Student's Assessment Number.....

THE UNITED REPUBLIC OF TANZANIA
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA
FORM TWO NATIONAL ASSESSMENT

041 BASIC MATHEMATICS

Time: 2:30 Hours **Year : 2021**

Instructions

1. This paper consists of **ten (10) compulsory** questions.
2. Show clearly all the working and answers in the space provided.
3. All writing must be in blue or black ink **except** drawings which must be in pencil.
4. NECTA mathematical tables, geometric instruments and graph papers may be used where necessary.
5. All communication devices, calculators and any unauthorised materials are **not** allowed in the assessment room.
6. Write your **Assessment Number** at the top right corner of every page.

FOR ASSESSOR'S USE ONLY		
QUESTION NUMBER	**SCORE**	**ASSESSOR'S INITIALS**
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
TOTAL		
CHECKER'S INITIALS		

1. (a) (i) Write 498,030 in words.

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(ii) Express the number given in part (a) (i) in standard notation.

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(iii) By using the listing method, write the lowest common multiple of: 3, 10 and 15.

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(b) (i) Write in numerals: nine hundred ninety nine million nine hundred ninety nine thousand nine hundred and one.

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(ii) Determine the number of significant figures in each of the numbers: 400,780 and 0.00606, then approximate each number into one significant figure.

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2. (a) (i) Write the fractions: $\frac{2}{3}$, $\frac{3}{4}$, $\frac{5}{8}$, and $\frac{1}{2}$ in order of magnitude starting with the smallest fraction.

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(ii) Find the product of the fractions given in part (a) (i).

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(b) Subtract $0.0\dot{2}$ of Tsh. 270,000 from 36% of Tsh. 50,000.

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3. (a) Find the value of 500 cm + 3150 mm + 3.5 m. (Give the answer in metres).

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(b) Find the number of years in which Tshs. 20,000 will earn an interest of Tshs. 4,800 if the interest rate is 4% per annum.

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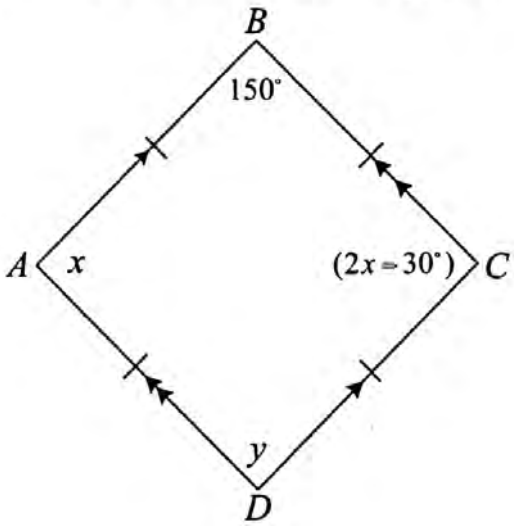
4. (a) (i) Write the name of the polygon *ABCD* represented in the following figure.



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(ii) From the figure given in part (a) (i), find the values of x and y.

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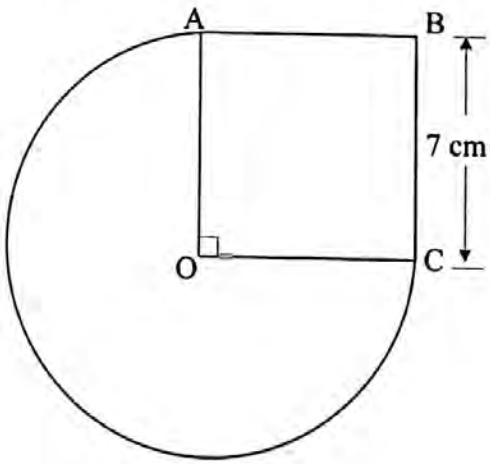
(b) Calculate the area of the following figure, if O is the centre of the circle and $OABC$ is a square.



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5. (a) The age of the father is three times the age of his son. If the sum of their ages is 64 years, find their ages.

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(b) Solve the quadratic equation $x^2 + 7x + 12 = 0$ by using the factorization method.

6. (a) A line passes through the points A(6, 4) and B(12, 6). Find the slope and the equation of the line.

(b) (i) A translation takes the origin to (-3, - 4). Without drawing, find where it takes Q(1,-2).

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(ii) Find the images of the points A (-5, 2) and B (4, -7) after reflection in the y –axis.

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7. (a) Find the value of x in the equation $\left(\frac{1}{3}\right)^{\sqrt{x}} = 81^{-x}$.

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(b) If $\log_{10}\left(\frac{x}{5}\right) = \log_{10}\left(\frac{2}{x}\right) + 1$, find the value of x.

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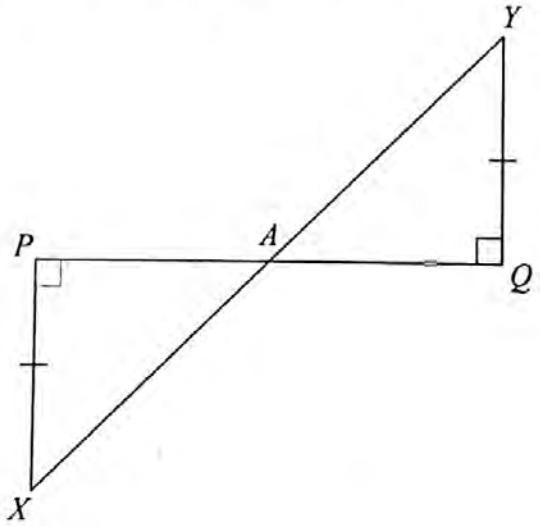
8. (a) In the following figure, $\overline{PX}$ and $\overline{QY}$ are perpendicular to $\overline{PQ}$ and $\overline{PX} = \overline{QY}$. Show that the two triangles XPA and YQA are congruent.



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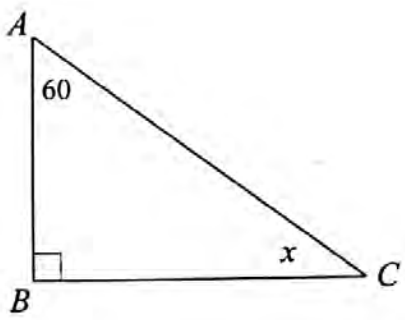
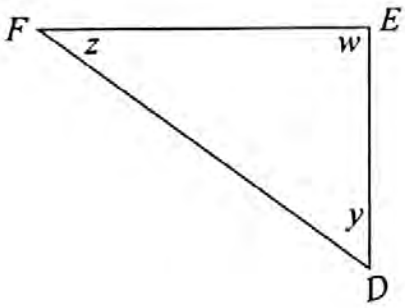
(b) Triangles ABC and DEF are similar. Find the size of the angles labeled x, y, z and w.





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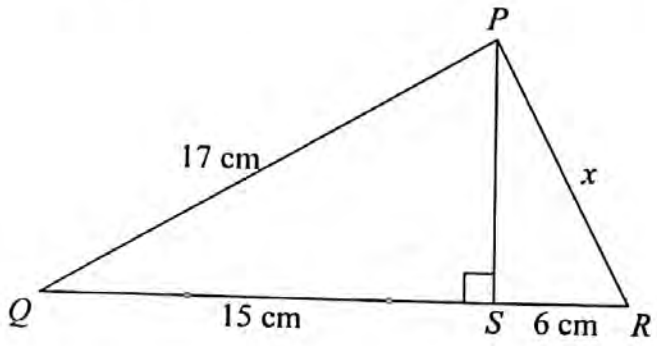
(a) In the following figure, $\overline{PQ} = 17$ cm, $\overline{QS} = 15$ cm, $\overline{RS} = 6$ cm and $\overline{PR} = x$. Find the value of x.



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(b) The angle of elevation of the top of a vertical building from a point on the ground is 25°. The point on the ground is 80 m away from the base of the building. By sketching a diagram representing this information, calculate the height of the building. Write the answer correct to one decimal place.

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10. (a) In a class of 30 students, 17 participate in English debate and 12 participate in both English debate and Mathematics club. If every student is required to participate in at least one of these two events, find the number of students who participate in;

(i) English debate only.

(ii) Mathematics club only.

(b) The ages of students selected to participate in a debate competition were recorded as follows:

13	15	17	16	15	14	16	18	17	16
15	14	13	16	14	17	15	16	15	16

(i) Prepare a frequency table showing the ages of students and their corresponding frequencies.

(ii) Draw a frequency polygon representing the given information in part (b)(i).