

Mathematics Challenge

GRADE 6 FIRST ROUND
18 SEPTEMBER 2002

NOTE:

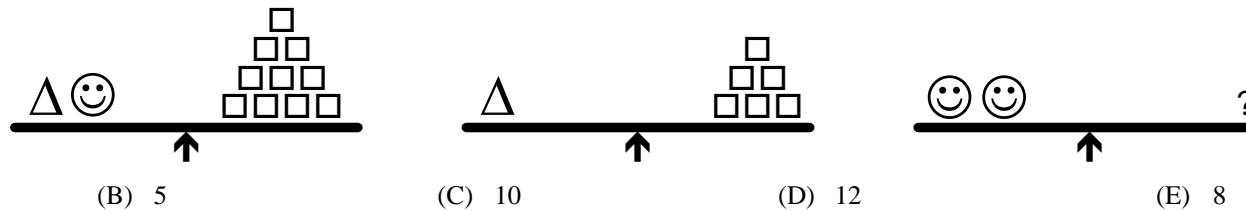
- Answer the questions according to the instructions on the answer sheet.
- You may use a calculator.
- The questions test insight. Complex calculations are therefore unnecessary and time consuming.
- We hope you enjoy it!

1. Which of these numbers is closest to 8?

(A) 7,93

(B) 8,08

2. The sketch shows three ways in which certain objects can be balanced. How many \square s are needed to balance the two \odot s?



(A) 4

(B) 5

(C) 10

(D) 12

(E) 8



In cooperation with the
Western Cape Education Department
Gauteng Education Department

Wiskunde-uitdaging

GRAAD 6 EERSTE RONDE
18 SEPTEMBER 2002

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 tydrowend.
- Ons hoop jy geniet dit!

1. Watter van hierdie getalle is die naaste aan 8?

(C) 7,8

(D) 8,1

1. Leliphi elona nani lisondeleyo kwi 8?

(E) 7,9

2. Die skets wys drie maniere waarop sekere voorwerpe gebalenseer kan word. Hoeveel \square e is nodig om die twee \odot s te balenseer?

2. Umzobo ubonisa iindlela ezi 3 zokulinganisa izinto ngesikali. Ziingaphi ii \square ezifunekayo ukulinganisa ii \odot ezimbini?

Nasou Via Afrika



CASIO

RUMEUS

Research Unit for Mathematics Education
of the University of Stellenbosch

3. Shane the snail starts at corner A and crawls clockwise once around the regular pentagon (a figure with 5 sides of equal length). On what side will he be when he has crawled $\frac{13}{20}$ of the distance around the pentagon?

(A) AB

(B) BC

(C) CD

(D) DE

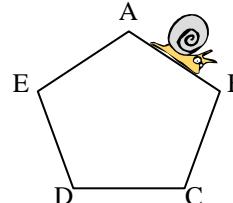
(E) EA

4. Refer to the previous question.
If each side of the pentagon is 5 cm long, how far has he still got to go?

(A) 16 cm

(B) 16,25 cm

3. Shane die slak begin by hoek A en seil kloksgewys een keer rondom die gelyksydige vyfhoek ('n figuur met vyf sye wat almal ewe lank is). Op watter sy sal hy wees wanneer hy $\frac{13}{20}$ van die afstand rondom die vyfhoek afgelê het?



4. Verwys na die vorige vraag.
As elke sy van die vyfhoek 5 cm lank is, hoe ver moet hy nog gaan?

(C) 9 cm

(D) 8,75 cm

4. Jonga umbuzo ongentla. Ukuba icala ngaliny lepentagoni lisi 5 cm, ungakanani umgama ekusafuneka ewuhambile?

None of these

(E) Nie een hiervan nie
Awukho kule

5. What is the next number in this pattern?
302 400; 50 400; 7 200; 900; 100; ...
(A) 50
(B) 1

6. 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?

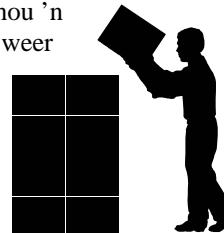
(A) 14 m \times 16 m

(B) 24 m \times 24 m

5. Wat is die volgende getal in die getallery?
302 400; 50 400; 7 200; 900; 100; ...
(C) 8
(D) 10

5. Leliphi inani elilandelayo kulo mfuziselo?
302 400; 50 400; 7 200; 900; 100, ...
(E) 0

6. 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 \times 20 m

(D) 22 m \times 22 m

(E) 20 m \times 22 m

3. U Shane ongumnyiki wesegadini waqalisa wayirhubuluza ngokupheleleyo kanye le pentagoni (umzobo onamacala amahlanu anobude obulinganayo) efanisa indlela yewotshi yamasiba Uyakuba ekweliphi icala emva kokuba erhubuluze I $\frac{13}{20}$ somgama wale pentagoni?

7. If you begin with a one-digit number, multiply it by 3, then add 8, then divide by 2 and then subtract 6, you will get the original number back. What is the number?

(A) 2

(B) 8

8. The sum of three consecutive numbers (e.g. 4, 5 and 6) is 54. What is the product of the three numbers?

(A) 120

(B) 5832

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

(A) 16ℓ

(B) 88ℓ

10. The scale shows that 4 books are balanced by 2 of the same books plus 6 kg. What is the mass of one book?

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

(B) 6 kg

7. As jy begin met 'n eensyfergetal, dit vermening-vuldig met 3, dan 8 bytel, dan deel deur 2 en dan 6 aftrek, sal jy die oorspronklike getal kry. Wat is die getal?

(C) 6

(D) 5

(E) 4

8. Die som van drie opeenvolgende getalle (bv. 4, 5 en 6) is 54. Wat is die produk van die drie getalle?

(C) 2916

(D) 5202

None of these
(E) Nie een hiervan nie
Asikho kwezi

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

(C) 729ℓ

(D) 1320ℓ

9. 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) 3520ℓ

10. Die skaal toon dat 4 boeke gebalanseer word deur 2 van dieselfde boeke plus 6 kg. Wat is die massa van een boek?



(C) 3 kg

(D) 2 kg

Nie genoeg inligting nie
(E) Not enough information
inkcazel enikiweyo ayiphelelelanga

10. Isikali sibonisa ukuba iincwadi ezi 4 zilinganiswe nobunzima beencwadi ezi 2 ezikwafana nazo kwaza kwezi zimbini kwadityanisa ubunzima obuyi 6kg. Buyintoni ubunzima bencwadi nganye?

11. Which of these fractions is the largest?

(A) $\frac{7}{15}$

(B) $\frac{3}{7}$

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

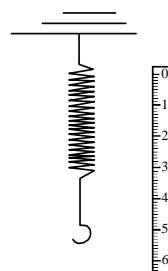
(B) 24 750

13. The sum of two numbers is 18. What is the greatest possible product of the two numbers?

(A) 36

(B) 81

14. The following table shows the readings of the mass hung on a spring and the corresponding length of the spring. What will the length of the spring be if a mass of 15 kg is hung on it?



(A) 45 cm

(B) 27 cm

11. Watter van hierdie breuke is die grootste?

(C) $\frac{11}{23}$

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

11. Ingaba kula maqhezu leliphi elona likhulu?

(E) $\frac{5}{11}$

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?

(C) 1 875

(D) 18 750

13. Die som van twee getalle is 18. Wat is die grootste moontlike produk van die twee getalle?

(C) 80

(D) 100

13. Isiphumo samanani amabini xa edityanisiwe li 18. Singubani esona siphumo sikhulu sala manani xa ephinda phindiwe?

Nie een hiervan nie

(E) None of these
Ayikho kwezi

14. Die volgende tabel gee die lesings van die massas wat aan 'n veer gehang word met die ooreenstemmende lengte van die veer. Wat sal die lengte van die veer wees as 'n massa van 15 kg daaraan gehang word?

Mass (kg)	0	1	2	3	4	5
Massa (kg)						
Ubunzima (kg)						
Length (cm)	15	17	19	21	23	25
Lengte (cm)						
Ubude (cm)						

(D) 40 cm

(E) 75 cm

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

None of these

(E) Nie een hiervan nie
Ayikho kwezi

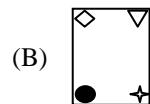
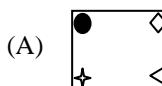
13. Isiphumo samanani amabini xa edityanisiwe li 18. Singubani esona siphumo sikhulu sala manani xa ephinda phindiwe?

Nie een hiervan nie

(E) None of these
Ayikho kwezi

14. Letafile yamanani ibonisa amanani obunzima bentsinjana encinci exhonywe kwisipringi kwakunye nobude obuhambelanayo bokutsaleka kwesisipringi athi athatyathwa kufaniso lwenzululwazi. Kengoko ngokwale tafile siyakube siside kanganani esi siringi ukuba intsinjana enobunzima obuli 15 kg buxhonywe kuso?

15. A rectangular matchbox is rotated along a straight line on a table, so that one side at a time touches the table. Which of the positions *cannot* be obtained?



16. James is twice as old as his brother John, who is 5 years old. How old will James be when John is 20 years old?

(A) 20

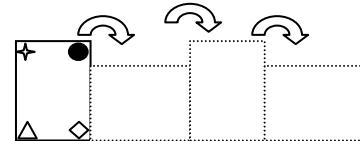
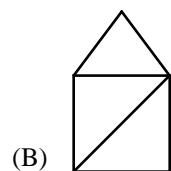
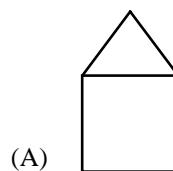
(B) 25

17. Mr Safe has a 4-digit combination that opens his lock. He remembers that the four digits are 3, 5, 7 and 9, but he has forgotten the correct order. What is the most different combinations that he must try to open the safe?

(A) 4

(B) 8

18. Four of these five figures can be traced without lifting your pencil and without tracing the same line twice. Which one *cannot*?



- (E) None of these
(F) Nie een hiervan nie
Ayikho kwezi

16. James is twee keer so oud soos sy broer John, wat nou 5 jaar oud is. Hoe oud sal James wees as John 20 jaar oud is?

(C) 30

(D) 35

16. Iminyaka ka James yobudala iyiphindaphinda kabini eyomfo wabo u John, oneminyaka emihlanu. Uyakuba emdala kanganani u James xa u John eneminyaka engama 20 ubudala?

(E) 40

17. Mn. Kluis het 'n vier-syfer kombinasie wat sy slot oopmaak. Hy onthou dat die vier syfers 3, 5, 7 en 9 is, maar hy kan nie die volgorde onthou nie. Wat is die meeste verskillende kombinasies wat hy sal moet probeer om die slot oop te maak?

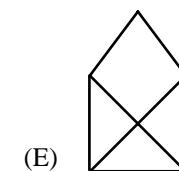
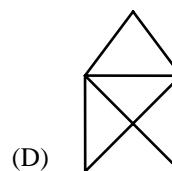
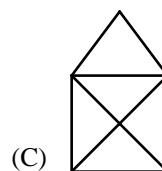
(C) 16

(D) 24

17. Umnu Safe uyivula iloko yakhe esebeenzisa kuphela idijiti ezi 4. Wakhumbula ukuba ezi dijithi sisi 3, isi5, isi7 kunye nesi 9, kodwa walibala indlela ezilandelelana ngayo. Kengoko zingaphi iindlela ezingafaniyo anokuzibenzisa edwelisa lamanani ukuze afumane eyona ndlela eyiyo yokuvula isefu yakhe?

(E) 36

18. Vier van hierdie vyf figure kan getrek word sonder om jou potlood op te lig en sonder om meer as een maal oor dieselfde lyn te gaan. Watter een *kan nie*?



18. Unganakho ukuyikhuphela (trace) lemizobo ungakhange uyiphakamise ipensile yakho. Ngowuphi kule mizobo ongenakho ukuwuphela?

19. If a glass is full of milk, the total mass is 370 g.
When the glass is half full of milk, the mass is 290 g.
What is the mass of the glass?

(A) 80 g

(B) 100 g

(C) 160 g

(D) 210 g

19. Wanneer 'n glas vol melk is, is die totale massa 370 g. Wanneer die glas halfvol melk is, is die massa 290 g. Wat is die massa van die glas?

19. Ukuba igilasi izele lubisi, ubunzima bayo bungama 370 g. Xa legilasi izele sisiqingatha sobisi ubunzima bayo buba ngama 290 g. Kengoko ingaba ubunzima bailegili xa ingenalo ubisi bungakanani?

None of these
(E) Nie een hiervan nie
Abukho kule

20. Two whole numbers, Δ and ∇ (Δ and ∇ are not equal) are chosen from the sequence of numbers:
1; 2; 3; 4; ...; 2002

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

(A) 2001

(B) 2002

20. Twee heelgetalle Δ en ∇ (Δ en ∇ is nie gelyk nie), word uit die volgende ry gekies:

1; 2; 3; 4; ...; 2002

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

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

1; 2; 3; 4; ...; 2002

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

21. Mandy can afford to buy either 6 cans of Coke and 7 packets of chips or 8 cans of Coke and 4 packets of chips. Both options leave her with no change whatsoever. If, however, she bought only chips, how many packets could she afford?

(A) 11

(B) 12

(C) 4003

(D) 4004

(E) 4005

21. Mandy het genoeg geld om of 6 blikkies Coke en 7 pakkies chips te koop of 8 blikkies Coke en 4 pakkies chips. In albei gevalle het sy geen geld oor nie. As sy egter net chips koop, hoeveel pakkies kan sy bekostig?

21. U Mandy unokuthi akwazi ukuthenga isi 6 senkonkxa ze Coke kunye nesi 7 sepakethi zama chips okanye engenzanga njalo akwazi ukuthenga isi 8 senkonkza ze Coke kunye nesi 4 sepakethi zama chips. Zombini ezindlela anokuthenga ngazo ziayakumenza angabuyelwa yitshintshi nakanjanina. Ukuba ke uthi agqibe ukuba athenge ii chips kuphela, zingaphi iipakethi angazithengayo?

22. In a banana eating competition a competitor ate 90 bananas in 4 hours. Each hour he ate 5 less bananas than in the previous hour. How many bananas did he eat in the last hour?

(A) 70

(B) 15

(C) 13

(D) 16

(E) 25

22. In 'n piesangeet-kompetisie eet 'n deelnemer 90 piesangs in 4 uur. Elke uur eet hy 5 minder piesangs as gedurende die vorige uur. Hoeveel piesangs het hy in die laaste uur geëet?

22. Kukhuphiswano lokutyiwa kweebhana, othabatha inxaxheba utye iibhana ezingama 90 ngeeyure ezi 4. Kwiyure nganye uthet watya ibhana ezi 5 ngaphantsi kuneebhana azitye kwiyure engaphambi kwaleyero. Zingaphi ibhanan awazitya kwiyure yokugqibela?

(D) 60

(E) 22

23. In the two-digit number 57, the two digits 5 and 7 are both odd. How many two-digit numbers consist only of odd digits?

(A) 30

(B) 35

(C) 25

(D) 15

24. Look at this menu. How much should be charged for egg and mash?

Menu	
Egg & chips	R4,90
Sausage & chips	R6,00
Sausage & mash	R5,70

(A) R4,60

(B) R5,53

(C) R5,30

(D) R1,80

23. In die tweesyfer-getal 57, is die twee syfers 5 en 7 albei onewe. Hoeveel tweesyfer-getalle bestaan net uit onewe syfers?

None of these

(E) Nie een hiervan nie
Abukho kule

23 Kweli nani linemivo emibini elingama 57, le mivo mibini isi 5 kunye nesi 7 ayiminqakathi. Mangaphi ke ngoko amanani anemivo emibini eyiminqakathi?

Spyskaart	
Eier & skyfies	R4,90
Wors & skyfies	R6,00
Wors & pap	R5,70

(A) R4,60

(B) R5,53

(C) R5,30

(D) R1,80

25. * is a computing instruction that gives the following results:

$4 * 5 = 29$

$2 * 6 = 20$

$3 * 7 = 31$

$8 * 9 = 89$

What is the result of $4 * 6$?

(A) 22

(B) 24

(C) 34

(D) 26

(E) 28

25. * is 'n rekenopdrag wat die volgende resultate gee:

$4 * 5 = 29$

$2 * 6 = 20$

$3 * 7 = 31$

$8 * 9 = 89$

Wat is die resultaat van $4 * 6$?

25. I * iyalela ukuba kubalwe kumphume ezi ziphumo ezilandeyo:

$4 * 5 = 29$

$2 * 6 = 20$

$3 * 7 = 31$

$8 * 9 = 89$

Isiphumo sesi $4 * 6$ singubani?