

# Mathematics Challenge

GRADE 7 FINAL ROUND  
14 OCTOBER 2003

**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 box is built using small cubes of equal size. The box is without a lid, but has a bottom, one layer thick. How many cubes were used to make the box?

(A) 52

(B) 64

(C) 68

(D) 56

2. Determine the value of  $a$  if

$$23 \times 25 = \frac{46}{4} \times \frac{a}{2}$$

(A) 1

(B) 25

(C) 100

(D) 216



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

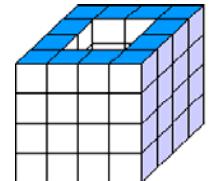
# Wiskunde-uitdaging

GRAAD 7 FINALE RONDE  
14 OKTOBER 2003

**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 tydwend.
- Ons hoop jy geniet dit!

1. Hierdie kassie is gebou met ewe groot klein kubusse. Die kassie is sonder 'n deksel, maar het 'n bodem, een laag dik. Hoeveel kubusse is gebruik om die kassie te bou?



2. Bepaal die waarde van  $a$  as

$$23 \times 25 = \frac{46}{4} \times \frac{a}{2}$$

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(C) 100

(D) 216

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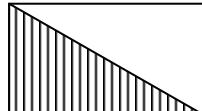
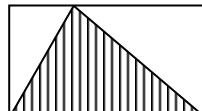
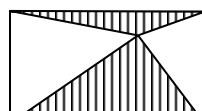
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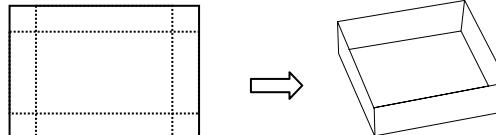
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|--|--|--|
| <p>3. Which of these numbers is the smallest?</p> <p>(A) 0,068      (B) 0,07</p>   | <p>3. Watter een van hierdie getalle is die kleinste?</p> <p>(C) 0,2      (D) 0,087</p>  | <p>3. Leliphi kulamanani elilelona lincinane?</p> <p>(E) 0,2443</p>  |
| <p>4. The sketch shows a 6 cm by 4 cm rectangle. What area is shaded?</p>  |  |  |
| <p>(A) <math>12 \text{ cm}^2</math></p>  | <p>4. Die skets toon 'n 6 cm by 4 cm reghoek. Watter oppervlakte is verdonker?</p>    | <p>4. Lo mzobo ubonisa uxande olune 6 cm nge 4 cm. Ingakanani i eriya yendawo eyenziwe mnyama?</p>   |
| <p>(B) <math>10 \text{ cm}^2</math></p>  | <p>(C) <math>9 \text{ cm}^2</math></p>   | <p>(D) <math>8 \text{ cm}^2</math></p>   |
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| <p>7. Penny had a bag of marbles. She gave one-third of them to Ronnie, and then a quarter of the remaining marbles to Sonny. She then had 24 marbles left in the bag. How many marbles were in the bag to start with?</p> |  |  |
| <p>(A) 48</p>  | <p>7. Penny het 'n sakkie albasters. Sy gee een derde daarvan vir Ronnie en gee dan 'n kwart van die oorblywende albasters vir Sonny. Sy het dan 24 albasters in die sakkie oor. Hoeveel albasters was aanvanklik in die sakkie?</p> | <p>7. U Penny unengxowa enamabastile. Wanika isinye kwisithathi sawo ku Ronnie, waza wanika ikota yala aseleyo ku Sonny. Kwathi kwasala amabastile angama 24 kule ngxowa ka Penny. Ayemangaphi amabastile awayekulengxowa ekuqaleni?</p> |
| <p>(B) 96</p>  | <p>(C) 36</p>  | <p>(D) 60</p>  |
| <p>(E) 72</p>  |  |  |

8. 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  $120 \text{ cm}^3$ . What was the area of the original sheet of cardboard?

(A)  $144 \text{ cm}^2$

(B)  $143 \text{ cm}^2$

8. 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  $120 \text{ cm}^3$ . Wat was die oppervlakte van die oorspronklike stuk karton?



(D)  $120 \text{ cm}^2$

8. 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  $120 \text{ cm}^3$ . Ingaba i eriya yolu xande yayingakanani phambi kokuba lisikwe?

(E)  $240 \text{ cm}^2$

9. How many numbers between 800 and 1000 are divisible by both 7 and 8?

(A) 2

(B) 3

9. Hoeveel getalle tussen 800 en 1000 is deelbaar deur beide 7 en 8?

(C) 4

(D) 5

9. Mangaphi amanani aphakathi kwama 800 ne 1000 anokuthi ohluleke kungabikho ntsalela ngesi 7 kunye nesi 8?

(E) 6

10. How many different rectangles, with whole number side lengths, can be constructed with a perimeter of 16 m?

(A) 7

(B) 5

10. Hoeveel verskillende reghoeke, met heelgetal sylengtes, kan gemaak word met 'n omtrek van 16 m?

(C) 4

(D) 2

10. Zingangaphi iingxande ezingalinganiyo ezinokuthi zakhiwe ngobude bomphandle (perimeter) obuli 16 m xa amacala azo enobude abungamanani azeleyo?

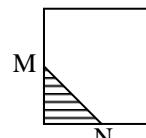
(E) 1

11. M and N are the midpoints of the sides of the square. What fraction is the triangle of the square?

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

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

11. M en N is die middelpunte van die sye van die vierkant. Watter breuk is die driehoek van die vierkant?



(C)  $\frac{1}{8}$

(D)  $\frac{1}{12}$

11. U M kunye no N ngamachokoza ahleli kanye eziphakathini zamacula esikwere. Ingaba lo nxantathu uliqhezu elingakanani lesikwere?

(E)  $\frac{1}{16}$

12. 15 coins are placed in four piles so that each pile has a different number of coins. What is the smallest number of coins that can be in the largest pile?



(A) 1

(B) 4

12. 15 Muntstukke word in vier hopies gepak sodat elke hopie 'n verskillende getal muntstukke bevat. Wat is die kleinste getal muntstukke wat in die grootste hopie kan wees?



(C) 5

(D) 6

12. Iinkozo zemali ezili 15 zibekiwe zazizicuku ezine ukuze isicuku ngasinye sibe nenani elashluikikeyo leenkozo zemali. Zingangaphi iinkozo zemali ezimbawla ezinokufunyanwa kwesona sicuku sinenkozo ezininzi zemali?

(E) 8

13. In this diagram, A, B, C, D and E are all squares. The area of A is  $16 \text{ cm}^2$ . The area of B is  $25 \text{ cm}^2$ . What is the area of the whole figure?

(A)  $144 \text{ cm}^2$

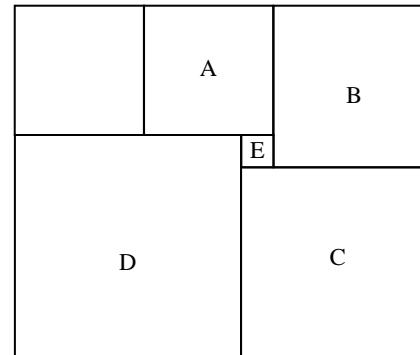
(B)  $145 \text{ cm}^2$

(C)  $143 \text{ cm}^2$

(D)  $140 \text{ cm}^2$

(E)  $142 \text{ cm}^2$

13. In die diagram is A, B, C, D en E almal vierkante. Die oppervlakte van A is  $16 \text{ cm}^2$ . Die oppervlakte van B is  $25 \text{ cm}^2$ . Wat is die oppervlakte van die hele figuur?



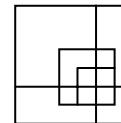
13. Kulo mzobo, u A, B, C, D kunye no E bazizikwere. I eriya ka A li  $16 \text{ cm}^2$ . I eriya ka B ngama  $25 \text{ cm}^2$ . Ingaba ingakanani i eriya yalo mzobo xa uwonke?

14. How many squares (of all sizes) are there in this diagram?

(A) 13

(B) 10

14. Hoeveel vierkante (van alle groottes) is daar in hierdie diagram?



(C) 12

(D) 9

14. Zingaphi izikwere (zabo bonke ubukhulu) ezifumaneka kulo mzobo?

(E) 11

15. Conrad's Taxi Service charges R1,50 for the first kilometre and 90c for each additional kilometre or part of a kilometre. Mr GoGo takes the taxi to the station and when they arrive there, the taxi meter shows 10,4 km. How much must he pay?



(A) R9,60

(B) R10,50

15. Conrad se Huurmotor-diens vra R1,50 vir die eerste kilometer en 90c vir elke verdere kilometer of gedeelte daarvan. Mnr GoGo neem die huurmotor na die stasie en met die aankoms daar lees die meter 10,4 km. Hoeveel moet hy betaal?

(C) R9,96

(D) R15,90

15. I Conrad Taxi Services ibiza i R1,50 ngekhilometha yokuqala ehanjiweyo ize yongeze ama 90c ngekhilometha nganye emva koko okanye inxalenye ye khilomitha. U Mnu Gogo wathi wayikhwela itaxi esiya esititshini kwathi xa befika apho yabe imitha ibonisa iikhilomitha ezihanjiweyo ibonisa i 10,4 km. Kuyakufuneka ehlawule malini?

(E) R9,90

16. In question 15. How far could Mrs Xati go for R20 if she gives the driver a R2 tip?

(A) 20 km

(B) 21 km

16. In vraag 15. Hoe ver kan Mev. Xati ry vir R20 as sy die bestuurder 'n R2 footjie gee?

(C) 18 km

(D) 19 km

16. Kumbuzo 15. Uyakuhamba umgama ongakanani u Mrs Xati xa ehlawule ama R20 ehlanganisa nemali engange R2 ayiphe umqhubi wetaxi?

(E) 22 km

17. A farmer has 100 m of fencing and wants to build a rectangular pen (kraal) for his sheep on a grass field. He decides to build it in such a way that there is maximum grazing for the sheep. What will the area of the pen be?

(A)  $620 \text{ m}^2$

(B)  $624 \text{ m}^2$

18.  $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times \dots \times (1 - \frac{1}{2003}) =$

(A)  $\frac{1}{2003}$

(B)  $\frac{2}{2003}$

19. The graph shows Sam and Janet's progress in a 100 m swimming race (two lengths of 50 m). Which of these statements is wrong?



- (A) After the start Sam was in the lead
- (B) Janet went into the lead after 22 seconds
- (C) Janet completed 50 m after 50 seconds
- (D) After 80 seconds Sam started swimming faster
- (E) Janet won the race

20. In question 19, after 80 seconds, what was the distance between the swimmers?

(A) 1 m

(B) 5 m

17. 'n Boer het 100 m heiningdraad waarmee hy 'n reghoekige kraal vir sy skape op 'n grasveld wil bou. Hy besluit om dit so te bou dat daar die maksimum weiding vir sy skape is. Wat sal die oppervlakte van die kraal wees?

(C)  $600 \text{ m}^2$

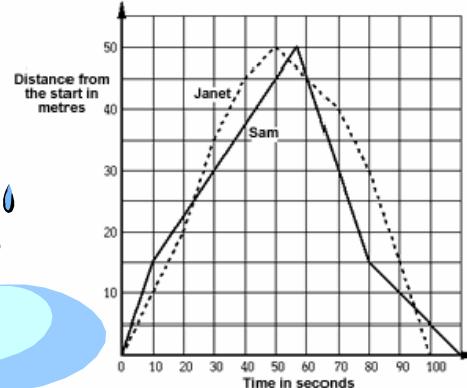
(D)  $625 \text{ m}^2$

18.  $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times \dots \times (1 - \frac{1}{2003}) =$

(C)  $\frac{1}{24}$

(D)  $\frac{24}{2003}$

19. Die grafiek wys Sam en Janet se vordering in 'n 100 m swemresies (twee lengtes van 50 m). Watter van hierdie stellings is verkeerd?



- (A) In die begin was Sam voor
- (B) Janet was voor na 22 sekondes
- (C) Janet het 50 m in 50 sekondes voltooi
- (D) Na 80 sekondes het Sam begin vinniger swem
- (E) Janet het die resies gewen

20. In vraag 19, wat was die afstand tussen die swemmers na 80 sekondes?

(C) 15 m

(D) 10 m

(E) 20 m

17. Umfama une 100 m zobiyo kwaye ufunu ukwakha uxande lobuhlanti (uthango) lweegusha zakhe emadlelwensi engca. Uggibe ukulwakha ukuze kubekho elona dlelo likhulu lweegusha. Iyakuba yintoni i eriya yobu buhlanti?

(E)  $650 \text{ m}^2$

18.  $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times \dots \times (1 - \frac{1}{2003}) =$

(E)  $\frac{2002}{2003}$

19. Le grafu ibonisa inkqubela eyenziwa ngu Sam kunye no Janet kumdyarho wokudada (ubude obu 50 m kabini). Yeyiphi kwezi zinto zichaziwego ngezantsi engeyonyani?

- (A) Emva kokuba kuqaliwe u Sam wayengophambili
- (B) U Janet waba ngophambili emva kwemizuzwana engama 22
- (C) U Janet wagqiba ama 50 m emva kwemizuzwana engama 50
- (D) Emva kwemizuzwana engama 80 u Sam wathi waqlisa ukudada ngokukhawuleza
- (E) U Janet wawuphumelela lo mdyarho

20. Kumbuzo 19, Wawungakanani umgama phakathi kwezi ndadi emva kwemizuzwana engama 80?

21. In the triangle three lines are drawn from two corners to the opposite sides of the triangle. This divides the triangle into 16 non-overlapping sections. If 10 lines from two corners are drawn in the same way, how many non-overlapping sections will the triangle have?

(A) 100

(B) 121

22. Twenty-five balls are placed into 14 boxes. Each box contains 1, 2 or 3 balls. 7 boxes contain 1 ball each. How many boxes contain 3 balls?

(A) 4

(B) 6

23. A square is divided into four identical rectangles. The perimeter of each of the four rectangles is 30 cm. What is the perimeter of the square?

(A) 42 cm

(B) 74 cm

24. In a supermarket articles are always priced at so many rands and 99 cents (e.g. R0,99 or R2,99 or R8,99). If Sandra pays a total of R41,71, how many articles did she buy?

(A) 17

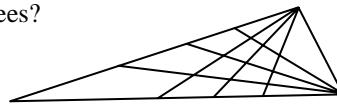
(B) 9

25. Ahmed said Delia did it, Delia said Bruce did it, Bruce said Clare did it, Clare said she didn't do it and Eldon confessed that he did do it. If Ahmed didn't do it, one of the five really did do it and if only one of them is telling the truth, who did it?

(A) Bruce

(B) Clare

21. In die driehoek word drie lyne vanaf twee hoeke na die teenoorstaande sye van die driehoek getrek. Dit verdeel die driehoek in 16 dele wat mekaar nie oorvleuel nie. As 10 lyne op dieselfde manier van twee hoeke getrek word, hoeveel nie-oorvleuelende dele sal daar wees?



(C) 20

(D) 107

22. Vyf en twintig balle word in 14 bokse gepak. Elke boks bevat 1, 2 of 3 balle. 7 bokse bevat elk 1 bal. Hoeveel bokse bevat 3 balle?

(C) 7

(D) 8

23. 'n Vierkant word in vier identiese reghoekoede verdeel. Die omtrek van elkeen van die vier reghoekoede is 30 cm. Wat is die omtrek van die vierkant?



(C) 60 cm

(D) 54 cm

24. In 'n supermark word artikels altyd gemerk as soveel rand en 99 cent (bv. R0,99 of R2,99 of R8,99). As Sandra 'n totaal van R41,71 betaal, hoeveel artikels het sy gekoop?

(C) 29

(D) 49

25. Ahmed sê Delia het dit gedoen, Delia sê Bruce het dit gedoen, Bruce sê Clare het dit gedoen, Clare sê sy het dit nie gedoen nie en Eldon erken hy het dit gedoen. As Ahmed dit nie gedoen het nie en een van die vyf het dit regtig gedoen en net een van hulle praat die waarheid, wie het dit gedoen?

(C) Delia

(D) Eldon

21. Kulo nxantathu imigca emithathu izotyiwe isukela kwii kona ezimbini isiya kwicala elijongene nalo kona. Lo nto yenza ukuba lo nxantathu ube neendawo ezili 16 ezingagudlananga. Ukuba kuthe kwazotywa imigca eli 10 kwikona nganye kwezi zimbini ngendlela efanayo , ingaba zingaphi iindawo ezingagudlananga ezinokwakheka kulo nxantathu?

(E) 54

22. Iibola ezingama shumi amabini ane anesihlanu zithe zafakwa kwiibhokisi ezili 14. Ibhokisi nganye ine bhola e 1, ezi 2 okanye ezi 3. Iibhokisi ezi 7 zinebhola enye kuhela. Zingaphi iibhokisi ezinobhola ezintathu?

(E) 9

23. Isikwere sahluliwe saba ziingxande ezi 4 ezilinganayo. Ubude bomphandle (perimeter) boxande ngalunye bungama 30 cm. Ingaba ingakanani i perimeter yesikwere?

(E) 48 cm

One cannot say

(E) Onmoontlik om te sê

Asinakukwazi kakuhle ukuchaza

24. Kwi Supermarket izinto zithengiswa ngenani leeranti elinama 99c (umz.R0,99, okanye R2,99 okanye R8,99). Ukuba u Sandra wahlawula ama R41,71 ngezinto awazithengayo, zazingaphi ezo zinto?

(E) Ahmed