

# Mathematics Challenge

## GRADE 6 FINAL ROUND

### 14 OCTOBER 2009

#### 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

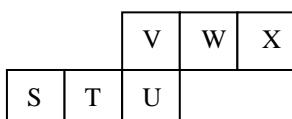
## GRAAD 6 FINALE RONDE

### 14 OKTOBER 2009

#### 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 tydwendend.
- Ons hoop jy geniet dit!

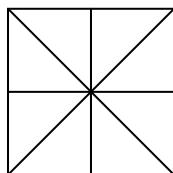
1. If the figure shown is folded to make a cube, then what is the letter opposite the T?



- (A) S      (B) U      (C) V      (D) W      (E) X

2. How many different triangles (of all sizes) are in this figure?

1. As die figuur hieronder word gevou om 'n kubus te vorm, watter letter sal oorkant die T wees?



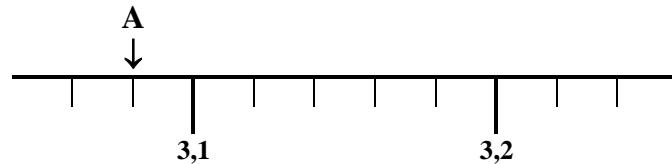
- (A) 8      (B) 10      (C) 12      (D) 14      (E) 16

3. The sum of 7 consecutive numbers is 63. Which is the largest of the 7 numbers?

3. Die som van 7 opeenvolgende getalle is 63. Watter een is die grootste van die 7 getalle?

- (A) 63      (B) 9      (C) 13      (D) 12      (E) 10

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



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

- (A) 2,08      (B) 2,8      (C) 3,0      (D) 3,08      (E) 3,09

5. How many whole numbers divide exactly into 100?

5. Hoeveel heelgetalle deel presies in 100 in?

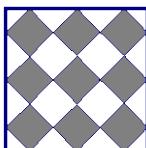
- (A) 8      (B) 6      (C) 7      (D) 10      (E) 9



6. Which of the following divisions has the smallest remainder?

(A)  $4002 \div 4$       (B)  $503 \div 5$       (C)  $604 \div 6$       (D)  $75 \div 7$       (E)  $8883 \div 8$

7. In the diagram, the small squares are all of the same size. What fraction of the large square is shaded?



- (A)  $\frac{9}{10}$       (B)  $\frac{9}{16}$       (C)  $\frac{3}{7}$       (D)  $\frac{3}{5}$       (E)  $\frac{1}{2}$
8. Which of the following is a fraction between  $\frac{5}{6}$  and  $\frac{7}{8}$ ?

(A)  $\frac{4}{5}$       (B)  $\frac{18}{22}$       (C)  $\frac{41}{48}$       (D)  $\frac{8}{9}$       (E)  $\frac{5}{7}$

9. The sum of two numbers is 30. What is the greatest possible product of the two numbers?

(A) 150      (B) 900      (C) 200

9. Die som van twee getalle is 30. Wat is die grootste moontlike produk van die twee getalle?

(D) 400      (E) 225

10. A magic substance is placed in a container, where it doubles in quantity every minute. If the container is full after one hour, after how many minutes was it half-full?

(A) 30      (B) 59      (C) 15

10. 'n Towerstof word in 'n houer geplaas en verdubbel elke minuut in hoeveelheid. As die houer na een uur vol was, na hoeveel minute was die houer half-vol?

(D) 2      (E) 0,5

11. Which of the following fractions is closest to  $\frac{2}{5}$ ?

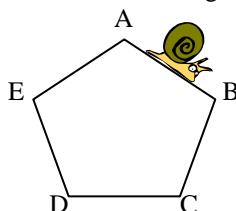
(A)  $\frac{399}{1000}$       (B)  $\frac{199}{500}$       (C)  $\frac{41}{100}$

11. Watter van die volgende breuke is die naaste aan  $\frac{2}{5}$ ?

(D)  $\frac{21}{50}$       (E)  $\frac{3}{10}$

12. A snail starts at corner A and crawls clockwise once around the regular pentagon (a figure with 5 sides of equal length). What side will he be on when he has crawled  $\frac{13}{20}$  of the distance around the pentagon?

12. 'n Slak begin by hoek A en seil kloksgewys een keer rondom die gelyksydige vyfhoek ('n figuur met vyf sye wat almal ewe lank is). Op watter sy sal hy wees wanneer hy  $\frac{13}{20}$  van die afstand rondom die vyfhoek afgelê het?



(A) AB      (B) BC      (C) CD      (D) DE      (E) EA

13. Refer to the previous question.

If each side of the pentagon is 5 cm long, how far has he then still got to go?

13. Verwys na die vorige vraag.

As elke sy van die vyfhoek 5 cm lank is, hoe ver moet hy dan nog gaan?

(A) 16 cm      (B) 16,25 cm      (C) 9 cm      (D) 8,75 cm      (E) 7 cm

14. Which of these fractions is the largest?

(A)  $\frac{7}{15}$

(B)  $\frac{8}{17}$

(C)  $\frac{11}{23}$

14. Watter van hierdie breuke is die grootste?

(D)  $\frac{13}{27}$

(E)  $\frac{5}{11}$

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

(A) 666

(B) 36

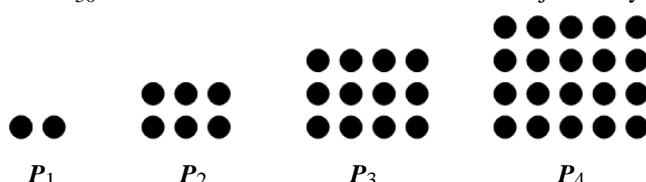
(C) 667

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

(D) 37

(E) 38

16. Betty uses dots to build patterns as shown below. How many dots will she use for  $P_{50}$ ?



(A) 2601

(B) 1275

(C) 2550

(D) 2500

(E) 2600

17. Mr Safe has a 4-digit combination that opens his lock. He remembers that the four digits are 3, 5, 7 and 9, but he has forgotten the correct order. What is the most different combinations that he must try to open the safe?

(A) 4

(B) 8

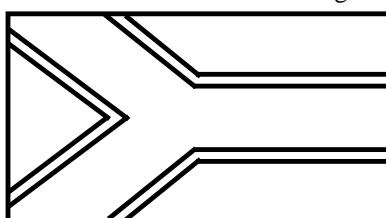
(C) 16

(D) 24

(E) 36

17. Mn. Kluis het 'n vier-syfer kombinasie wat sy slot oopmaak. Hy onthou dat die vier syfers 3, 5, 7 en 9 is, maar hy kan nie die volgorde onthou nie. Wat is die meeste verskillende kombinasies wat hy sal moet probeer om die slot oop te maak?

18. This flag has 7 regions. You want to colour the flag so that no two touching regions are the same colour. What is the least number of colours you need?



(A) 2

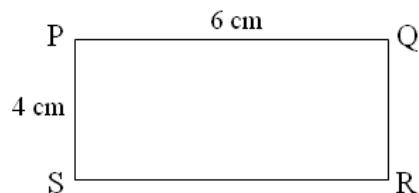
(B) 3

(C) 4

(D) 5

(E) 6

19. You want to enlarge the rectangle below so that the side PS is 6 cm long. How long will side PQ be in the enlargement?



19. Jy wil die reghoek hieronder vergroot sodat die sy PS 6 cm lank is. Hoe lank sal die sy PQ in die vergroting wees?

(A) 7 cm

(B) 8 cm

(C) 9 cm

(D) 10 cm

(E) 12 cm

20. A palindrome is a whole number that reads the same forwards or backwards, e.g. 474. How many 3-digit palindromes are there?

(A) 100

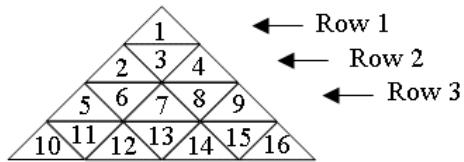
(B) 90

(C) 999

(D) 810

(E) None of these  
Nie een hiervan nie

21. The last questions all refer to this arrangement of numbers. There are three numbers in Row 2 and five numbers in Row 3. If the pattern is continued, how many numbers are there in Row 50?



- (A) 99      (B) 101      (C) 51      (D) 151      (E) 150

22. What is the first (left) number in Row 50?

- (A) 2450      (B) 2500      (C) 2550      (D) 2402      (E) None of these  
Nie een hiervan nie

23. What is the last (right) number in Row 50?

- (A) 2450      (B) 2500      (C) 2550      (D) 2402      (E) None of these  
Nie een hiervan nie

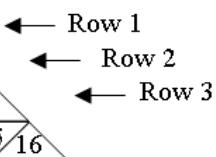
24. What is the middle number in Row 50?

- (A) 2457      (B) 2403      (C) 2557      (D) 2401      (E) None of these  
Nie een hiervan nie

25. What is the sum of all the numbers in Row 50?

- (A) 245100      (B) 155220      (C) 25570      (D) 122550      (E) None of these  
Nie een hiervan nie

21. Die laaste vrae verwys almal na hierdie rangskikking van getalle. Daar is drie getalle in Ry 2 en vyf getalle in Ry 3. As die patroon voortgesit word, hoeveel getalle is in Ry 50?



22. Wat is die eerste (linker) getal in Ry 50?

- (A) 2450      (B) 2500      (C) 2550      (D) 2402      (E) None of these  
Nie een hiervan nie

23. Wat is die laaste (regter) getal in Ry 50?

- (A) 2450      (B) 2500      (C) 2550      (D) 2402      (E) None of these  
Nie een hiervan nie

24. Wat is die middelste getal in Ry 50?

- (A) 2457      (B) 2403      (C) 2557      (D) 2401      (E) None of these  
Nie een hiervan nie

25. Wat is die som van al die getalle in Ry 50?

- (A) 245100      (B) 155220      (C) 25570      (D) 122550      (E) None of these  
Nie een hiervan nie