Mathematics Challenge

GRADE 6 FINAL ROUND
10 OCTOBER 2007

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!

Wiskunde-uitdaging

GRAAD 6 FINALE RONDE
10 OKTOBER 2007

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!

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1. The sum of three consecutive even numbers is 174. What is the biggest of these numbers?

   (A) 58 (B) 62 (C) 59 (D) 56 (E) 60

1. Die som van drie opeenvolgende ewe getalle is 174. Wat is die grootste van hierdie getalle?

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2. Starting at 8 and counting by 8s, Samuel counts 8, 16, 24, 32, ... Which of these numbers will he count?

   (A) 721 (B) 722 (C) 724 (D) 726 (E) 728

2. Samuel begin by 8 en tel in 8s: 8, 16, 24, 32, ... Watter van hierdie getalle sal hy tel?

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3. Starting at 4 and counting by 8s, Samuel counts 4, 12, 20, 28, ... Which of these numbers will he count?

   (A) 721 (B) 722 (C) 724 (D) 726 (E) 728

3. Samuel begin by 4 en tel in 8s: 4, 12, 20, 28, ... Watter van hierdie getalle sal hy tel?

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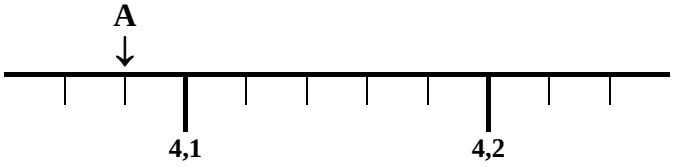
4. What is the number indicated by A on the ruler?



   (A) 3,08 (B) 3,8 (C) 4,0 (D) 4,08 (E) 4,09

4. Wat is die getal aangedui deur A op die liniaal?

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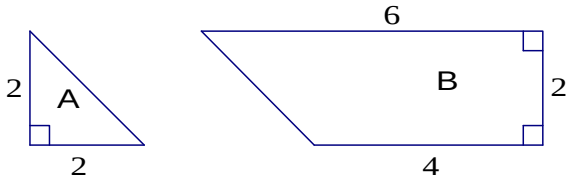
5. How many triangles A can fit into the trapezoid B?



   (A) 3 (B) 4 (C) 5 (D) 6 (E) 7

5. Hoeveel driehoeke A kan in trapesium B inpas?

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6. The product of two numbers is 36. What is the smallest possible sum of the two numbers?

   (A) 13 (B) 36 (C) 9 (D) 12 (E) 15

6. Die produk van twee getalle is 36. Wat is die kleinste moontlike som van die twee getalle?

AMESA The Association for Mathematics Education of South Africa

In cooperation with the
Western Cape Education Department
Gauteng Education Department

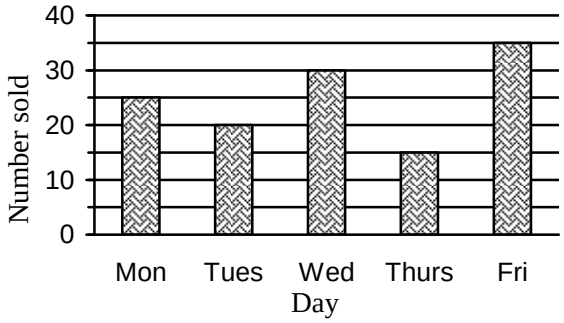
Nasou Via Afrika

CASIO

RUMEUS
Research Unit for Mathematics Education of the University of Stellenbosch

7. The graph shows the number of cartons of milk sold each day of a week at a school. How many cartons of milk did the school sell that week?

7. Die grafiek toon die getal bokse melk wat elke dag van 'n week by 'n skool verkoop is. Hoeveel bokse melk het die skool in daardie week verkoop?



(A) 125 (B) 115 (C) 135 (D) 25 (E) None of these / Nie een hiervan nie

8. A lorry with a load of maize has a mass of 4 653 kg. The mass of the empty lorry is 2 583 kg. One bag of maize has a mass of 90 kg. How many bags of maize are on the lorry?

8. 'n Vragmotor met 'n vrag mielies het 'n massa van 4 653 kg. Die massa van die leë vragmotor is 2 583 kg en een sak mielies het 'n massa van 90 kg. Hoeveel sakke mielies is daar op die vragmotor?

(A) 20 (B) 21 (C) 22 (D) 23 (E) 24

9. What is the missing number ***a*** in the table?

1	2	4	7
1	***a***	7	13

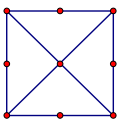
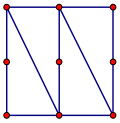
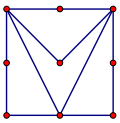
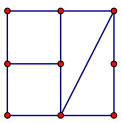
9. Wat is die ontbrekende getal ***a*** in die tabel?

1	2	4	7
1	***a***	7	13

(A) 2 (B) 3 (C) 4 (D) 5 (E) 6

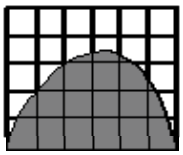
10. Which square is *not* divided into quarters?

10. Watter vierkant is *nie* in kwarte verdeel nie?

(A)  (B)  (C)  (D)  (E) None of these / Nie een hiervan nie

11. What is the best estimate of the area of the shaded region in square units?

11. Wat is die beste skatting van die oppervlakte van die verdonkerde figuur in vierkante eenhede?



(A) 10 (B) 12 (C) 14 (D) 16 (E) 18

12. Vusi spends half of his pocket money on computer games, he uses one eighth to buy sweets and saves one eighth. He has R15 left. How much pocket money did he have?

12. Vusi spandeer die helfte van sy sakgeld op rekenaarspeletjies, hy gebruik een agste om lekkers te koop en spaar 'n agste. Hy het R15 oor. Hoeveel sakgeld het hy gehad?

(A) R100 (B) R60 (C) R75 (D) R30 (E) R40

13. Susie opens a book. She multiplies the two page numbers and gets 1332. What is the left-hand page number?

13. Susie maak 'n boek oop. Sy vermenigvuldig die twee bladsynommers en kry 1332. Wat is die bladsynommer aan die linkerkant?

(A) 666 (B) 38 (C) 667 (D) 37 (E) 36

14. Cookie uses $\frac{2}{3}$ cups of milk in a recipe for 12 people.
How many cups of milk should she use in the recipe for 18 people?

(A) $1\frac{1}{2}$ (B) $1\frac{1}{3}$ (C) $1\frac{2}{3}$ (D) $\frac{2}{3}$ (E) None of these

14. Koekie gebruik $\frac{2}{3}$ koppies melk in 'n resep vir 12 mense. Hoeveel koppies melk moet sy in die resep gebruik vir 18 mense?

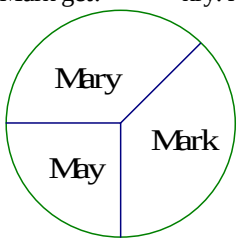
(A) $1\frac{1}{2}$ (B) $1\frac{1}{3}$ (C) $1\frac{2}{3}$ (D) $\frac{2}{3}$ (E) Nie een hiervan nie

15. 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) 1½ kg (B) 6 kg (C) 3 kg (D) 2 kg (E) 2½ kg

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

16. This pie chart shows how much pocket money three children get. If May gets R12, how much does Mark get?



(A) R18 (B) R16 (C) R24 (D) R36 (E) R20

16. Hierdie sirkeldiagram toon hoeveel sakgeld drie kinders kry. As May R12 kry, hoeveel kry Mark?

17. The number pattern below is called Pascal's Triangle. What is the missing number ***a***?

1
1 1
1 2 1
1 3 3 1
1 4 6 4 1
1 5 10 10 5 1
1 6 15 *a* 15 6 1

(A) 28 (B) 20 (C) 30 (D) 19 (E) 22

17. Die getalpatroon hieronder word Pascal se Driehoek genoem. Wat is die ontbrekende getal ***a***?

18. When Joe was 5 years old, Diana was 8. When Joe was 8, Cindy was 6. How old was Diana when Cindy was 8?

(A) 8 (B) 16 (C) 11 (D) 13 (E) 14

18. Toe Joe 5 jaar oud was, was Diana 8. Toe Joe 8 was, was Cindy 6. Hoe oud was Diana toe Cindy 8 was?

19. Buildings A and B advertise the following office space:

A: 100-120 square metres at R800 per month

B: 50-200 square metres at R80 per square metre per year

A company wants to rent an office of 110 square metres. What will the cheaper option cost per year?

(A) R960 (B) R9 600 (C) R8 800 (D) R9 000 (E) None of these

19. Geboue A en B adverteer die volgende kantore te huur:

A: 100-120 vierkante meter teen R800 per maand

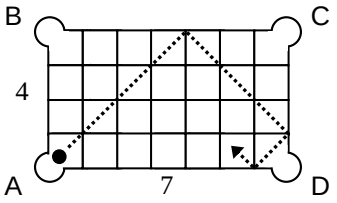
B: 50-200 vierkante meter teen R80 per vierkante meter per jaar

'n Maatskappy wil 'n kantoor van 110 vierkante meter huur. Wat kos die goedkoopste kantoor per jaar?

(A) R960 (B) R9 600 (C) R8 800 (D) R9 000 (E) Nie een hiervan nie

20. This special 4 by 7 snooker table has a pocket at each corner. A ball is hit away from pocket A at an angle of 45° to the sides of the table. The ball rebounds from each side of the table at an angle of 45° until it drops into one of the pockets. In which pocket will the ball drop?

20. Hierdie spesiale 4 by 7 snoekertafel het ’n sak by elke hoek. ’n Bal word vanaf sak A weggeskiet teen ‘n hoek van 45° met die kant van die tafel. Die bal bons van elke kant van die tafel teen ’n hoek van 45° totdat dit in een van die sakke val. In watter sak sal die bal val?



(A) A (B) B (C) C (D) D (E) One cannot know / Mens kan nie sê nie

21. In a competition the first four judges gave Dori scores of 4,5; 4,6; 4,7 and 5,0. What score did the fifth judge give her if her average score from the five judges was 4,8?

21. In ’n kompetisie het die eerste vier beoordelaars vir Dori tellings gegee van 4,5; 4,6; 4,7 en 5,0. Watter telling het die vyfde beoordelaar haar gegee as haar gemiddelde telling van die vyf beoordelaars 4,8 was?

(A) 4,8 (B) 4,9 (C) 5,0 (D) 5,1 (E) 5,2

22. Eight different playing cards are dealt alternatively into two piles, left first, then right, then left, and so on. The left pile is then placed on top of the right pile, and the process repeated (without turning the cards over). What is the smallest number of times this process needs to be completed so that the cards are back in their original order?

22. Agt verskillende kaarte word om die beurt in twee hopies uitgedeel – eers links, dan regs, dan links, en so aan. Die linker hopie word dan bo-op die regter hopie geplaas en die proses word herhaal (sonder om die kaarte om te keer). Wat is die kleinste getal kere dat hierdie proses voltooi moet word sodat die kaarte weer in die oorspronklike volgorde is?

(A) 3 (B) 2 (C) 6 (D) 8 (E) 4

23. The whole numbers, starting with 1, are written in order 1234567891011121314 ...

What digit will appear in the 100th place?

23. Die heelgetalle, beginnende met 1, word geskryf in die volgorde 1234567891011121314 ...

Watter syfer sal in die 100ste plek geskryf word?

(A) 0 (B) 4 (C) 5 (D) 6 (E) 7

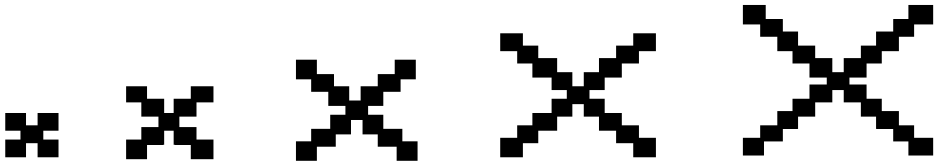
24. In a banana eating competition Xander ate 90 bananas in 4 hours. Each hour he ate 5 less bananas than in the previous hour. How many bananas did he eat in the last hour?

24. In ’n piesangeet-kompetisie eet Xander 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?

(A) 70 (B) 15 (C) 25 (D) 10 (E) 30

25. Sipho uses tiles to build crosses as shown below. How many tiles will he use for $\mathbf{X}_{50}$?

25. Sipho bou kruise met teëls soos hieronder. Hoeveel teëls sal hy gebruik vir $\mathbf{X}_{50}$?



$\mathbf{X}_1$ $\mathbf{X}_2$ $\mathbf{X}_3$ $\mathbf{X}_4$ $\mathbf{X}_5$

(A) 202 (B) 201 (C) 200 (D) 210 (E) None of these / Nie een hiervan nie