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: 2020**

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 and calculators are **not** allowed in the examination room.
6. Write your **Assessment Number** at the top right hand 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) Write each of the numbers 18, 24 and 36 as a product of prime factors and hence find their greatest common factor.

(b) Write the number 0.009765;
(i) correct to three decimal places
(ii) correct to three significant figures
State the place value of 9 in the given number.

2. (a) Find the value of the expression $\frac{5}{2} - \left(3\frac{3}{5} \div 1\frac{1}{5} - \frac{4}{5}\right)$.

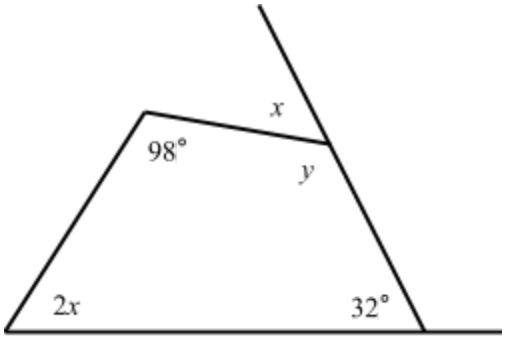
(b) (i) In a sales promotion, the price of a shirt costing shs. 15,000 is reduced by 15%. What is the new price of the shirt?

(ii) Change $0.5\dot{6}$ into a fraction in its simplest form.

3. (a) A lorry carries 7.2 tonnes of sand from the mining area to the industrial site. On the way 230 kg of sand either fall off or blow away. What mass of sand will remain by the end of the journey? Give the answer in tonnes.

(b) An article was sold for shs 160,000 at a profit of 25%. Find the buying price of the article.

4. (a) Find the values of x and y in the following figure.



(b) Suppose a metal wire is bent to form a semi-circle with a radius of 14 cm. Find;

(i) the total length of the metal wire.

(ii) the area bounded by the metal wire.

5. (a) The sum of two numbers is 127. If the difference between the numbers is 7, find the numbers.

(b) Solve the equation $x^2 - 10x + 13 = 0$ by completing the square. Leave the answer in surd form.

6. (a) (i) Find the equation of a line passing through the point P(-1,4) and has a gradient of 10.

(ii) If the line of the equation you obtained in part (a) (i) passes through the points $(a,0)$ and $(0,b)$, what will be the values of a and b?

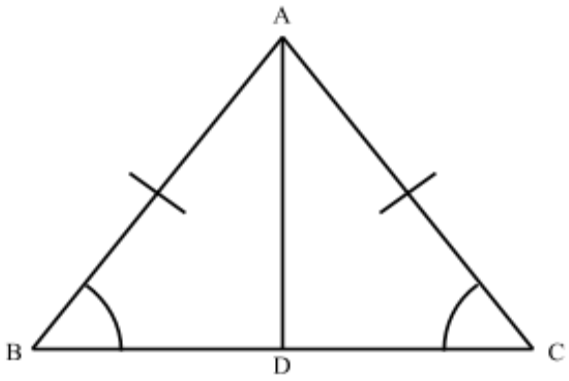
(b) Find the image of the point P(4,1) when it is;
(i) reflected in the x-axis.
(ii) reflected in the line $y = x$.
(iii) translated by the point T(3,5).

7. (a) If $(3^{x+3})(5^{2-y}) = \left(\frac{1}{3}\right)^5 \left(\frac{1}{5}\right)$, find the values of x and y.

(b) (i) Find the value of 0.0000234×120 in standard notation, correct to three significant figures.

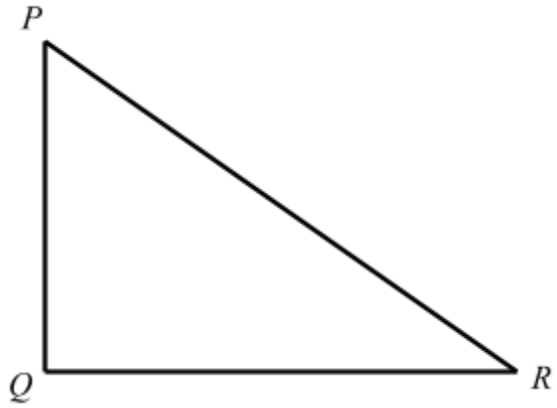
(ii) Rationalize the denominator of the expression $\frac{\sqrt{2}}{\sqrt{3}+\sqrt{2}}$.

8. (a) In the following figure, $\overline{AB} = \overline{AC}$, prove that ABC and ACD are also equal.



(b) If the rectangular metal sheets $ABCD$ and $WXYZ$ are similar, calculate the length of $\overline{XY}$ when $\overline{AB} = 2\ cm$, $\overline{BC} = 4\ cm$ and $\overline{WX} = 2.5\ cm$.

9. (a) Figure PQR represents a triangular floor such that $\overline{PQ} = \overline{QR} = 2$ cm and angle PQR is 90°. Find $\overline{PR}$, correct to two decimal places.



(b) Given that $\sin\theta = \frac{\sqrt{3}}{2}$ where θ is an acute angle; without using mathematical table, find;

(i) $\cos\theta$.

(ii) $\tan\theta$.

10. (a) In a certain village, 300 people were interviewed about their food preference. It was found that, 200 people like banana, 120 people like rice and 60 people like both banana and rice. By using formula, find the number of people who like neither banana nor rice.

(b) The masses of a group of students from Kilimani secondary school were recorded as shown in the following table:

Mass in kilograms	31 − 40	41 − 50	51 − 60	61 − 70	71 − 80
Frequency	2	5	3	9	1

(i) How many students are there in the group?

_____

(ii) State the class interval that has the largest number of students.

_____

(iii) Prepare a table showing the class boundaries and the corresponding cumulative frequencies.