SA Mathematics Challenge 2013
GRADE 7 FIRST ROUND

SA Wiskunde-uitdaging 2013
Graad 7 Eerste Ronde

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!

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. What number is exactly halfway between 5,6 and 5,65?

   (A) 5,025   (B) 5,625   (C) 5,62

1. Watter getal is presies halfpad tussen 5,6 en 5,65?

   (D) 5,605   (E) 5,635

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

   (A) $1\times1\div1\times1 = 1$ (B) $2\div2+2\div2 = 2$ (C) $3\times3-3+3 = 3$

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

   (D) $(4-4)\div4+4 = 4$ (E) $5+5\times(5-5) = 5$

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3. What is the 83rd number in the following pattern?
   1; 3; 5; 7;….

   (A) 85   (B) 165   (C) 62

3. Wat is die 83ste getal in die volgende patroon?

   1; 3; 5; 7;….

   (D) 97   (E) 102

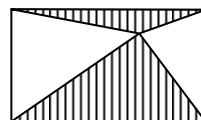4. The sketch shows a 6 cm by 4 cm rectangle. What area is shaded?

   (A) 12 cm^2 (B) 10 cm^2 (C) 9 cm^2

4. Die skets toon 'n 6 cm by 4 cm reghoek. Watter oppervlakte is verdonker?

   (D) 8 cm^2 (E) 7 cm^2

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5. The sketch shows a 6 cm by 4 cm rectangle. What area is shaded?

   (A) 12 cm^2 (B) 10 cm^2 (C) 9 cm^2

5. Die skets toon 'n 6 cm by 4 cm reghoek. Watter oppervlakte is verdonker?
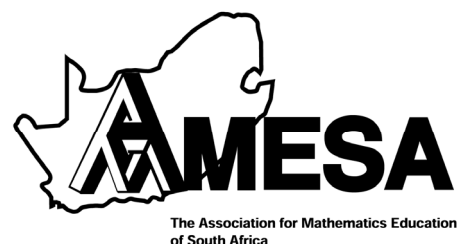
   (D) 8 cm^2 (E) 7 cm^2

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6. The average of eleven numbers is 8. If a twelfth number is added to these numbers, the average of all twelve numbers is now 11. What is the twelfth number added?

   (A) 11   (B) 12   (C) 33

6. Die gemiddelde van elf getalle is 8. As 'n twaalfde getal by hierdie getalle getel word, is die gemiddelde van al twaalf getalle nou 11. Wat is die twaalfde getal wat bygetel is?

   (D) 44   (E) 22

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7. Calculate the value of

$$1 + \cfrac{1}{1 + \cfrac{1}{1 + \frac{1}{2}}}$$

7. Bereken die waarde van

$$1 + \cfrac{1}{1 + \cfrac{1}{1 + \frac{1}{2}}}$$

(A) $1\frac{3}{5}$ (B) $\frac{5}{8}$ (C) $1\frac{2}{3}$ (D) $3\frac{1}{2}$ (E) $5\frac{1}{2}$

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8. A small rectangular garden measuring 3,75 m by 2,5 m is to be paved with equal square tiles so that the area is covered exactly. Tiles may not be cut. What is the minimum number of square tiles that could be used?

8. 'n Klein reghoekige tuin met afmetings 3,75 m by 2,5 m moet plavei word met ewe-groot vierkantige teëls sodat die area presies bedek word. Teëls mag nie gesny word nie. Wat is die minimum getal vierkantige teëls wat gebruik kan word?

(A) 12   (B) 10   (C) 8   (D) 6   (E) 4

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9. The notation $a \mho b$ means "the remainder when a is divided by b". What is the value of $123 \mho (45 \mho 6)$?

9. Die notasie $a \mho b$ beteken "die res as a gedeel word deur b". Wat is die waarde van $123 \mho (45 \mho 6)$?

(A) 0   (B) 1   (C) 2   (D) 3   (E) 4

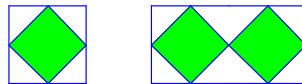
10. When a number is multiplied by itself, the result is a *square number*. For example, $3 \times 3 = 9$ and $6 \times 6 = 36$ are square numbers. How many square numbers are there from 1 to 1000?
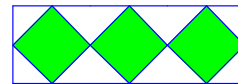
10. As 'n getal met homself vermenigvuldig word, is die resultaat 'n volkome *vierkant*. Byvoorbeeld, $3 \times 3 = 9$ en $6 \times 6 = 36$ is vierkante. Hoeveel vierkante is daar van 1 tot 1000?

(A) 31   (B) 961   (C) 20   (D) 21   (E) 22

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11. In the pattern below, the diagram with two squares has six triangles. If the pattern continues to grow, how many triangles are there in a diagram with six squares?

11. In die patroon hieronder: Die diagram met twee vierkante het ses driehoeke. As die patroon voortgesit word, hoeveel driehoeke is daar in 'n diagram met ses vierkante?

(A) 12   (B) 14   (C) 16   (D) 18   (E) 20

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12. In question 11, how many triangles are there in a diagram with 60 squares?

12. In vraag 11: Hoeveel driehoeke is daar in 'n diagram met 60 vierkante?

(A) 120   (B) 122   (C) 140   (D) 160   (E) 142

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13. In question 11, how many squares are there in a diagram with 60 triangles?

13. In vraag 11: Hoeveel vierkante is daar in 'n diagram met 60 driehoeke?

(A) 30   (B) 32   (C) 28   (D) 29   (E) 31

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14. With one digit you can form one number, e.g. 9. With two digits (e.g. 6 and 8) you can form two numbers, namely 68 and 86. How many different four-digit numbers can be formed with four different digits?

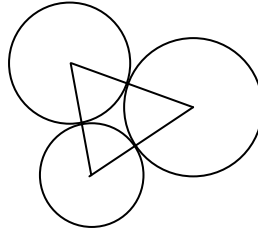14. Met een syfer kan jy een getal vorm, bv. 9. Met twee syfers (bv 6 en 8) kan jy twee getalle vorm, nl. 68 en 86. Hoeveel verskillende viersyfer-getalle kan met vier verskillende syfers gevorm word?

(A) 8   (B) 10   (C) 16   (D) 24   (E) 32

15. Three circles with radii 7 cm, 8 cm and 9 cm touch each other externally without overlapping. What is the perimeter of the triangle formed by joining the three centres of the circles?
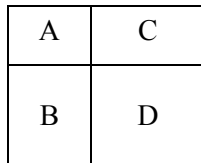
15. Drie sirkels met radiusse van 7 cm, 8 cm en 9 cm raak mekaar uitwendig. Wat is die omtrek van die driehoek wat gevorm word deur die drie middelpunte van die sirkels te verbind?

(A) 30 cm   (B) 24 cm   (C) 48 cm   (D) 12 cm   (E) $7\pi + 8\pi + 9\pi$

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16. If the areas of rectangles A, B and C below are 12 cm², 21 cm² and 20 cm² respectively. What is the area of rectangle D?
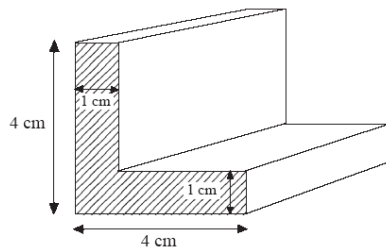
16. Die oppervlakte van reghoeke A, B en C hieronder is onderskeidelik 12 cm², 21 cm² en 20 cm². Wat is die oppervlakte van reghoek D?

A	C
B	D

(A) 32 cm²   (B) 35 cm²   (C) 55 cm²   (D) 56 cm²   (E) 88 cm²

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17. The figure below shows a metal bar which is 4 cm high, 4 cm wide, 1 cm thick and 12 cm long. What is the volume of the bar?

17. Die skets hieronder wys 'n metaalstaaf wat 4 cm hoog, 4 cm breed, 1 cm dik en 12 cm lank is. Wat is die volume van die staaf?

(A) 96 cm³   (B) 7 cm²   (C) 16 cm²   (D) 192 cm³   (E) 84 cm³

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18. How many two-digit numbers are there with both digits even?

18. Hoeveel tweesyfer-getalle is daar met beide syfers ewe?

(A) 20   (B) 25   (C) 45   (D) 50   (E) 30

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19. Numbers are arranged in the following pattern:

1	2	3	4	5	6	**row 1**
7	8	9	10	11	12	**row 2**
13	14	15	16	17	18	**row 3**
…	…	…	…	…	…	**row 4**

What will the third number in row 81 be?

19. Getalle word in die volgende patroon rangskik:

1	2	3	4	5	6	**ry 1**
7	8	9	10	11	12	**ry 2**
13	14	15	16	17	18	**ry 3**
…	…	…	…	…	…	**ry 4**

Wat sal die derde getal in ry 81 wees?

(A) 480   (B) 486   (C) 483   (D) 485   (E) 241

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20. Tom, Fred and Rhoda put their apples into a bag. Tom and Fred together had 17 more apples than Rhoda. Tom had 7 apples. Rhoda had 5 apples. How many apples did Fred have?

20. Tom, Fred en Rhoda sit hul appels in 'n sak. Tom en Fred het saam 17 meer appels as Rhoda. Tom het 7 appels gehad. Rhoda het 5 appels gehad. Hoeveel appels het Fred gehad?

(A) 15   (B) 10   (C) 12   (D) 22   (E) 5

21. *a, b, c* and *d* are four adjacent dates in a calendar as shown. Which statement is NOT true for *any* calendar?

21. *a, b, c* en *d* is vier aangrensende datums in 'n kalender soos hieronder. Watter bewering is NIE waar vir *enige* kalender nie?

Mon	Tues	Wed	Thu	Fri	Sat	Sun
		a	*b*			
		c	*d*			

(A) $c - a = d - b$ (B) $c = a + 7$ (C) $d = a + 8$ (D) $a + c = b + d$ (E) $a + d = c + b$

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22. In the above calendar, $a + b + c + d = 52$. What is $a + b$?

22. In die kalender hierbo is $a + b + c + d = 52$. Wat is $a + b$?

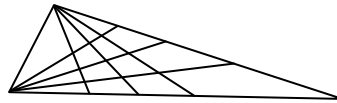(A) 19   (B) 25   (C) 26   (D) 27   (E) One cannot say / Mens kan nie sê nie

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23. *a, b, c* and *d* are *any* four consecutive numbers, for example 2, 3, 4, 5 or 14, 15, 16, 17. Which statement is NOT true for *any* such four numbers?

23. *a, b, c* en *d* is *enige* vier opeenvolgende getalle, byvoorbeeld 2, 3, 4, 5 of 14, 15, 16, 17. Watter bewering is NIE waar vir *enige* sulke vier getalle nie?

(A) $c - a = d - b$ (B) $c = a + 2$ (C) $d = a + 3$ (D) $a + c = b + d$ (E) $a + d = c + b$

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24. 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?

24. 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?

(A) 100   (B) 121   (C) 20   (D) 107   (E) 54

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25. Six pencils and four pens cost R62. However, four pencils and six pens cost R84. How much do five pencils and five pens cost?

25. Ses potlode en vier penne kos saam R62. Maar vier potlode en ses penne kos R84. Hoeveel kos vyf potlode en vyf penne?

(A) R31   (B) R73   (C) R56   (D) R96   (D) R62