarde het, wat is sy gewig op die Maan?

Ukuba into ethile ine weight engama 40 kg xa isemhlabeni, Ingakanani iweight yayo xa isenyangeni?

(A) 5,146 kg (B) 5,222 kg (C) 6,64 kg (D) 6,146 kg (E) None of these / Nie een hiervan nie / Ayikho kwezi

18. Refer to the previous question: If an object has a weight of 85 kg on Earth, what is its weight on the Moon?

18. Verwys na die vorige vraag: As 'n voorwerp 'n gewig van 85 kg op die Aarde het, wat is sy gewig op die Maan?

18. Kulo mbuzo ungentla ukuba into ine weight engama 85 kg emhlabeni, ingaba ine weight engakanani xa isenyangeni?

(A) 13,28 kg (B) 13,444 kg (C) 14,11 kg (D) 14,27 kg (E) None of these / Nie een hiervan nie / Ayikho kwezi

19. There are a total of seven bicycles and tricycles in the shop window. They have a total of 19 wheels. How many bicycles are there?

19. By ‘n fietswinkel staan daar altesaam sewe fietse en driewiele. Hulle het altesaam 19 wiele. Hoeveel fietse is daar?

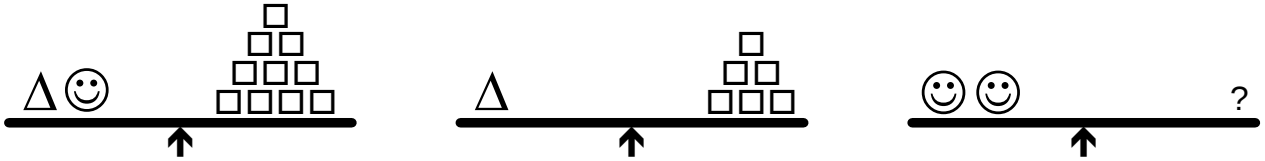
19. Kukho isi 7 esihlanganisa siibhayisikili kunye ne-tricycles kwifestile yevenkile. Zizonke ezi zinto zinamavili ali 19. Zingaphi iibhayisikili ezikhoyo?

(A) 4 (B) 7 (C) 3 (D) 2 (E) 5

20. The sketch shows three ways in which certain objects can be balanced. How many □s are needed to balance the two ☺s ?

20. Die skets wys drie maniere waarop sekere voorwerpe gebalenseer kan word. Hoeveel □e is nodig om die twee ☺s te balenseer?

20. Umzobo ubonisa iindlela ezi 3 zokulinganisa izinto ngesikali. Ziingaphi ii□ ezifunekayo ukulinganisa ii ☺ ezimbini?



(A) 4 (B) 5 (C) 10 (D) 12 (E) 8

21. Peter, Tom, Debbie and Robert are standing in a queue at the Post Office counter. If Peter leaves, Tom is in the second place. If Debbie leaves, Peter is first in the queue. Who is fourth in the queue?

(A) Robert (B) Peter (C) Debbie (D) Tom (E) Not enough information / Te min inligting / Ingxelo enikiweyo ayonelanga

21. Peter, Tom, Debbie en Robert staan in 'n tou by 'n toonbank in die Poskantoor. As Peter loop, is Tom in die tweede plek. As Debbie loop, is Peter voor in die tou. Wie is vierde in die tou?

21. U Peter, u Tom, u Debbie kunye no Robert bame kuluhlu kwikhawuntala yase Posini.Ukuba u Peter uye wahamba u Tom uba kwindawo yesibini. Ukuba u Debbie uye wahamba u Peter uba kwindawo yokuqala kuluhlu. Ngubani okwindawo yesine kuluhlu?

22. Stephen, Lara and Cathy each have some money. The sum of Stephen 's and Lara's money is R18. The sum of Lara's and Cathy's money is R21. The sum of Stephen 's and Cathy's money is R23. How much money do they have together?

(A) R31 (B) R124 (C) R80 (D) R62 (E) None of these / Nie een hiervan nie / Ayikho kwezi

22. Stephen, Lara en Cathy het elk geld. Die som van Stephen en Lara se geld is R18. Die som van Lara en Cathy se geld is R21. Die som van Stephen en Cathy se geld is R23. Hoeveel geld het hulle saam?

22. U Stephen, Ulara kunye no Cathy emnye kubo unemali. Imali ka Stephen No Lara xa idityanisiweyo yi R18. I mali ka Lara no Cathy xa idityanisiwe yi R21. Imali ka Stephen no Cathy xa idityanisiwe yi R23. Ingaba yimalini imali yabo xa bebonke?

23. Refer to the previous question: How much money does Cathy have?

(A) R13 (B) R3 (C) R2 (D) R9 (E) R12

23. Verwys na die vorige vraag: Hoeveel geld het Cathy?

23. Jonga kumbuzo ongentla. Yimalini imali ka Cathy?

24. Two whole numbers, Δ and ∇ (Δ and ∇ are not equal) are chosen from this sequence of numbers:

1; 2; 3; 4; ... 1999; 2000

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

(A) 2000 (B) 2001 (C) 3999 (D) 4000 (E) 4001

24. Twee heelgetalle Δ en ∇ (Δ en ∇ is nie gelyk nie), word uit hierdie getalry gekies:

1; 2; 3; 4; ... 1999; 2000

Wat is die grootste moontlike waarde van $\frac{\Delta+\nabla}{\Delta-\nabla}$?

24. Amanani amabini u Δ kunye no ∇ (angalinganiyo) akhethwe kolu luhlu lwamanani:

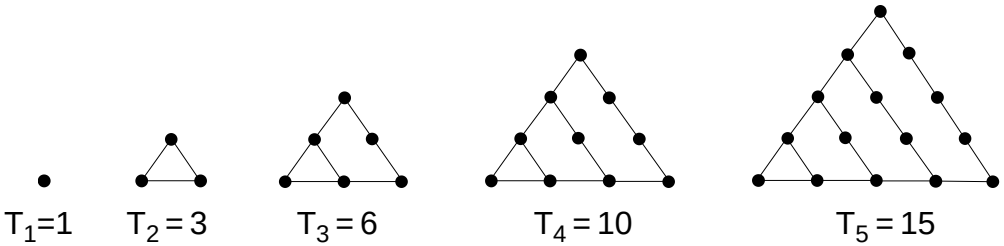
1; 2; 3; 4; ... 1999; 2000

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

25. Study the following pattern.
What is T_{20}?

25. Bestudeer die volgende patroon.
Wat is T_{20}?

25. Funda ola luhlu lulandelayo.
Lilipli elingu T_{20}?



(A) 55 (B) 60 (C) 200 (D) 210 (E) 400