

Jet SA Mathematics Challenge
GRADE 5 FINAL ROUND
7 SEPTEMBER 2011

Jet SA Wiskunde-uitdaging
GRAAD 5 FINALE RONDE
7 SEPTEMBER 2011

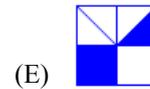
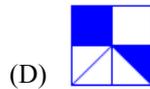
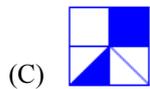
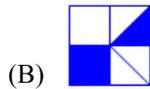
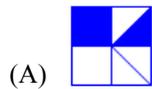
NOTE:

- 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!

1. Which square is the same as the one below?



2. Lindiwe counts like this: 5, 9, 13, 17, 21, ...
 What is the 100th number she will count?

2. Lindiwi tel so: 5, 9, 13, 17, 21, ...
 Wat is die 100^{ste} getal wat sy sal tel?



5, 9, 13, 17, 21,

- (A) 400 (B) 407 (C) 402 (D) 406 (E) 401

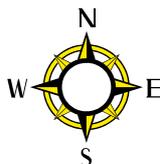
3. Refer to the previous question: which of these numbers will Lindiwe count?

3. Verwys na die vorige vraag: watter van hierdie getalle sal Lindiwi tel?

- (A) 6151 (B) 4065 (C) 9135 (D) 3023 (E) 3331

4. 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



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

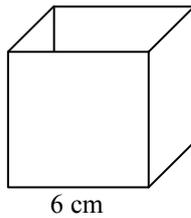
D is 30 km Oos van F
 B is 20 km Wes van C
 A is 10 km Wes van E
 F is 10 km Suid van A
 D is 20 km Noord van C

How far is B from E?

Hoe ver is B van E?

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

5. How many of the small cubes fit exactly into the big cube?



5. Hoeveel van die klein kubusse pas presies in die groot kubus in?



- (A) 9 (B) 12 (C) 20 (D) 21 (E) 27

6. Which of these numbers is closest to 8?

- (A) 7,93 (B) 8,08 (C) 7,8 (D) 8,1 (E) 7,9

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

- (D) 8,1 (E) 7,9

7. What number is halfway between 234469 and 234562?

- (A) 234515,5 (B) 234515 (C) 234516 (D) 93 (E) 46,5

7. Watter getal is halfpad tussen 234469 en 234562?

- (D) 93 (E) 46,5

8. A computer has a secret rule. For every input number that you type in, it produces an output number using that same rule. Here are some examples of the computer's answers. If the input number is 20, what is the computer's output number?

Input number	0	1	2	3	20
Output number	2	7	12	17	?

8. 'n Rekenaar gebruik 'n geheime formule om 'n uitvoergetal te bereken vir elke invoergetal. Die tabel toon sulke invoer-uitvoer pare. As die invoergetal 20 is, wat is die rekenaar se uitvoergetal?

- (A) 140 (B) 102 (C) 97 (D) 100 (E) 22

9. In the previous question: if the computer's output number is 152, what was the input number?

- (A) 26 (B) 24 (C) 35 (D) 27 (E) 30

9. In die vorige vraag: as die rekenaar se uitvoergetal 152 is, wat was die invoergetal?

- (D) 27 (E) 30

10. 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 make a rectangle with length 20?



10. 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

11. Which number in place of Δ makes this number sentence true?

$$\Delta \times \Delta \times \Delta = 729$$

- (A) 243 (B) 6 (C) 7

11. Watter getal in die plek van Δ maak hierdie getallesin waar?

$$\Delta \times \Delta \times \Delta = 729$$

- (D) 9 (E) 33

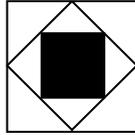
12. In a string of beads there are 2 red beads for every 5 green beads and 3 purple beads for every 10 green beads. How many purple beads are there in a string with 12 red beads?

- (A) 50 (B) 10 (C) 9 (D) 15 (E) 18

12. In 'n string krale is daar 2 rooi krale vir elke 5 groenes en 3 pers krale vir elke 10 groenes. Hoeveel pers krale is daar in 'n string met 12 rooi krale?

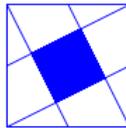
- (D) 15 (E) 18

13. The figure is formed by successively joining the midpoints of the sides of a square. What fraction of the whole figure is shaded?



- (A) $\frac{1}{3}$ (B) $\frac{1}{4}$ (C) $\frac{1}{2}$ (D) $\frac{2}{9}$ (E) $\frac{3}{8}$

14. The corners of a square are connected to the midpoints of the opposite sides. What fraction of the big square is shaded?



13. Die figuur is gevorm deur die middelpunte van opeenvolgende vierkante te verbind. Watter breukdeel van die hele figuur is verdonker?

14. Die hoekpunte van 'n vierkant word verbind met die middelpunte van die teenoorstaande sye. Watter breuk van die groot vierkant is verdonker?

- (A) $\frac{1}{2}$ (B) $\frac{1}{3}$ (C) $\frac{1}{4}$ (D) $\frac{1}{5}$ (E) $\frac{1}{9}$

15. Shaun bought a burger, a cold drink and an ice-cream cone for R19. If the burger costs R4 more than the ice-cream and the ice-cream costs R3 more than the cold drink, what did the ice-cream cost?

- (A) R12 (B) R4 (C) R6 (D) R3 (E) R5

15. Shaun koop 'n burger, 'n koeldrank en 'n roomys vir R19. As die burger R4 meer as die roomys kos en die roomys R3 meer as die koeldrank kos, hoeveel het die roomys gekos?

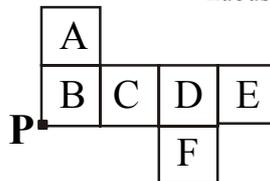
16. In the diagram, each row, each column and each diagonal contains each of the numbers 1, 2, 3 and 4 once. What is $a + b$?

1	a	b	
	2		
		3	
		1	

16. In die diagram bevat elke ry, elke kolom en elke hoeklyn elk van die getalle 1, 2, 3 en 4 een keer. Wat is $a + b$?

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

17. The net shown is folded to form a cube. Which three faces will meet at P?



17. Die net wat gewys word, moet gevou word om 'n kubus te vorm. Watter drie sykante sal by P ontmoet?

- (A) B E F (B) A B C (C) B D F (D) A B E (E) A B F

18. The three digits of a three-digit number add up to 25. How many such three-digit numbers are there?

- (A) 2 (B) 4 (C) 6 (D) 8 (E) 10

18. Die som van die drie syfers van 'n driesyfergetal is 25. Hoeveel sulke driesyfergetalle is daar?

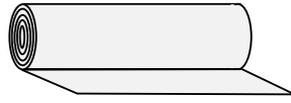
19. Some numbers read the same forwards and backwards, like 353 and 262. How many such "mirror numbers" are there between 100 and 200?

- (A) 7 (B) 8 (C) 9 (D) 10 (E) 11

19. Sommige getalle lees dieselfde van voor en van agter, soos 353 en 262. Hoeveel sulke "spieëlgetalle" is daar tussen 100 en 200?

20. 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?

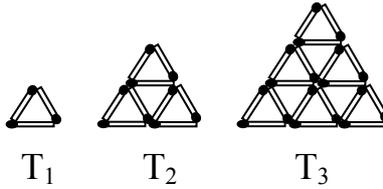
20. Na een tiende van 'n rol materiaal afgesny is, bly daar 99 m materiaal oor. Hoe lank was die oorspronklike rol materiaal?



- (A) 90 m (B) 100 m (C) 110 m (D) 108 m (E) 111 m

21. 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} ?

21. 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} ?



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

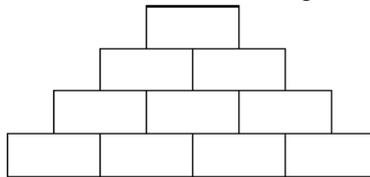
22. In question 21, T_1 has three matches and T_2 has 9 matches. How many matches does Siphon need to build pattern T_{10} ?

22. In vraag 21 : T_1 het drie vuurhoutjies en T_2 het 9 vuurhoutjies. Hoeveel vuurhoutjies het Siphon nodig om T_{10} te bou?

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

23. Siphon builds "pyramids" with blocks as shown in the sketch below. To build this pyramid 4 blocks high he needs 10 blocks. How many blocks does he need in total to build a pyramid 50 blocks high?

23. Siphon bou "piramides" met blokke soos in die skets getoon. Om soos hier 'n piramide 4 blokke hoog te bou, het hy 10 blokke nodig. Hoeveel blokke het hy altesaam nodig om 'n piramide 50 blokke hoog te bou?



- (A) 2500 (B) 1275 (C) 2401 (D) 2550 (E) 2601

24. Penny has twice as many coins as Alex. If Penny gives Alex four coins, they have the same number of coins. How many coins do they have in the beginning?

24. Penny het tweekeer soveel muntstukke as Alex. As Penny vir Alex vier muntstukke gee, het hulle ewe veel muntstukke. Hoeveel muntstukke het hulle in die begin saam gehad?

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

25. Jackie has four cards (see below). How many different three-digit numbers (e.g. 132 and 241) can she make with these cards?

25. Jackie het vier kaarte (sien hieronder). Hoeveel verskillende driesyfer-getalle (bv. 132 en 241) kan sy met hierdie kaarte maak?



- (A) 15 (B) 12 (C) 16 (D) 20 (E) 24