SA Mathematics Challenge 2014
GRADE 7 FIRST ROUND

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!

SA Wiskunde-uitdaging 2014
Graad 7 Eerste Ronde

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. Which statement is *not* true?

(A) $1 + 1 - 1 \times 1 = 1$
(B) $1 - 1 \times 1 + 1 = 1$
(C) $2 - 2 \div 2 + 2 = 2$
(D) $3 - 3 + 3 \times 3 = 9$
(E) $4 - 4 \div 4 \times 4 = 0$

(A) A (B) B (C) C (D) D (E) E

1. Watter bewering is *nie* waar nie?

(A) $1 + 1 - 1 \times 1 = 1$
(B) $1 - 1 \times 1 + 1 = 1$
(C) $2 - 2 \div 2 + 2 = 2$
(D) $3 - 3 + 3 \times 3 = 9$
(E) $4 - 4 \div 4 \times 4 = 0$

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2. Part of a calendar is shown below. The sum of the numbers in the first row (from Monday to Thursday) is 26. What is the date of the Monday in the first row?

2. 'n Deel van 'n kalender word hieronder getoon. Die som van die getalle in die eerste ry (van Maandag tot Donderdag) is 26. Wat is die datum van die Maandag in die eerste ry?

Mon	Tues	Wed	Thurs

(A) 23 (B) 26 (C) 10 (D) 8 (E) 5

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3. What is the angle between the hour hand and the minute hand on an analogue clock at 08:00?

(A) 20° (B) 120° (C) 130° (D) 150° (E) 200°

3. Wat is die hoek tussen die uur- en minuutwysers op 'n analooghorlosie om 08:00?

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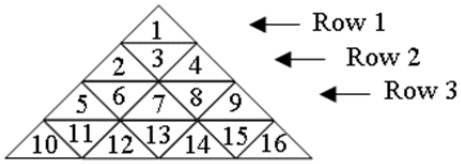
4. Numbers are arranged in a triangle as shown. There are three numbers in Row 2 and five numbers in Row 3. If the pattern is continued, how many numbers are there in Row 20?

4. Getalle word in 'n driehoek rangskik soos getoon. Daar is drie getalle in Ry 2 en vyf getalle in Ry 3. As die patroon voortgesit word, hoeveel getalle is in Ry 20?



(A) 19 (B) 21 (C) 33 (D) 39 (E) 41

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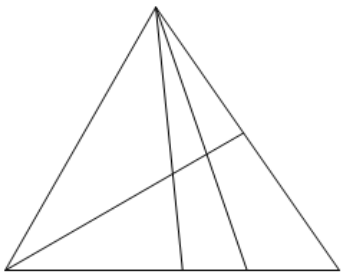
AMESA The Association for Mathematics Education of South Africa

5. Refer to the previous question. What is the first (left) number in Row 20?

(A) 362 (B) 400 (C) 401 (D) 324 (E) 200

5. Verwys na die vorige vraag. Wat is die eerste (linker) getal in Ry 20?

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



(A) 11 (B) 12 (C) 13 (D) 14 (E) 15

6. Hoeveel verskillende driehoeke (van alle groottes) is daar in hierdie figuur?

7. Calculate the value of

$$1+\frac{1}{1+\frac{1}{3}}$$

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

7. Bereken die waarde van

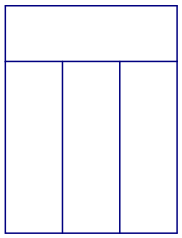
$$1+\frac{1}{1+\frac{1}{3}}$$

8. A car is travelling at 60 km/h. How many metres does it cover in 12 seconds?

(A) 200 (B) 240 (C) 720 (D) 500 (E) 600

8. ’n Motor beweeg teen 60 km/h. Hoeveel meter beweeg dit in 12 sekondes?

9. In the figure below, there are four equal rectangles. The longer side of each rectangle is 9 cm long. What is the perimeter of the figure?



(A) 36 cm (B) 42 cm (C) 45 cm (D) 48 cm (E) 54 cm

9. Die figuur hieronder bestaan uit vier ewe-groot reghoeke. Die langste sy van elke reghoek is 9 cm lank. Wat is die omtrek van die figuur?

10. X567Y is a five-digit number which is divisible by 3. What is the largest possible value of Y?

(A) 3 (B) 6 (C) 7 (D) 8 (E) 9

10. X567Y is ’n vyf-syfer getal wat deelbaar is deur 3. Wat is die grootste moontlike waarde van Y?

11. In a test consisting of 20 multiple choice questions, 6 points are awarded for each correct answer and 2 points are deducted for each wrong answer. David answered all the questions and scored 88. How many questions did David answer correctly?

(A) 15 (B) 16 (C) 17 (D) 18 (E) 19

11. In ’n toets bestaande uit 20 veelkeuse vrae, verdien elke korrekte antwoord 6 punte, en vir elke verkeerde antwoord word 2 punte afgetrek. David het al die vrae beantwoord en ’n telling van 88 punte behaal. Hoeveel vrae het David korrek beantwoord?

12. To find the number in a box in the diagram below, we apply the following rule to the two numbers immediately below the box:

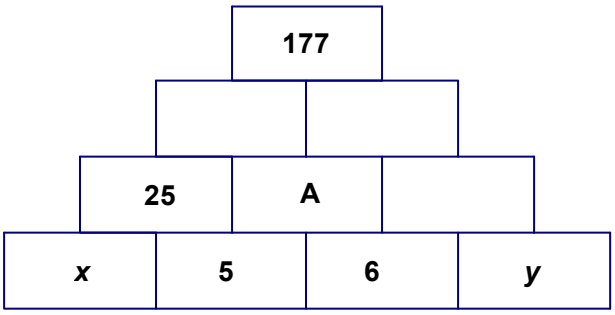
"Multiply the number on the left by 3 and then subtract the number on the right".

For example, $A = 3 \times 5 - 6 = 9$.
What is the value of x?

12. Om die getal in 'n boks in die diagram hieronder te bereken, pas ons die volgende reël toe op die twee getalle direk onder die boks:

"Vermenigvuldig die getal links onder met 3 en trek dan die getal regs af".

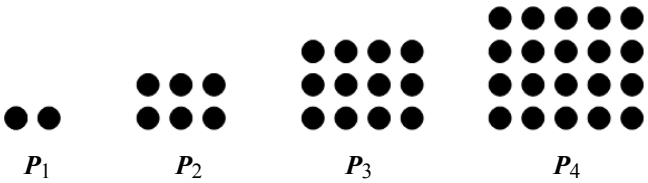
Byvoorbeeld, $A = 3 \times 5 - 6 = 9$.
Wat is die waarde van x?



(A) 10 (B) 20 (C) 15 (D) 70 (E) $6\frac{2}{3}$

13. Sipho uses dots to build patterns as shown below. How many dots will he use for P_{50}?

13. Sipho bou patrone met kolletjies soos hieronder. Hoeveel kolletjies sal hy gebruik vir P_{50}?



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

14. When a bucket is half full of water, it has a mass of 12 kg. When the bucket is one-third full of water it has a mass of 10 kg. What is the mass of the empty bucket?

(A) 2 kg (B) 5 kg (C) 6 kg (D) 4 kg (E) 8 kg

14. Wanneer 'n emmer halfvol water is, het dit 'n massa van 12 kg. Wanneer die emmer een-derde vol water is, het dit 'n massa van 10 kg. Wat is die massa van die leë emmer?

15. The average of five numbers is 60. If the smallest number is replaced by 80, the average is 65. What number was replaced?

(A) 60 (B) 55 (C) 50 (D) 48 (E) 45

15. Die gemiddelde van vyf getalle is 60. As die kleinste getal vervang word met 80, is die gemiddelde 65. Watter getal is vervang?

16. If $3! = 3 \times 2 \times 1$ and $4! = 4 \times 3 \times 2 \times 1$, what is the value of $\frac{20!}{19!}$?

(A) 20 (B) 19 (C) 39 (D) 380 (E) 400

16. As $3! = 3 \times 2 \times 1$ en $4! = 4 \times 3 \times 2 \times 1$, wat is die waarde van $\frac{20!}{19!}$?

17. All the counting numbers are arranged in columns as shown below. In which column is 2014?

17. Al die natuurlike getalle word in kolomme rangskik soos hieronder. In watter kolom is 2014?

A	B	C	D	E	F	G
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
⋮	⋮	⋮	⋮	⋮	⋮	⋮

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

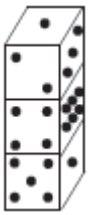
18. Four chocolates and two cooldrinks cost R35, while two chocolates and four cooldrinks cost R43. What does one chocolate and one cooldrink cost?

18. Vier sjokolades en twee koeldranke kos saam R35, terwyl twee sjokolades en vier koeldranke R43 kos. Hoeveel kos een sjokolade en een koeldrank?

(A) R10 (B) R11 (C) R12 (D) R13 (E) R16

19. Three dice with faces numbered 1 to 6 are stacked as shown. Seven of the 18 faces are visible, and 11 faces hidden (side, back, bottom, between). How many dots are *not* visible?

19. Drie dobbelstene met hul sye genommer van 1 tot 6 word gepak soos getoon. Sewe van die 18 sye is sigbaar en 11 sye is nie sigbaar nie (links, agter, onder, tussen). Hoeveel kolletjies is altesaam *nie* sigbaar nie?



(A) 21 (B) 22 (C) 31 (D) 41 (E) 51

20. In a village, in one month, one-tenth of the people are sick and nine-tenths are well. In the next month, seven-tenths of those who were sick are now well, while three-tenths of the people who were well are now sick. What fraction of the people is sick at the end of the second month?

20. In ’n dorpie is daar in ’n sekere maand een-tiende van die mense siek en nege-tiendes is gesond. In die volgende maand is sewe-tiendes van die mense wat siek was nou gesond, terwyl drie-tiendes van die mense wat gesond was nou siek. Watter breuk van die mense is aan die einde van die tweede maand siek?

(A) $\frac{1}{10}$ (B) $\frac{1}{5}$ (C) $\frac{3}{10}$ (D) $\frac{2}{5}$ (E) $\frac{1}{2}$