Jet SA Mathematics Challenge

GRADE 6 FINAL ROUND
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!

Jet SA Wiskunde-uitdaging

GRAAD 6 FINALE RONDE
7 SEPTEMBER 2011

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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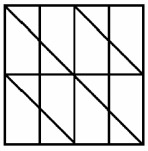
1. How many triangles are there in this figure?

1. Hoeveel driehoeke is daar in hierdie figuur?



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

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

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

(A) 5,63 (B) 5,625 (C) 5,62 (D) 5,605 (E) 5,655

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3. What number is exactly halfway between $\frac{1}{8}$ and $\frac{1}{10}$?

3. Watter getal is presies halfpad tussen $\frac{1}{8}$ en $\frac{1}{10}$?

(A) $\frac{1}{80}$ (B) $\frac{9}{40}$ (C) $\frac{1}{18}$ (D) $\frac{1}{9}$ (E) $\frac{9}{80}$

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4. Mary ties a Christmas gift with a ribbon as shown. The bow requires 47 cm of ribbon. What is the total length of the ribbon?

4. Mary bind 'n kersgeskenk toe met 'n lint soos getoon. Die strik benodig 47 cm lint. Hoeveel lint gebruik sy altesaam?

(A) 157 cm (B) 227 cm (C) 122 cm (D) 137 cm (E) None of these / Nie een hiervan nie

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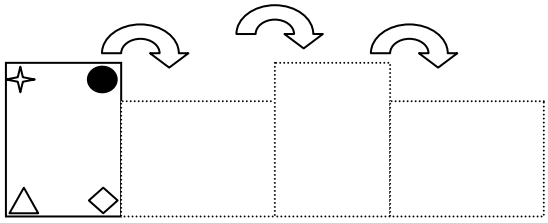
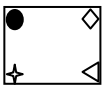
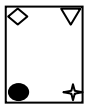
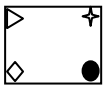
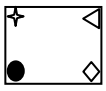
5. A rectangular matchbox is rotated along a straight line on a table, so that one side at a time touches the table. Which of the positions *cannot* be obtained?

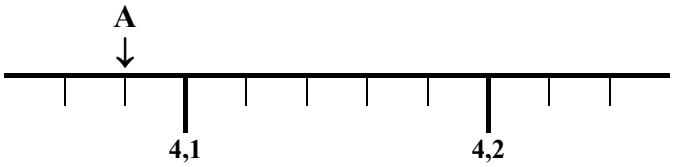
5. ’n Reghoekige vuurhoutjiedosie word langs ’n reguit lyn op ’n tafel geroteer, sodat een van die kante op ’n slag op die tafel is. Watter van die volgende posisies is *nie* moontlik nie?



(A)  (B)  (C)  (D)  (E) Not one of these / Nie een hiervan nie

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

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



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

7. What is the next number in this pattern?

$$24, 12, 6, 3, 1\tfrac{1}{2}, \ldots$$

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

7. Wat is die volgende getal in hierdie patroon?

$$24, 12, 6, 3, 1\tfrac{1}{2}, \ldots$$

8. From a batch of 3000 light bulbs, 100 were selected at random and tested. Five of the bulbs in the sample were found to be defective. About how many defective light bulbs would be expected in the entire batch?

(A) 15 (B) 60 (C) 150 (D) 300 (E) 600

8. Uit ’n besending van 3000 gloeilampe is 100 willekeurig geselekteer en getoets. Vyf van die gloeilampe in die monster was defektief. Omtrent hoeveel defektiewe gloeilampe kan mens in die hele besending verwag?

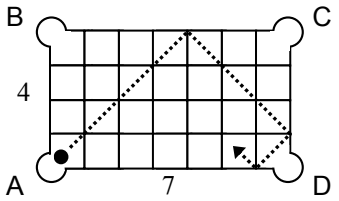
9. Thirty equally spaced points on a circle are labelled in order with the numbers 1 to 30. Which number is directly opposite to 7?

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

9. Dertig punte op ’n sirkel, almal ewe ver van mekaar, word opeenvolgend genommer van 1 tot 30. Watter getal is reg oorkant 7?

10. 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?

10. 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

11. You have three 10c coins, two 5c coins and two 20c coins. In how many different ways can you give a person 35c?

(A) 1 (B) 2 (C) 3 (D) 4 (E) 5

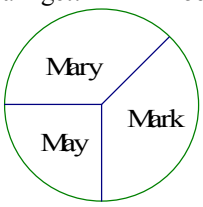
11. Jy het drie 10c muntstukke, twee 5c muntstukke en twee 20c muntstukke. Op hoeveel verskillende maniere kan jy 'n persoon 35c gee?

12. A palindrome is a whole number that reads the same forwards or backwards (e.g. 4774). How many palindromes are there between 100 and 500?

(A) 40 (B) 50 (C) 30 (D) 46 (E) 42

12. 'n Palindroom is 'n getal wat dieselfde lees van links en van regs (bv. 4774). Hoeveel palindrome is daar tussen 100 en 500?

13. This pie chart shows how much pocket money three children get. Mary and Mark get the same amount, and May gets R12. How much pocket money does Mark get?



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

13. Hierdie sirkeldiagram toon hoeveel sakgeld drie kinders kry. Mary en Mark kry ewe veel en May kry R12. Hoeveel sakgeld kry Mark?

14. Of the 35 learners in the Grade 6 class, 18 learners have a dog and 24 have a cat, while 6 have no pets. How many of the learners have a dog and a cat?

(A) 13 (B) 7 (C) 6 (D) 3 (E) 42

14. Daar is 35 leerlinge in die graad 6-klas. 18 Leerlinge het 'n hond en 24 het 'n kat, terwyl 6 geen troeteldier het nie. Hoeveel leerlinge in die klas het 'n hond én 'n kat?

15. Aimee's team is painting the 48 windows on the set of the school play. So far they have painted 16 windows in 80 minutes. If they work at the same rate, how long will they take to paint the remaining windows?

(A) 4 h (B) 3 h (C) $3\frac{1}{2}$ h (D) 2 h 40 min (E) $4\frac{1}{2}$ h

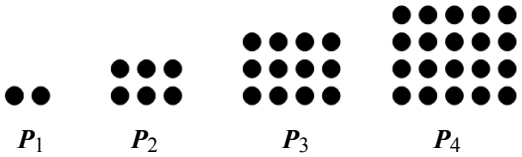
15. Aimee se span moet die 48 vensters op die stel van die skoolopvoering verf. Hulle het sover 16 vensters in 80 minute geverf. As hulle teen dieselfde tempo werk, lank sal dit neem om die oorblywende vensters te verf?

16. The sketch shows the first three patterns in the sequence that John is building with coins. How many coins will he need for the fiftieth pattern in the sequence?

(A) 140 (B) 150 (C) 153 (D) 155 (E) 160

16. Die skets toon die eerste drie patrone in die ry wat John met muntstukke uitpak. Hoeveel muntstukke het hy nodig vir die vyftigste patroon in die ry?

17. Betty uses dots to build patterns as shown below. How many dots will she use for $\boldsymbol{P}_{50}$?



(A) 2601 (B) 1275 (C) 2550 (D) 2500 (E) 2600

17. Betty bou patrone met kolletjies soos hieronder. Hoeveel kolletjies sal sy gebruik vir $\boldsymbol{P}_{50}$?

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

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

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

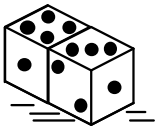
19. In the two-digit number 57, the two digits 5 and 7 are both odd. How many two-digit numbers consist only of odd digits?

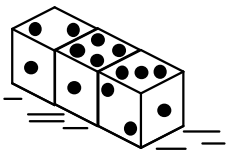
19. In die tweesyfer-getal 57, is die twee syfers 5 en 7 albei onewe. Hoeveel tweesyfer-getalle bestaan net uit onewe syfers?

(A) 30 (B) 35 (C) 25 (D) 15 (E) 50

20. If we place dice side by side in a row on a table, only some of the faces are visible: With 2 dice in the row 8 faces are visible; with 3 dice in the row 11 faces are visible, etc. If 75 dice are placed in a row, how many faces will be visible?

20. As ons dobbelstene op ’n tafel in ’n ry teen mekaar pak, is net sommige sye (vlakke) sigbaar: Met 2 dobblestene in die ry is 8 sye sigbaar; met 3 in die ry is 11 sye sigbaar, ens. Hoeveel sye sal sigbaar wees as 75 dobbelstene so in ’n ry gepak word?





(A) 227 (B) 175 (C) 225 (D) 300 (E) 275

21. Each of the nine small squares in the diagram are to be filled so that each row and each column contains exactly one 1, one 2 and one 3. What must M + N be?

21. Elkeen van die nege klein vierkante in die diagram moet gevul word, sodat elke ry en elke kolom presies een 1, een 2 en een 3 bevat. Wat sal M + N wees?

		M
	2	N
1		

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

22. In the previous question, what is the sum of all nine numbers in the diagram?

22. In die vorige vraag, wat is die som van al nege getalle in die diagram?

(A) 9 (B) 12 (C) 15 (D) 18 (E) 16

23. The number pattern below is called Pascal’s Triangle. The sum of the numbers in *Row 2* is 1 + 2 + 1 = 4. What is the sum of the numbers in *Row 8?*

23. Die getalpatroon hieronder word Pascal se Driehoek genoem. Die som van die getalle in *Ry 2* is 1 + 2 + 1 = 4. Wat is die som van die getalle in *Ry 8?*

1 ← ***Row 0***
1 1 ← ***Row 1***
1 2 1 ← ***Row 2***
1 3 3 1 ← ***Row 3***
1 4 6 4 1 ← ***Row 4***
1 5 10 10 5 1
1 6 15 20 15 6 1

(A) 512 (B) 64 (C) 256 (D) 128 (E) 400

24. One piece of bubble gum and one small chocolate cost 90c. Ten pieces of bubble gum and five small chocolates cost R4,70. How much does one small chocolate cost?

24. Een stuk kougom en een klein sjokolade kos saam 90c. Tien stukke kougom en vyf klein sjokolades kos R4,70. Hoeveel kos een klein sjokolade?

(A) 78c (B) 4c (C) 76c (D) 86c (E) 82c

25. Lulu’s bucket weighs 21 kg when full of water. After she pours out half the water from the bucket, it weighs 12 kg. What is the weight of the empty bucket?

25. Lulu se emmer weeg 21 kg wanneer dit vol water is. Nadat sy die helfte van die water uitgegooi het, weeg dit 12 kg. Wat weeg die leë emmer?

(A) 2 kg (B) 3 kg (C) 9 kg (D) 18 kg (E) 4 kg