Candidate's No. .....

THE UNITED REPUBLIC OF TANZANIA

MINISTRY OF EDUCATION AND VOCATIONAL TRAINING

FORM TWO SECONDARY EDUCATION EXAMINATION, 2013

0041 BASIC MATHEMATICS

TIME: 2½ HOURS

INSTRUCTIONS

1. This paper consists of sections A and B.
2. Answer **ALL** questions showing clearly all the working and answers in the spaces provided.
3. **ALL** writing must be in blue or black ink **EXCEPT** drawings which must be in pencil.
4. Write your examination number on the top right corner of every page.
5. Mathematical tables, geometrical instruments and graph papers may be used where necessary.
6. Cellphones and calculators are not allowed in the examination room.

FOR EXAMINER'S USE ONLY					
QUESTION NUMBER	SCORE	INITIALS OF EXAMINER	QUESTION NUMBER	SCORE	INITIALS OF EXAMINER
1			14		
2			15		
3			16		
4			17		
5			18		
6			19		
7			20		
8			21		
9			22		
10			23		
11			24		
12			25		
13					
TOTAL					

This paper consists of 8 printed pages.

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SECTION A (60 MARKS)

1. The numbers 2, 3, 5 and Y have an average equal to 4. What is the number represented by the letter Y?

2. Which numbers are equal to their squares?

3. Simplify the expression $\left(\frac{5}{3}\right)^3$

4. The difference in the measure of two supplementary angles is 102°. Find the two angles.

5. In the year 2012, the population of the world was 6,760,000,000. Write this population number in a scientific notation.

6. If N is a number such that when multiplied by 0.75 gives 1, find the value of N.

7. What percent of 1 hour is 15 minutes?

8. Write the fraction $\frac{31}{8}$ as a mixed number.

9. What is x if $x + 2y = 16$ and $y = 3$?

10. If $x^2 - y^2 = 10$ and $x + y = 2$, find the value of $x - y$

11. Rationalize the denominator of the expression $\frac{2}{3-\sqrt{5}}$

12. Simplify the algebraic expression $-2(x - 3) + 4(-2x + 8)$

13. Write the number 2373695 in words

14. Write $2\log_3 x + \log_3 5$ as a single logarithmic expression

15. Convert the expression 4×10^{-2} into decimal number.

16. If the area of a square tomato garden is 361 m^2, find its perimeter.

17. What is the denominator when $\frac{5}{6}$ is multiplied by $\frac{7}{8}$?

18. Without using mathematical tables simplify the expression $\sqrt{9\sin(162° - 72°)}$

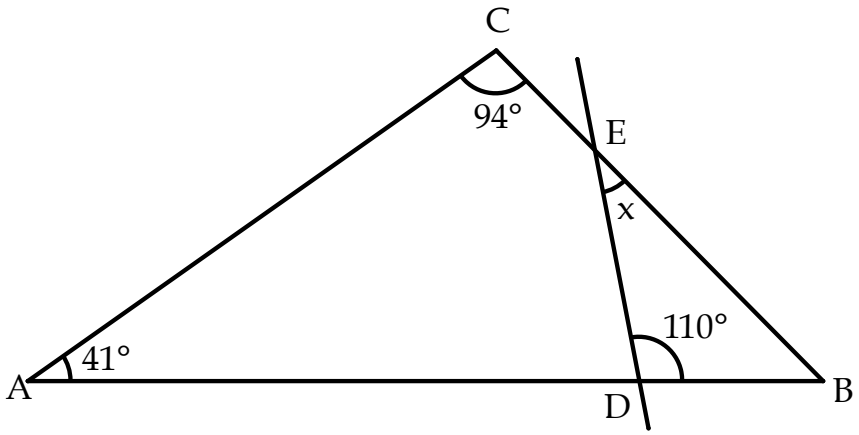
19. Find the Least Common Multiple of 24, 36 and 48.

20. In a class of 75 form two students, 50 like Physics and 10 like Physics and Chemistry. Apply the general formula to find the number of students who like Chemistry.

SECTION B (40 MARKS)

21. In a bag containing small balls, $\frac{1}{4}$ are green, $\frac{1}{8}$ are blue, $\frac{1}{12}$ are yellow and the remaining 26 are white. How many balls are blue?

22. Find the size of angle x in the figure below.

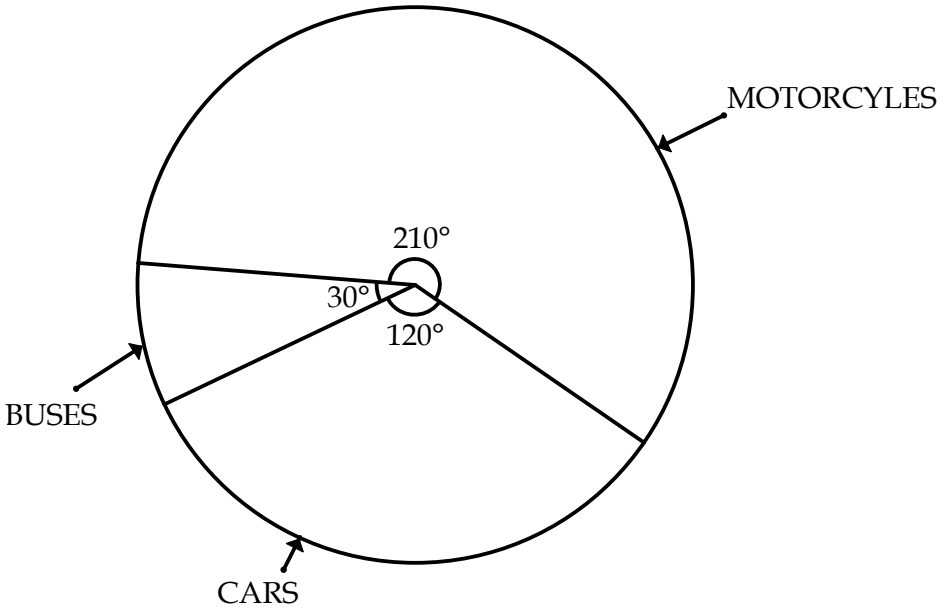


23. In a right angled triangle, $\tan A = \frac{3}{4}$. Find $\sin A$ and $\cos A$.

24. Draw a Venn diagram to represent the relationship between the sets $A = \{1, 2, 5, 6, 7, 9, 10\}$ and $B = \{1, 3, 4, 5, 6, 8, 10\}$

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25. The following pie chart shows a survey of the number of cars, buses and motorcycles which pass a particular junction. The survey shows that there were 150 buses which were passing the junction.



From the given information determine:

(i) The fraction of motorcycles.

(ii) The percentage of cars which were passing the junction.

(iii) The total number of the vehicles (motorcycles, cars and buses).