



**KWAZULU NATAL  
PROBLEM SOLVING**

**MATHEMATICS  
CHALLENGE 2006**

**GRADE 7**

**DATE:** THURSDAY 24 AUGUST 2006  
**DURATION:** 1 hour

**GENERAL INFORMATION**

1. Congratulations on being selected to participate in this challenge.
2. This examination paper consists of 20 questions.
3. Enter your final answer in the correct block on the ANSWER SHEET. Working details are not required.
4. Candidates that qualify to the SECOND ROUND will be required to show full working details.
5. Each question is worth 1 point. No marks are deducted for incorrect answers.
6. Calculators or other computing devices are NOT allowed.
7. Some questions have blanks. You are expected to fill in the blanks.
8. For multiple choice questions, write only the LETTER of your choice.
9. Please do not turn over until the invigilator gives you the signal

1. Give the value of  $\frac{3}{5} \div \frac{1}{3}$ .  
A. 1                      B. 3  
C. 6                      E. 9

2. Determine the value of  
 $48 \times 36 + 48 \times 14$ .

3. In the following addition problem each letter represents a different digit.

$$\begin{array}{r} A\ 3\ B \\ +\ 5\ B\ C \\ \hline 9\ 0\ 0 \end{array}$$

Then  $A + B + C = \dots\dots$

[Same as  $A3B + 5BC = 900$ ]

4. If 11 toys cost R157 then what will 33 such toys cost?

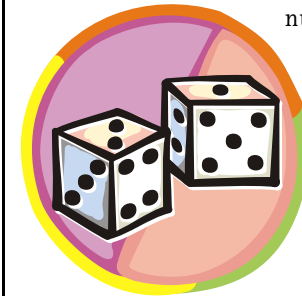


- (A) R459                      (B) R471  
(C) R483                      (D) R495

5. If  $636 \times 96 = 61056$  and  $636 \times 24 = 15264$  then write down the value of  $636 \times 72$

- (A) 45792                      (B) 45782  
(C) 45772                      (D) 45762

6. Two views of a false die (dice) are shown. What number is opposite 2?



7.  $25 \times 16 \times 125 \times 8$  will end in ..... zeros.

- (A) 1                              (B) 3  
(C) 5                              (D) 7

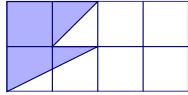
8. A well  $\frac{1}{3}$  full holds 75 litres.



How much, in litres, does it hold when it is  $\frac{5}{9}$  full?

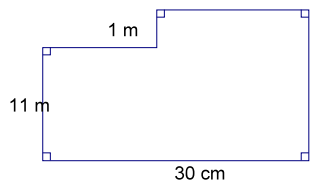
- (A) 125                              (B) 175  
(D) 200                              (E) 225

9. 8 small squares each of area  $2\text{ m}^2$ , are placed to form a rectangle as shown.



What is the shaded area in  $\text{m}^2$ ?

10. Find the perimeter of the following figure.



- (A) 80m (B) 82m  
(C) 84m (D) 86m

11. A pen and a ruler cost R4,40.

Five rulers cost the same as 3 pens.



What is the cost of a pen?

12. Sherry was asked her age. She replied, 'If you multiply my age as it was 4 years ago by 6 it will be 3 times my age in 5 years time'.



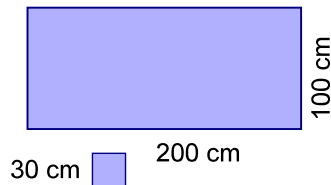
What is Sherry's age?

- (A) 13 (B) 15  
(C) 17 (D) 19

13. A is heavier than E but lighter than B.  
B is heavier than C.  
D is heavier than E.  
C is lighter than E.

Who is the lightest of them?

14. A rectangular carpet measures 200 cm by 100 cm.



Find the largest number of whole carpet squares of side 30 cm that can be cut from this carpet.

15. A car is traveling at an average speed of 72km per hour.

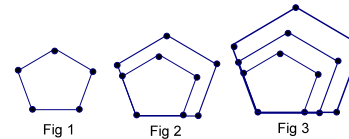
100 m ahead is a child crossing the road.



What is the most amount of time in seconds the child has to avoid being hit by the car?

- (A) 2 (B) 3  
(C) 4 (D) 5

16. Study the pattern forming.



If the pattern continues, how many dots will there be in figure 40?

17. Observe the following arrangement of numbers

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1
2 3 4
5 6 7 8 9
10 11 12 13 14 15 16
. . . . .
    
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What is the 2nd number of the 41st row?

18. A; B; C and D have secret numbers.  
A and B are consecutive natural numbers.  
C and D are also consecutive natural numbers.  
B is 6 less than C  
The sum of all 4 numbers is 84.  
Find  $A + B$ .

19. In a bus there are 25 adults and many more children.

The difference between the number of children and the adults is equal to three fifths of the number of people in the bus.

How many people are there in the bus?

20. Consider

$$\begin{aligned}
 1 \times 2 \times 3 + 2 &= 8 \\
 2 \times 3 \times 4 + 3 &= 27 \\
 3 \times 4 \times 5 + 4 &= 64 \\
 &\dots \\
 &\dots \\
 &\dots \\
 9 \times 10 \times 11 + 10 &= 1000
 \end{aligned}$$

If  $a \times b \times c + b = 8000$  then what is the value of 'a'?