

SMZ

ZANZIBAR EXAMINATION COUNCIL
FORM THREE ENTRANCE EXAMINATION 2014
MATHEMATICS

TIME: 3:00 Hours

INSTRUCTIONS TO CANDIDATES

1. This paper consists of TWO sections A and B.
2. Answer ALL questions in Section A and any FOUR questions in section B.
3. Each question in Section A carries 7 marks while each question in Section B carries 11 marks.
4. ALL WORKING must be clearly shown in both sections.
5. Calculators and mobile phones are not allowed in the examination room.
6. Write your examination number on every page in the spaces provided.
7. You are required to circle each question you have attempted in the Question number "column".

QUESTIONS NUMBER	FOR EXAMNAER'S USE ONLY	
	MARKS	SIGNATURE
1.		
2.		
3.		
4.		
5.		
6.		
7.		
9.		
10.		
11.		
12.		
13.		
14.		

THIS PAPER CONSISTS OF 20 PRINTED PAGES

SECTION A (60 MARKS)

List down all factors of

i) 16

 $16 : 1, 2, 4, 8, 16$

(ii) 24

 $24 : 1, 2, 3, 4, 6, 8, 12, 24$

Hence find the greatest common factor (GCF) of 16 and 24.

 $GCF : 8$

- b) i) Round off each of the numbers 8.7, 69.5, 210.11 and 146.8 to the nearest unit.

- ii) By putting the rounded numbers in b(i) above, approximate the value of the numerical expression:

$$\frac{146.8 \times 210.11}{69.5 \times 8.7}$$

2. d) Simplify: $(3\frac{1}{2} + 4\frac{3}{5}) \times 2\frac{1}{2}$

b) i) Increase 75 by 8 percent

ii) Decrease $12\frac{1}{2}$ by 12 percent

3. a) Perform the following operations

i) $(5\text{km} + 50\text{m} + 3000\text{cm}) + (2\text{km} + 25\text{m} + 500\text{cm})$

giving your answer in metres

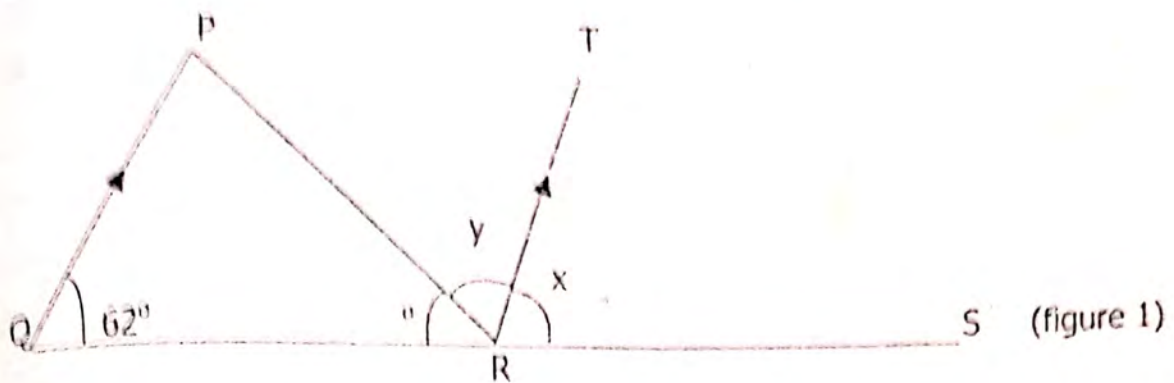
Candidate's Number.....

- ii) $(3.5 \text{ litres} + 500 \text{ millilitres}) - (1.8 \text{ litres} + 700 \text{ millilitres})$

giving your answer in milliliters

- b) A person changed 450 US dollars and obtained 765,000 T. shillings. What was the exchange rate in T. shillings per dollar?

4. a) In the figure 1 below, find the size of the angles marked by the letters y and x .



- b) A rectangular garden of length 24 metres has an area of 240 metre square. Determine:

- i) Its width

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ii) The length of its diagonal

a) What number must be added to the expression $x^2 + 6x + 7$ to make it a perfect square?

b) Ali is now 12 years younger than her sister Masha. The ratio of their ages three years ago was 1:3.

i) Translate the above statement into a mathematical equation.

ii) Hence, by solving the resulting equation find their present ages.

c) Solve for t : $4t - 2(5 - t) = 8 - 3(t + 1)$

- a) Rationalize the denominator and simplify

$$\frac{\sqrt{6}}{\sqrt{6} - \sqrt{3}}$$

- b) Obtain the values of x and y such that $2^{x \cdot y} = 16$ and $3^{x \cdot y} = 9$

7. a) Determine the exact values of:

i) $\sqrt{2} (\cos 45^\circ + \sin 45^\circ)$

ii) $2\sqrt{3} \cos 30^\circ - \tan 45^\circ$

b) If $\cos P = \frac{15}{17}$ where P is acute angle, find the value of

i) $\sin P$

(ii) $\tan P$

8. a) Solve for y

$$\log_{10}(y+7) = \log_{10} y + 1$$

b) Find the value of $\log \sqrt[3]{\left(\frac{b}{a}\right)^2}$ given that $\log a = 1.83$ and $\log b = 2.73$

c) Suggest any four ways of reducing Industrial pollution in the World

This image shows a single page of white paper with horizontal black ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

- b) i) Plot the points $A(4,0)$, $B(0,3)$ and the origin on a graph paper. What is the common name of the resulting shape when these points are joined?

- ii) Calculate the length of the line from A to B.

10. a) i) How many subsets are there in a set with three (3) elements?

List down all subsets of the set $S = \{a, b, c\}$

[illegible]

- i) Both subjects

(ii) Physics but not Mathematics

- 11 a) i) Express the equation $\frac{x+3}{x-1} = 2(x-5) + 11$ in the form $x^2 + bx + c = 0$ where b and c are integers.

- ii) Solve the resulting equation in part 11 (a) (i) above by factorization method.

- b) Given that $m * n = \frac{1}{2}(m + n) - m$. Evaluate $(9 * 17) * 6$.

2. a) If $A:B = 3:4$ and $B:C = 5:6$, find $C:A$.

- b) In setting the selling price P of an article, a shopkeeper doubled its price. What will be the profit of the article whose selling price is T . Shillings 46,500?

13. a) In the figure 2 below, $AB = 4\text{cm}$, $BC = 3\text{cm}$ and the area of the rectangle $ACDE$ is 20m^2 .

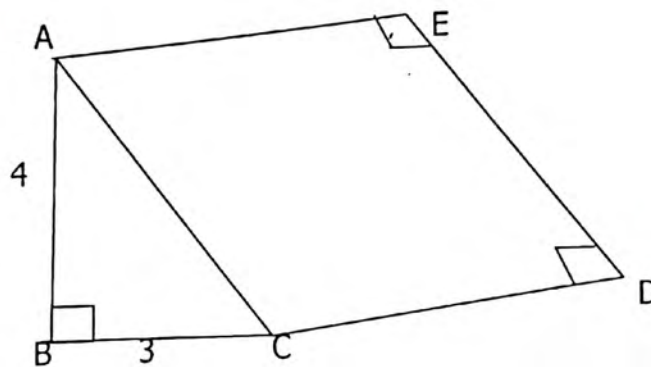


Figure 2

- i) Determine the perimeter of the polygon $ABCDE$.

ii) What is the name given to this polygon?

b) Figure 3 shows triangles KLM and KPN.

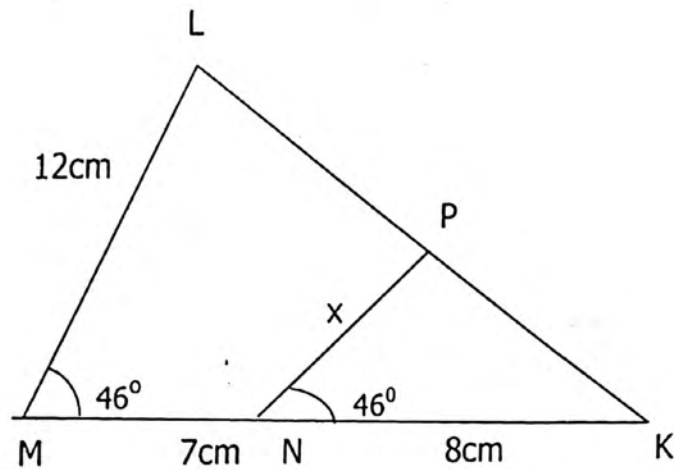


Figure 3

i) Show that these triangles are similar

- i) Using similarity property, calculate the length of the side labeled x .

14. a) The ages of 30 people (adults) who attended a clinic on one part were recorded as follow.

35	46	41	59	55	47	38	32	27	35
52	45	40	56	49	53	33	42	39	36
43	42	53	41	43	29	32	25	38	44

- i) Prepare a frequency distribution which includes cumulative frequencies by grouping the ages into class intervals 25-29, 30-34, ..., 55 - 59.

- ii) Hence draw the cumulative frequency curve (ogive).

- b) Ten (10) packets of a chemical are such that, five (5) weigh 20.01g each and three (3) weigh 19.98 g each and 2 weigh 20.03g each. Calculate mean (average) mass of the packets.

[illegible]