Mathematics Challenge

GRADE 5 FINAL ROUND
13 OCTOBER 2008

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 5 FINALE RONDE
13 OKTOBER 2008

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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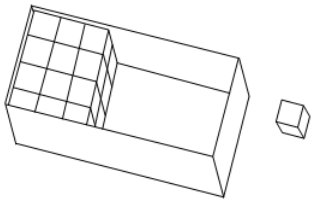
1. This open box is 8 cm long, 4 cm wide and 2 cm high. How many of the small 1 cm by 1 cm by 1 cm blocks can be packed into the box?

1. Hierdie oop boks is 8 cm lank, 4 cm breed en 2 cm hoog. Hoeveel van die klein 1 cm by 1 cm by 1 cm blokkies kan in die boks inpas?



(A) 32 (B) 14 (C) 24 (D) 64 (E) 48

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2. In question 1: After all the blocks are packed into the box, how many blocks will be touching the box?

2. In vraag 1: Nadat al die blokkies ingepas is, hoeveel blokkies sal aan die boks raak?

(A) 64 (B) 32 (C) 40 (D) 52 (E) 56

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3. A train departs from Bellville station at 09:47 and arrives in Cape Town at 10:18. Another train on the same route leaves Bellville at 12:30. At what time does it arrive in Cape Town?

3. ’n Trein vertrek om 09:47 van Bellville-stasie en kom om 10:18 in Kaapstad aan. ’n Ander trein op dieselfde roete vertrek om 12:30 van Bellville. Hoe laat kom dit in Kaapstad aan?

(A) 13:18 (B) 13:01 (C) 01:01 (D) 13:12 (E) 12:51

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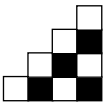
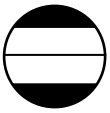
4. In which one of the following is half of the figure shaded?

4. In watter een van die volgende is die helfte van die figuur verdonker?

(A)  (B)  (C)  (D)  (E) 

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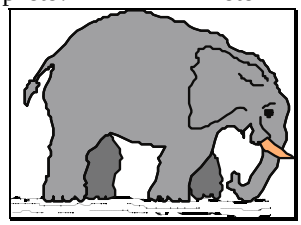
5. This photo of 120 mm × 90 mm is enlarged to 360 mm × 270 mm. The elephant’s tail in the smaller photo is 22 mm long. How long is its tail in the larger photo?

5. Hierdie foto van 120 mm × 90 mm word vergroot na 360 mm × 270 mm. As die olifant se stert in die klein foto 22 mm lank is, hoe lank is sy stert in die vergroting?



(A) 33 mm (B) 44 mm (C) 55 mm (D) 66 mm (E) 99 mm

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

6. In an election 39 218 votes were cast for two candidates. The winner had 1 002 votes more than the loser. How many votes did the winner receive?

(A) 19 108 (B) 20 182 (C) 38 216 (D) 20 110 (E) 19 609

6. In ’n verkiesing is 39 218 stemme uitgebring vir twee kandidate. Die wenner het 1 002 stemme meer as die verloorder gekry. Hoeveel stemme het die wenner gekry?

7. Which one of the following numbers will appear in the sequence 6; 12; 18; 24; ...?

(A) 3733 (B) 4526 (C) 5186 (D) 6526 (E) 7356

7. Watter een van die volgende getalle sal voorkom in die getalry 6; 12; 18; 24; ...?

8. You and your friend have the same amount of money. How much should you give her so that she has R10 more than you?

(A) R15 (B) R10 (C) R20 (D) R5 (E) None of these / Nie een hiervan nie

8. Jy en jou maat het ewe veel geld. Hoeveel moet jy haar gee sodat sy R10 meer as jy het?

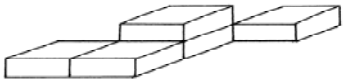
9. Hailey is reading a book. Chapter 7 begins on page 246 and ends on page 274. How many pages are there in chapter 7?

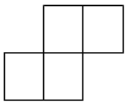
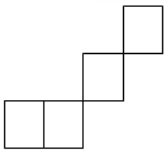
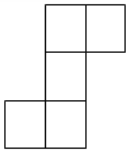
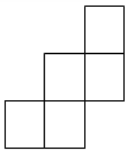
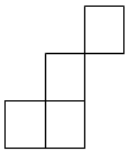
(A) 274 (B) 28 (C) 15 (D) 29 (E) 30

9. Hailey lees ’n boek. Hoofstuk 7 begin op bladsy 246 en eindig op bladsy 274. Hoeveel bladsye is daar in hoofstuk 7?

10. What will you see if you look at this block building directly from above?

10. Wat sal jy sien as jy direk van bo na hierdie blokgebou kyk?



(A)  (B)  (C)  (D)  (E) 

11. Thomas forgot to take off his shoes when he got onto the scale to weigh himself. The scale showed 41 kg. He then weighed his two shoes and found that they had a mass of 725 g. What was his mass without his shoes?

(A) 40,175 g (B) 40,725 kg (C) 39,275 kg (D) 41,725 kg (E) 40,275 kg

11. Thomas het vergeet om sy skoene uit te trek voor hy op die skaal geklim het om homself te weeg. Die skaal het 41 kg gewys. Toe weeg hy sy twee skoene en vind dat hulle ’n massa van 725 g het. Wat was sy massa sonder sy skoene?

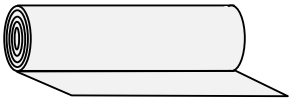
12. Peter, Paul and David worked in the garden. Peter worked for 3 hours, Paul worked 2 hours and David worked 1 hour. They are paid R48 for their work altogether. How much should Peter get?

(A) R8 (B) R16 (C) R12 (D) R36 (E) R24

12. Peter, Paul en David het in ’n tuin gewerk. Peter het 3 uur lank gewerk, Paul 2 uur en David 1 uur. Hulle word saam R48 betaal. Hoeveel behoort Peter te kry?

13. After one-tenth of a roll of material was cut off, 99 m of material remains on the roll. How long was the original roll of material?

13. Na een tiende van ’n rol materiaal afgesny is, bly daar 99 m materiaal oor. Hoe lank was die oorspronklike rol materiaal?



(A) 90 m (B) 100 m (C) 110 m (D) 108 m (E) None of these / Nie een hiervan nie

14. I choose three numbers from this number square – one number from each row and one number from each column. Then I multiply the three numbers. What is the largest possible product?

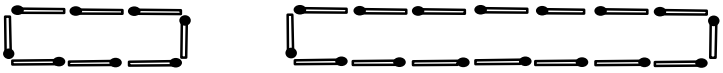
14. Ek kies drie getalle uit hierdie getalvierkant – een getal uit elke ry en een getal uit elke kolom. Dan vermenigvuldig ek die drie getalle. Wat is die grootste moontlike produk?

1	2	3
4	5	6
7	8	9

(A) 72 (B) 96 (C) 105 (D) 162 (E) 504

15. John builds rectangles as shown. When the length of the rectangle is 3, there are 8 matches. When the length of the rectangle is 7, there are 16 matches. How many matches does he need to build a rectangle with length 20?

15. John bou reghoeke soos getoon. As die lengte van die reghoek 3 is, gebruik hy 8 vuurhoutjies en as die lengte 7 is, gebruik hy 16 vuurhoutjies. Hoeveel vuurhoutjies het hy nodig om ’n reghoek met lengte 20 te bou?



(A) 48 (B) 42 (C) 80 (D) 46 (E) 44

16. In question 15: If John has 220 matches, what will the length of the rectangle be if he uses all the matches?

16. In vraag 15: As John 220 vuurhoutjies het, wat sal die lengte van die reghoek wees as hy al die vuurhoutjies gebruik?

(A) 108 (B) 109 (C) 110 (D) 112 (E) 114

17. To number 11 pages from 1 to 11, one uses 13 digits. How many digits does one use to number 100 pages from 1 to 100?

17. Om 11 bladsye van 1 tot 11 te nommer, gebruik ’n mens 13 syfers. Hoeveel syfers gebruik ’n mens om 100 bladsye van 1 tot 100 te nommer?

(A) 100 (B) 200 (C) 190 (D) 192 (E) 191

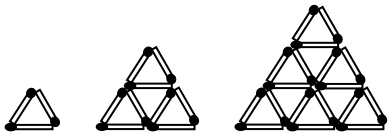
18. There are a total of seven bicycles and tricycles altogether in the shop window. They have a total of 19 wheels. How many bicycles are there?

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

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

19. Vusi builds a sequence of triangular patterns with matches as shown. In T_1 there is one triangle and in T_2 there are four triangles. How many triangles are there in T_{10}?

19. Vusi bou ’n ry driehoekpatrone met vuurhoutjies soos hieronder. In T_1 is daar een driehoek. In T_2 is daar vier driehoeke. Hoeveel driehoeke is daar in T_{10}?



T_1 T_2 T_3

(A) 30 (B) 60 (C) 100 (D) 120 (E) 121

20. In question 19, T_1 has three matches and T_2 has 9 matches. How many matches does Sipho need to build pattern T_{10}?

20. In vraag 19 : T_1 het drie vuurhoutjies en T_2 het 9 vuurhoutjies. Hoeveel vuurhoutjies het Sipho nodig om T_{10} te bou?

(A) 150 (B) 180 (C) 135 (D) 165 (E) 300

21. Bradford drinks $\frac{1}{2}$ of a jug of milk in the fridge. His sister drinks $\frac{1}{3}$ of the left over milk. What fraction of the original jug of milk is now left over?

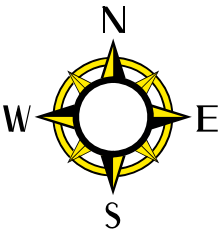
(A) $\frac{1}{6}$ (B) $\frac{2}{5}$ (C) $\frac{1}{5}$ (D) $\frac{1}{3}$ (E) $\frac{5}{6}$

21. Bradford drink $\frac{1}{2}$ van ’n beker melk in die yskas. Sy suster drink $\frac{1}{3}$ van die oorblywende melk. Watter breuk van die oorspronklike beker melk is nou oor?

22. 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?



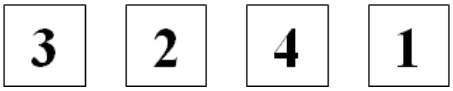
(A) 30 km (B) 20 km (C) 10 km (D) 40 km (E) 50 km

22. Ses dorpe A, B, C, D, E en F is soos volg geleë:

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?

23. Jackie has four cards (see below). How many different two-digit numbers can she make with these cards?



(A) 8 (B) 12 (C) 16 (D) 18 (E) 24

23. Jackie het vier kaarte (sien hieronder). Hoeveel verskillende tweesyfer-getalle kan sy met hierdie kaarte maak?

24. In question 23: How many different three-digit numbers can Jackie make with these cards?

(A) 8 (B) 12 (C) 16 (D) 18 (E) 24

24. In vraag 23: Hoeveel verskillende driesyfer-getalle kan Jackie met hierdie kaarte maak?

25. Here is a subtraction problem, but the problem is missing:

$$\begin{array}{r} ?? \\ -\,\underline{??} \\ 63 \end{array}$$

How many different two-digit subtraction problems could have the answer 63?

(A) 15 (B) 20 (C) 25 (D) 26 (E) 27

25. Hier is ’n aftrek-probleem, maar die probleem is uitgelaat:

$$\begin{array}{r} ?? \\ -\,\underline{??} \\ 63 \end{array}$$

Hoeveel verskillende twee-syfer aftrek-probleme kan die antwoord 63 hê?