SA Mathematics Challenge 2016
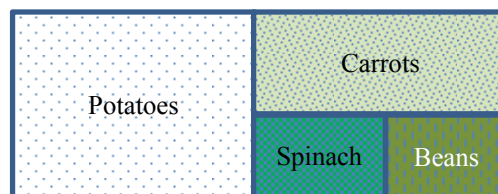# Grade 5 Final Round
27 July 2016

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!

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1. What number between 30 and 45 is divisible by seven, but not by six?
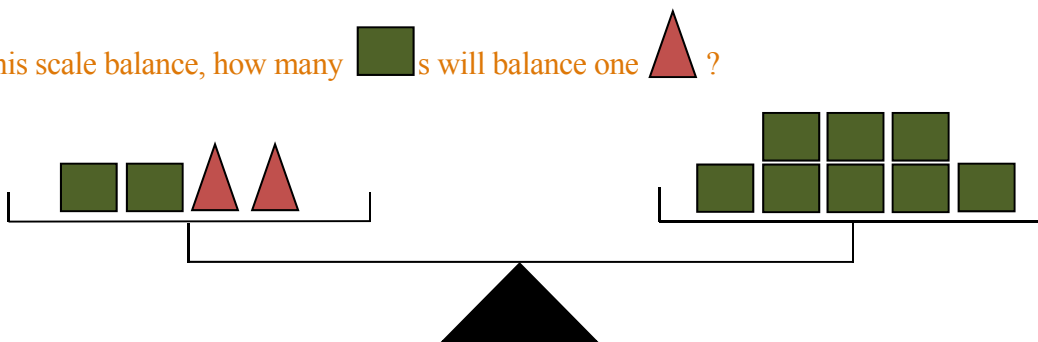
    (A) 36   (B) 37   (C) 42   (D) 35   (E) 49

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2. Thobeka planted a rectangular vegetable garden. Half the garden was planted with potatoes. She then planted half of the ground left with carrots. She then planted spinach in half of the rest. She then planted beans on the remaining part. What fraction of the garden had beans planted on it?

    (A) $\frac{1}{8}$ (B) $\frac{3}{16}$ (C) $\frac{1}{4}$ (D) $\frac{3}{8}$ (E) $\frac{5}{32}$

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3. On this scale balance, how many ☐s will balance one △?

    (A) 8   (B) 6   (C) 5   (D) 4   (E) 3

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4. Mr Rasehwete was born in 1922. In what year was his 85th birthday celebrated?

   (A) 1992   (B) 2002   (C) 1997   (D) 2007   (E) 2005

5. The table shows the number of people who attended the two films Star Wars and Matrix at a movie theatre over a weekend. How many more people saw Star Wars than Matrix?

Day	Star Wars	Matrix
Friday	250	550
Saturday	880	620
Sunday	720	480

   (A) 300   (B) 100   (C) 250   (D) 200   (E) 160

6. On Sunday, 200 people went to the beach and 300 went to the park. One out of two people at the beach were adults. Two out of three people at the park were children. How many children were there altogether at the beach and at the park?

   (A) 300   (B) 400   (C) 500   (D) 200   (E) 100

7. Matshidiso collects rocks. If she groups the rocks in fives there will be four left over. If she groups the rocks in fours there will be three left over. If she groups the rocks in threes there will be two left over. She has fewer than 100 rocks in her collection. How many rocks does she have?

   (A) 59   (B) 47   (C) 54   (D) 69   (E) 39

8. In how many different ways can the four friends be arranged in a line next to each other for a photograph?

   (A) 4   (B) 8   (C) 12   (D) 16   (E) 24

9. How many different amounts of money can be created using one or more of these coins? There are three 10c and five 20c coins.

   (A) 10   (B) 12   (C) 11   (D) 13   (E) 12

10. In a triathlon race an athlete swims 2 km in 25 minutes, then cycles 90 km in 2 hours and 25 minutes, and then runs 20 km in 1 hour and 35 minutes. If he starts the race at 09:03 when should he expect to reach the finish line?

    (A) 13:28   (B) 13:25   (C) 13:00   (D) 13:30   (E) 13:33

11. Mary noticed that in some dates, the sum of the day and month equals the year (written as the last two digits), for example 13/02/15 (13+2 = 15) and 03/12/15 (3+12 = 15). She calls such dates *sum dates*. How many *sum dates* are there in the year 2016?

    (A) 30   (B) 31   (C) 8   (D) 12   (E) 16

12. Two standard dice numbered 1 to 6 are rolled together. In how many different ways can we get that the two numbers on the dice are consecutive numbers, for example 5 and 6?
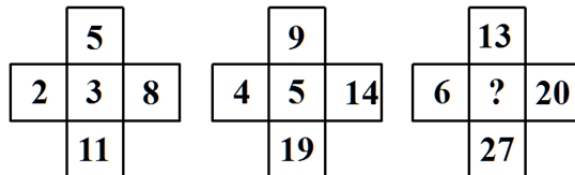
    (A) 5   (B) 12   (C) 4   (D) 10   (E) 8

13. What is the 2016th letter in this continuing pattern?

    SAMATHSCHALLENGESAMATHSCHALLENGESAMA…

    (A) S   (B) A   (C) M   (D) C   (E) E

14. Which number replaces the question mark?

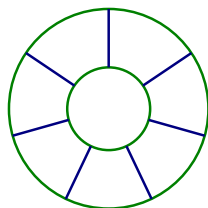|	5				9				13	
2	3	8		4	5	14		6	?	20
	11				19				27	

    (A) 25   (B) 16   (C) 12   (D) 26   (E) 7

15. How many two-digit numbers have a tens digit that is greater than the units digit?

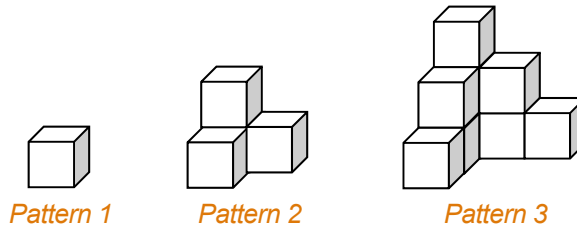   (A) 32   (B) 34   (C) 45   (D) 35   (E) 21

16. What is the least number of colours needed to paint this figure so that no two regions with a common border have the same colour?

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

17. Nombulelo builds a pattern of cubes as shown below.

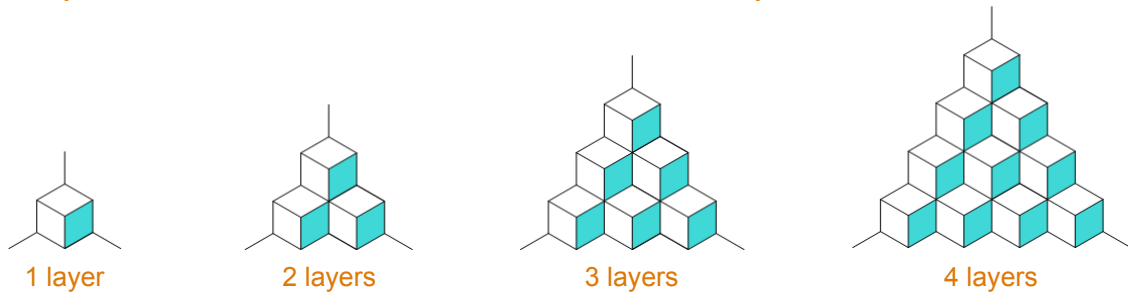   How many cubes will there be in the bottom row in *Pattern 20?*

    Pattern 1   *Pattern 2*   *Pattern 3*

    (A) 21   (B) 41   (C) 39   (D) 42   (E) 38

18. In question 17: How many cubes will there be altogether in *Pattern 20?*

    (A) 312   (B) 400   (C) 412   (D) 441   (E) 40

19. Cubes are stacked in the corner of a room as shown below.

    How many cubes will there be in the bottom row of a stack of 6 layers?

    1 layer   2 layers   3 layers   4 layers

    (A) 21   (B) 20   (C) 18   (D) 15   (E) 13

20. In question 19: How many cubes will there be altogether in the stack of 6 layers?

    (A) 35   (B) 56   (C) 36   (D) 45   (E) 21