Mathematics Challenge

GRADE 7 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!

Wiskunde-uitdaging

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

Umceli-mngeni Ngezibalo

GRADE 7 UMJIKELO WOKUQALA
18 SEPTEMBA 2002

QAPHELA:

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

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

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

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

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

1. Ingaba yeyiphi kwzi engeyonyani?

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

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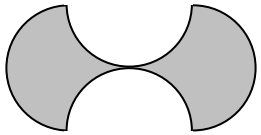
2. The figure is a combination of four semi-circles, each with a radius of 3 cm. What is the area of the figure?

2. Die figuur is ’n samestelling van vier semisirkels, elk met ’n radius van 3 cm. Wat is die oppervlakte van die figuur?

2. Kulo mzobo kudityaniswe izangqa ezine eziziziqingatha, ngasinye sine rediyasi esisi 3 cm. Ingaba i area yalo mzobo ingakanani?



(A) 24 cm^2 (B) 9 cm^2 (C) 36 cm^2 (D) Not enough information / Te min inligting / Ingxelo enikiweyo ayonelanga (E) None of these / Nie een hiervan nie / Ayikho kwezi

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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

RUMEUS
Research Unit for Mathematics Education of the University of Stellenbosch

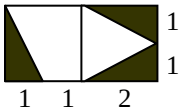
3. Which is not a correct way of writing $\frac{2}{3}$?

(A) $2 \div 3$ (B) $2 \times \frac{1}{3}$ (C) 0,6666 … (D) $\frac{1}{3}$ of 2 / $\frac{1}{3}$ van 2 / $\frac{1}{3}$ ka 2 (E) $3 \div 2$

3. Watter een is nie ’n korrekte skryfwyse vir $\frac{2}{3}$ nie?

3. Yeyiphi indlela engalunganga yokubhala u $\frac{2}{3}$?

4. What fraction of the figure is shaded?



(A) $\frac{5}{16}$ (B) $\frac{3}{4}$ (C) $\frac{3}{5}$ (D) $\frac{1}{4}$ (E) $\frac{3}{8}$

4. Watter breukdeel van die figuur is verdonker?

4. Liqhezu elingakanani lalomzobo elenziwe mnyama?

5. Determine the value of *x* if

$$54 \times 25 = \frac{54}{1} \times \frac{x}{4}$$

(A) 1 (B) 25 (C) 216 (D) 12,75 (E) Nie een hiervan nie / none of these / ayikho kwezi

5. Bepaal die waarde van *x* as

$$54 \times 25 = \frac{54}{1} \times \frac{x}{4}$$

5. Bonisa ixabiso lika *x* ukuba

$$54 \times 25 = \frac{54}{1} \times \frac{x}{4}$$

6. A grocer sells 90 of every 100 pears he bought. If he is left with 550 unsold pears, how many pears did he buy?

(A) 4150 (B) 5500 (C) 4950 (D) 5000 (E) 4500

6. ’n Kruidenier verkoop 90 van elke 100 pere wat hy gekoop het. As hy 550 pere nie verkoop het nie, hoeveel pere het hy gekoop?

6. Umthengisi uye athengise amapere angama 90 xa athe wathenga amapere ali 100. Ukuba usalelwe ngamapere angama 550 angathengiswanga, Mangaphi athe wawathenga ekuqaleni?

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

1 ; 1 ; 2 ; 3 ; 5 ; 8; . . .

(A) 13 (B) 12 (C) 11 (D) 10 (E) 15

7. Wat is die volgende getal in hierdie getalpatroon?

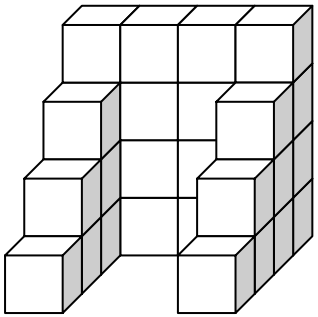
1 ; 1 ; 2 ; 3 ; 5 ; 8; . . .

7. Leliphi inani elilandelayo kolu luhlu?

1 ; 1 ; 2 ; 3 ; 5 ; 8; . . .

8. Blocks, each 1 cm × 1 cm × 1 cm, are stacked as shown below. What is the volume of the stack?

8. Blokkies van 1 cm × 1 cm × 1 cm word soos hieronder gepak. Wat is die volume van die stapel?



8. Isakhiwo esenziwe ngeebloko ezincinane , ibloko nganye ingange 1 cm x 1cm x 1cm, sakhiwe ngalendlela iboniswe ngezantsi. Ingaba umthamo (volume) wesisakhiwo ungakanani?

(A) 28 cm^3 (B) 24 cm^3 (C) 31 cm^3 (D) 36 cm^3 (E) 36 cm^2

9. Refer to the previous question. If the stack of blocks were placed on a table, what area of the tabletop will the stack cover?

9. Verwys na die vorige vraag. As die stapel op ’n tafel geplaas word, watter oppervlakte van die tafelblad sal die stapel dek?

9. Jonga kumbuzo ongentla. Ukuba esi sakhiwo besibekwe ngaphezu kwetafile, yi-eriya engakanani yetafile enokugqunywa sesi sakhiwo.

(A) 9 cm^2 (B) 10 cm^2 (C) 13 cm^2 (D) 14 cm^2 (E) 16 cm^2

10. The table shows the average rainfall (millilitres) per month in Cape Town.

10. Die tabel toon die gemiddelde reënval (milliliters) per maand in Kaapstad.

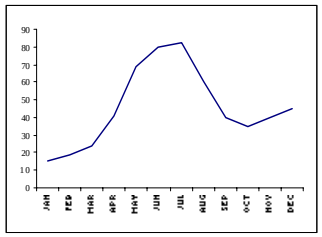
10. Le tafile yamanani ibonisa umyinge (average) wokuna kwemvula e Cape Town.

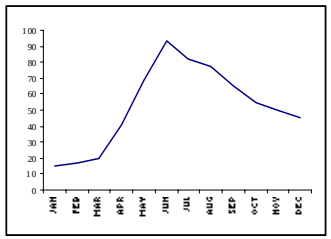
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
15	17	30	41	69	70	75	70	40	30	20	10

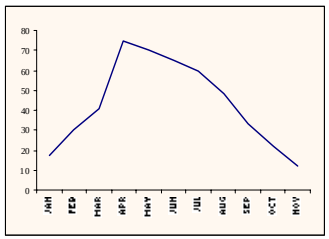
Which line graph best illustrates the data?

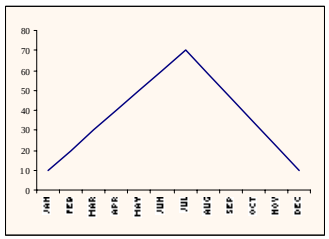
Watter lyngrafiek illustreer die data die beste?

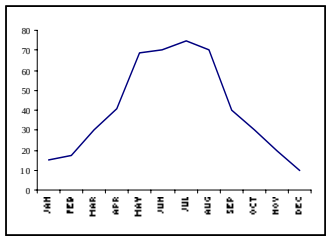
Yeyiphi igrafu ebona kakuhle la manani anikiweyo?

(A) 

(B) 

(C) 

(D) 

(E) 

11. A shop sells a shirt for R78 and makes 30% profit on the shirt. At what price should they sell the shirt if they want to make 60% profit?

(A) R156 (B) R96 (C) R87,36 (D) R101,40

11. ’n Winkel verkoop ’n hemp vir R78 en maak 30% wins op die hemp. Teen watter prys moet hulle die hemp verkoop om 60% wins te maak?

11. Ngokuthengisa ihempe ngama R78, ivenkile ithi yenze inzuzo engama 30%. Kuyakufuneka beyithengise ngamalini ihempe ukuba bafuna ukwena inzuzo angama 60%?

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

12. Towns A, B, C and D, in this order lies along a straight road. The table shows the distance between pairs of towns, for example town A is 51 km away from town D and town B is 18 km away from C. Which number should be in the place of *x*?

12. Dorpe A, B, C en D, in hierdie volgorde, lê langs ’n reguit pad. Die tabel toon die afstande tussen dorpe, byvoorbeeld dorp A is 51 km van dorp D en B is 18 km van C. Watter getal moet in die plek van *x* kom?

12. Ii dolophu u A, B, C kunye no D, ngokwale ndlela zibhalwe ngayo zihleli kwindlela ende ephangaleleyo. Olu luhlu lubonisa imigama ekhoyo phakathi kwedolophu u A ungama 51 km ukususka kwidolophu u D, kwaye u B yena uli 18 km ukususka ku C. Ingaba ngubani inani elinokuba sendaweni ka *x*?

A			
y	B		
	18	C	
51	*x*	13	D

(A) 33 (B) 31 (C) 64 (D) 38 (E) 82

13. Refer to the previous question. Which number should be in the place of *y*?

(A) 38 (B) 5 (C) 20 (D) 31 (E) 33

13. Verwys na die vorige vraag. Watter getal moet in die plek van *y* kom?

13. Jonga kumbuzo ongasentia. Leliphi inani ekufuneka libe sendaweni ka *y*?

14. A rectangle has a length of 20 cm and a width of 10 cm. If the length is decreased by 4 cm, by how many centimetres must the width be increased to get a rectangle with the same area as the original rectangle?

(A) 16 (B) 4 (C) 12,5 (D) 2,5

14. ’n Reghoek het ‘n lengte van 20 cm en ’n breedte van 10 cm. As die lengte met 4 cm korter gemaak word, met hoeveel sentimeter moet die breedte langer gemaak word sodat dit dieselfde oppervlakte as die oorspronklike reghoek sal hê?

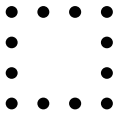
14. Uxande linobude obungama 20cm nobubanzi obuli 10 cm. Ukuba ubude buye baphungulwa ngesi 4 cm, buyakuthi bongezwe kanganani ububanzi ukuze olu xande lube ne eriya engahlukanga kunaleyo yoqala?

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

15. A hollow square is made by placing dots 1 cm apart. In the picture below 12 dots are used to make a square with an area of 9 cm^2. How many dots will you need to make a square with area 144 cm^2?

(A) 16 (B) 60

15. 'n Leë vierkant word gemaak deur kolletjie 1 cm uit mekaar te plaas. In die skets hieronder word 12 kolletjies gebruik en die vierkant het 'n oppervlakte van 9 cm^2. Hoeveel kolletjies is nodig om 'n vierkant met 'n oppervlakte van 144 cm^2 te maak?



(C) 108 (D) 141

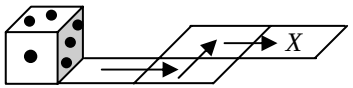
15. Isikwere esingenanto senziwe ngokuthi kubekwe amachokoza ashiyana nge 1cm. Kulo mfanekiso ungezantsi kusetyenziswe amachikoza ali 12 ukwenza isikwere esine eriya ezi 9 cm^2. Mangaphi kengoko amachokoza afunekayo ukuze kubunjwe isikwere esine eriya eli 144 cm^2?

(E) 48

16. The numbers on opposite faces of a dice always add up to 7. The dice in the sketch is rolled as shown until it rests on the square labelled X. What is the number on the uppermost face now?

(A) 1 (B) 2

16. Die som van die getalle op teenoorgestelde kante van 'n dobbelsteen is altyd 7. Die dobbelsteen in die skets word gerol soos aangedui tot op die vierkant gemerk X. Wat is die getal aan die bokant van die dobbelsteen nou?



(C) 3 (D) 4

16. Amanani akumacala afulatheleneyo edayisi asoloko xa edityanisiwe enza u 7. Idayisi elikumzobo liqengqwa ukusuka ekupheleni liye ekepheleni njengoko kubonisiwelide lime kwisikweri esinonjolwe ngo X. Liliphi inani elingaphezulu ngoku?

(E) 5

17. How many whole numbers *n* are there such that

$$\frac{5}{61} < \frac{1}{n} < \frac{13}{57} \ ?$$

(A) 1 (B) 6

17. Hoeveel heelgetalle *n* is daar sodat

$$\frac{5}{61} < \frac{1}{n} < \frac{13}{57} \ ?$$

(C) 7 (D) 8

17. Mangaphi amanani azeleyo angu *n* akhoyo anokwenza u

$$\frac{5}{61} < \frac{1}{n} < \frac{13}{57} \ ?$$

(E) 9

18. The prices marked on articles in the cafe already include 14% VAT. How much VAT do you pay if you buy a 2 ℓ Coke marked R9,46?

(A) R1,32 (B) R1,33

18. Die gemerkte pryse van artikels in die kafee sluit reeds 14% BTW in. Hoeveel BTW betaal jy as jy 'n 2 ℓ-Coke koop wat R9,46 gemerk is?

(C) R1,16 (D) R1,17

18. Ixabiso lezinto elibhalwe kuzo kwivenkilana liselifakwe ixabiso lentengo (VAT) eli 14%. Ingaba uhlawula ixabiso ntengo elingakanani ukuba uthenga I 2 ℓ ye Coke nge R9,46?

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

19. Three sisters wanted to weigh themselves. The only available scale was a cattle scale that started at 100 kg, so they weighed themselves as follows:
Lynn and Fran together weigh 132 kg.
Fran and Sue together weigh 151 kg.
Sue and Lynn together weigh 137 kg.
What does Sue weigh?

(A) 59 kg (B) 73 kg (C) 62 kg (D) 78 kg

19. Drie suster wou hulle weeg. Die enigste skaal beskikbaar is ’n skaal wat vir beeste gebruik word en begin eers op 100 kg. Hulle weeg hulself soos volg:
Lynn en Fran weeg saam 132 kg.
Fran en Sue weeg saam 151 kg.
Sue en Lynn weeg saam 137 kg.
Wat weeg Sue?

19. Odade abathathu bafuna ukukwazi ukuba banobunzima obukanganani na. Isikali esasikho sasisesokulinganisa ubunzima beenkomo kwaye siqalela kwi 100 kg ukubala, baye ke bazilanganisa ngolu hlobo:
Bebobabini u Lynn no Fran babeli 132 kg.
Bebobabini u Fran no Sue babeli 157 kg.
Bebobabini u Sue no Lynn babeli 137kg.
Ingaba ubunzima buka Sue bungakanani?

(E) Not enough information / Nie genoeg inligting nie / Akukho nkcazelo yaneleyo

20. Suppose it was discovered that creatures on Mars wrote their numbers like this:

■▲▲ for 7
▼▲▲▲ for 28
▼▼■■▲▲ for 62

How would they write 91?

(A) ▼▼▼■■■▲ (B) ▼▼■■■■▲ (C) ▼▼▼▼■▲ (D) ▼■■■▲▲▲

20. Veronderstel dit word ontdek dat op Mars skryf hulle hul getalle so:

■▲▲ vir 7
▼▲▲▲ vir 28
▼▼■■▲▲ vir 62

Hoe sou hulle 91 skryf?

20. Mhlawumbi kwafumanyaniswa ukuba izidalwa zeplanethi u Mars amanani azo azibhala olu hlobo:

■▲▲ Njengesi 7
▼▲▲▲ Njengama 28
▼▼■■▲▲ Njengama 62

Zingawabhala kanjani ama 91?

(E) None of these / Nie een hiervan nie / Ayiko kwezi

21. A family of 5 sisters, all of different ages, shares 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

21. ’n Gesin van 5 susters, almal van verskillende ouderdomme, 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?

(E) 24

22. 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

22. 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?

22. 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?

(E) 56

23. Twelve teams participated in a netball tournament. Each team played every other team once. How many games were played altogether?

(A) 24 (B) 66 (C) 144 (D) 132 (E) 164

23. Twaalf spanne neem deel aan ’n netbaltoernooi. Elke span speel een wedstryd teen elke ander span. Hoeveel wedstryde word altesaam gespeel?

23. Amaqela ayi 12 aye akhuphisana kumdlalo womnyazi (netball). Ngalinye iqela kufuneke lidlale neqela ngalinye kanye. Mingaphi imidlalo ethe yadlalwa kulo mnyadala?

24. For every 5 m a cat runs, a dog runs 7 m. If the cat is 36 m ahead of the dog, how far will the cat run before the dog catches up with it?

(A) 72 m (B) 18 m (C) 90 m (D) 36 m (E) 85 m

24. Vir elke 5 m wat ’n kat hardloop, hardloop ’n hond 7 m. As die kat 36 m voor die hond is, hoe ver sal hy hardloop voordat die hond hom inhaal?

24. Ngesi 5 m ngasinye esibalekwa yikati, inja yona ibaleka isi 7m. Ukuba ikati ingama 36m ngaphambi kwenja , iyakubaleka umgama ongakanani ikati ngaphambi kokuba inja iyifumane?

25. Every year a farmer cuts down all the Port Jackson trees on his farm. He finds that 60% of the trees die, but that the rest grows again from the stumps that remain. What percentage of the original number of trees are still alive after three years?

(A) 38 (B) 24 (C) 6,4 (D) 18 (E) All are dead / Almal is dood / Yonke ifile

25. ’n Boer kap elke jaar al die Port Jacksonbome op sy plaas af. Hy vind dat 60% van die bome doodgaan terwyl die res weer van die stompe af groei. Watter persentasie van die oorspronklike hoeveelheid bome is na drie jaar oor?

25. Minyaka le umfama ugawula yonke imithi eyi Port Jackson kwifama yakhe. Ufumanise ukuba ama 60% ale mithi iyafa, kodwa intsalela iphinda ikhule kwizikhondo eziseleyo. Ithini ipesenti yenani lokuqala lemithi esaphilayo emva kweminyaka emithathu?