

Jet SA Mathematics Challenge

GRADE 7 FINAL ROUND
5 SEPTEMBER 2012

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!

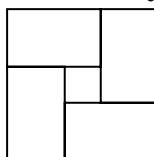
Jet SA Wiskunde-uitdaging

GRAAD 7 FINALE RONDE
5 SEPTEMBER 2012

LET OP:

- Beantwoord die vrae volgens die instruksies op die antwoordblad.
- Jy mag 'n sakrekenaar gebruik.
- Die vrae toets insig. Omslagtige berekening is dus onnodig en tydrowend.
- Ons hoop jy geniet dit!

1. Four rectangles and a square are arranged as shown. Each of the four rectangles is 5 cm long and 3 cm wide. What is the area of the square at the centre?



- (A) 1 cm^2 (B) 4 cm^2 (C) 8 cm^2 (D) 9 cm^2 (E) 16 cm^2

2. What is half of 2^{24} ?

- (A) 2^{12} (B) 1^{12} (C) 2^{23} (D) 1^{24} (E) 2^{22}

3. The average mass of 3 boys is 75 kg. The average mass of 6 girls is 66 kg. What is the average mass of the 9 children together?

- (A) 70,5 kg (B) 68 kg (C) 70 kg (D) 69 kg (E) 69,5 kg

4. What is the value of a in the table?

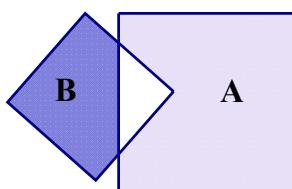
1	2	3	4	...	a
4	6	8	10	...	64

- (A) 31 (B) 16 (C) 5 (D) 57 (E) 34

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

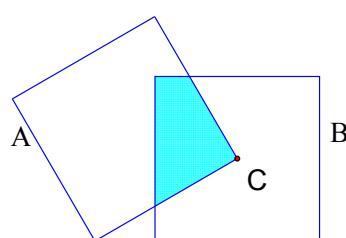
- (A) R1,32 (B) R1,33 (C) R1,16 (D) R1,17 (E) None of these
Nie een hiervan nie

6. Two squares with lengths 4 cm and 6 cm respectively, partially overlaps as shown in the diagram. What is the difference between shaded area A and shaded area B?
6. Twee vierkante met sylengtes 4 cm en 6 cm onderskeidelik oorvleuel gedeeltelik soos in die diagram getoon. Wat is die verskil tussen die verdonkerde oppervlakte A en verdonkerde oppervlakte B?



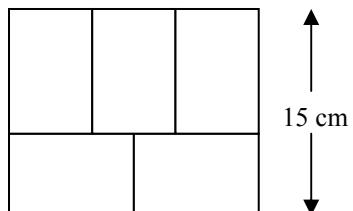
- (A) 2 cm^2 (B) 20 cm^2 (C) 4 cm^2 (D) 32 cm^2 (E) None of these
Nie een hiervan nie

7. In the previous question, what is the area of the overlap between the two squares?
7. In die vorige vraag, wat is die oppervlakte van die oorvleueling tussen die twee vierkante?
- (A) 2 cm^2 (B) 20 cm^2 (C) 4 cm^2 (D) 32 cm^2 (E) Not enough information
Nie genoeg inligting nie
8. Squares A and B are identical 12 cm by 12 cm squares. One corner of A is at the centre of B. What area is shaded?
8. Vierkante A en B is identiese 12 cm by 12 cm vierkante. Een hoek van A is by B se middelpunt. Watter oppervlakte is verdonker?

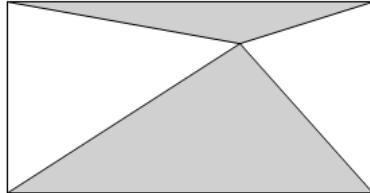


- (A) 30 cm^2 (B) 32 cm^2 (C) 34 cm^2 (D) 36 cm^2 (E) Not enough information
Nie genoeg inligting nie

9. Thandi's average for Mathematics after her first 4 tests is 67%. In the next 2 tests she obtained 63% and 67%. What is her average now? (All the tests have the same weight.)
9. Thandi se gemiddelde vir Wiskunde na haar eerste 4 toetse is 67%. In die volgende 2 toetse het sy 63% en 67% behaal. Wat is haar gemiddelde nou? (Al die toetse dra dieselfde gewig.)
- (A) 66,3 (B) 66 (C) 63 (D) 65 (E) 66,5
10. Five identical rectangles fit together to form a figure as shown. What is the area of the figure?
10. Vyf identiese reghoeke pas saam om 'n figuur te vorm soos getoon. Wat is die oppervlakte van die figuur?



- (A) 270 cm^2 (B) 300 cm^2 (C) 330 cm^2 (D) 360 cm^2 (E) 450 cm^2

11. Patrick Green's initials are PG. Hannah Brown's initials are HB. A firm makes handkerchiefs with all possible combinations of two initials. How many different combinations are possible?
 (A) 676 (B) 338 (C) 52 (D) 650 (E) 625
12. Split the number 18 into two whole numbers (e.g. 3 and 15). Now multiply these two numbers. What is the largest possible answer?
 (A) 80 (B) 77 (C) 72 (D) 81 (E) 100
13. A reservoir is $\frac{5}{8}$ full. If 135 litres of water is added, the reservoir is $\frac{8}{11}$ full. What is the capacity (in litres) of the reservoir when full?
 (A) 16 (B) 88 (C) 729 (D) 1 320 (E) 3 520
14. 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 (D) 8 cm^2 (E) 7 cm^2
- 
15. In this magic square the sum of the three numbers in each row, in each column and in each diagonal is 18. What is the value of z ?
 (A) 1 (B) 3 (C) 9 (D) 7 (E) 8
- | | | |
|----|---|-----|
| | | z |
| 11 | 6 | |
| | | 10 |
16. In this multiplication magic square the *product* of the three numbers in each row, in each column and in each diagonal is 1. What is the value of $r + s$?
 (A) $\frac{1}{2}$ (B) $\frac{9}{16}$ (C) $\frac{5}{4}$ (D) $\frac{33}{16}$ (E) 24
- | | | |
|-----|-----|---------------|
| p | q | r |
| s | 1 | t |
| u | 4 | $\frac{1}{8}$ |
17. How many multiples of 4 are bigger than 1 but smaller than 100?
 (A) 50 (B) 25 (C) 24 (D) 23 (E) 26
11. Patrick Green se voorletters is PG. Hannah Brown se voorletters is HB. 'n Fabriek vervaardig sakdoeke met twee voorletters daarop. Hoeveel verskillende kombinasies van twee voorletters is moontlik?
12. Verdeel die getal 18 in twee telgetalle (bv. 3 en 15). Vermenigvuldig nou hierdie twee getalle. Wat is die grootste moontlike antwoord?
13. 'n Watertenk is $\frac{5}{8}$ vol. Nadat nog 135 liter water bygetap is, is die tenk $\frac{8}{11}$ vol. Hoeveel water hou die tenk (hoeveel liter)?
14. Die skets toon 'n 6 cm by 4 cm reghoek. Watter oppervlakte is verdonker?

18. In the previous question, what is the average of all these multiples of 4?

(A) 50 (B) 25 (C) 48

18. In die vorige vraag, wat is die gemiddelde van al hierdie veelvoude van 4?

(D) 52 (E) 44

19. 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

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

(D) 8 (E) 10

20. John builds houses as shown. When there are 3 houses, there are 13 matches. When there are 7 houses, there are 29 matches. How many matches does he need to make 20 such houses?



(A) 80 (B) 81 (C) 85

20. John bou huisies soos getoon. Vir 3 huise gebruik hy 13 vuurhoutjies en vir 7 huise 29 vuurhoutjies. Hoeveel vuurhoutjies gebruik hy vir 20 sulke huise?

(D) 84 (E) 83

21. In question 20, if John has 225 matches, how many such houses can he build if he uses all the matches?

(A) 50 (B) 52 (C) 54

21. In vraag 20: as John 225 vuurhoutjies het, hoeveel sulke huise kan hy bou as hy al die vuurhoutjies gebruik?

(D) 56 (E) 58

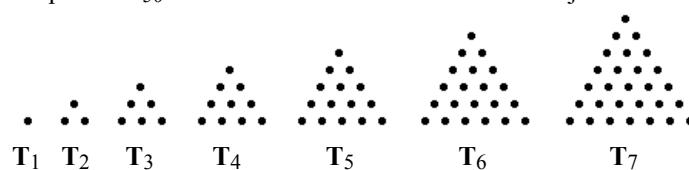
22. If $a \times b = 2$, $b \times c = 24$ and $c \times a = 3$ and a , b and c are all positive, what is the value of c ?

(A) 12 (B) 3 (C) 4

22. As $a \times b = 2$, $b \times c = 24$ en $c \times a = 3$ en a , b en c is almal positief, wat is die waarde van c ?

(D) 8 (E) 6

23. Zola uses dots to build triangle patterns as shown below. How many dots are there in pattern T_{50} ?



(A) 2601 (B) 1275 (C) 2550

23. Zola bou driehoek patrone met kolletjies soos hieronder. Hoeveel kolletjies is daar in patroon T_{50} ?

(D) 1250 (E) None of these
Nie een hiervan nie

24. Which one of the following numbers will appear in the sequence

2; 5; 10; 17; 26; 37; ...?

(A) 901 (B) 902 (C) 903

24. Watter een van die volgende getalle sal voorkom in die getalry

2; 5; 10; 17; 26; 37; ...?

(D) 904 (E) None of these
Nie een hiervan nie

25. Calculate $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times \dots \times (1 - \frac{1}{2012})$

(A) $\frac{1}{2012}$ (B) $\frac{1}{1006}$ (C) $\frac{1}{24}$

25. Bereken $(1 - \frac{1}{2}) \times (1 - \frac{1}{3}) \times (1 - \frac{1}{4}) \times \dots \times (1 - \frac{1}{2012})$

(D) $\frac{24}{2012}$ (E) $\frac{2011}{2012}$