Candidate's Examination Number _____

SMZ

ZANZIBAR EXAMINATIONS COUNCIL

FORM THREE ENTRANCE EXAMINATION

041 MATHEMATICS

TIME: 2:30 HOURS WEDNESDAY, 23RD DECEMBER 2020 A.M

INSTRUCTIONS TO CANDIDATES

1. **This paper consists of TWO (2) sections A and B.**
2. **Answer ALL questions in section A and any FOUR (4) questions in section B.**
3. **Write your examination number on each page.**
4. **Write your answers in the space provided.**
5. **Use a blue or black pen in writing.**
6. **Cellular phones, calculators and unauthorized materials are not allowed in the examination room.**
7. **Mathematics tables are allowed in the examination room.**

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	**MARKS**	**SIGNATURE**
1.		
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14.		
TOTAL		

This paper consists of 14 printed pages

SECTION A: (60 Marks)

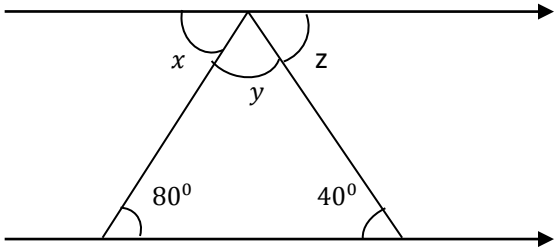
Answer ALL questions in this section.

1. a) Find the value of $4\frac{3}{4} \div 5\frac{1}{8}$.

b) Work out $2235 + 2126$.

2. Rationalize the denominator of $\frac{2}{2\sqrt{3}+\sqrt{2}}$

3. In the figure below, find the values of $x,\ y\ and\ z$.



4. a) Write 0.0745 in standard form.

b) Express 0.12 as a percentage.

5. a) Simplify the following expression $(3a^3b^2)^{-3}$

b) Make Y the subject of the formula, given that $X = \frac{Y+YM^2}{KZ}$

6. a) Simplify the expression $x(2y + 3) + y(3x + 4)$

b) Find the exterior angle of a regular nonagon.

7. The sum of the two numbers $a\ and\ b\ is\ 30$, and $a\ is\ twice\ than\ b$. Find the value of $a\ and\ b$.

8. a) Write in the box the correct mathematical sign $<, >, =$ from the pair of the numbers below:

   i) 36% ☐ 0.36

   ii) $1\frac{4}{5}$ ☐ 1.65

   iii) 1.065 ☐ $1\frac{13}{20}$

   b) The total mass of 20 similar iron bars is $50kg420g$. What is the mass of each bar?

SECTION B: (40 marks)

Answer ANY four (4) questions in this section.

9. a) Solve for x if: $\left(\frac{1}{2}\right)^{x} \times \left(\frac{1}{8}\right)^{x+1} \times \left(\frac{1}{16}\right)^{2x-1} = \frac{1}{32}$

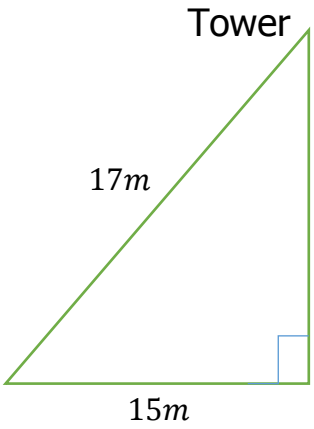
b) Use logarithm to evaluate the following expression and give your answer to 3 significant figures.

$$46.22 \times 18.33$$

10. a) The buying price of the radio is sh. 5000 and the percentage profit is 30%. What is its selling price?

b) Asha borrowed some money at simple interest of 12% per annum. After 2 years, she paid a total interest of sh. 5000. How much money did she pay?

11.



A wire 17m long attached to the top of tower and the ground. The wire is 15m away from the base of the tower.

a) Calculate the height of the tower.

b) Calculate the size of the angle formed between the ground and the wire.

12. a) In a class of 40 students, 18 are taking Kiswahili, 12 are taking both Kiswahili and Mathematics. How many students in this class are taking mathematics, if 6 students are taking neither Kiswahili nor Mathematics?

b) Draw a Venn diagram to represent the relationship between the sets

$$A = \{1, 2, 5, 6, 7, 9, 10\} \; and \; B = \{1, 3, 4, 5, 6, 8, 10\}$$

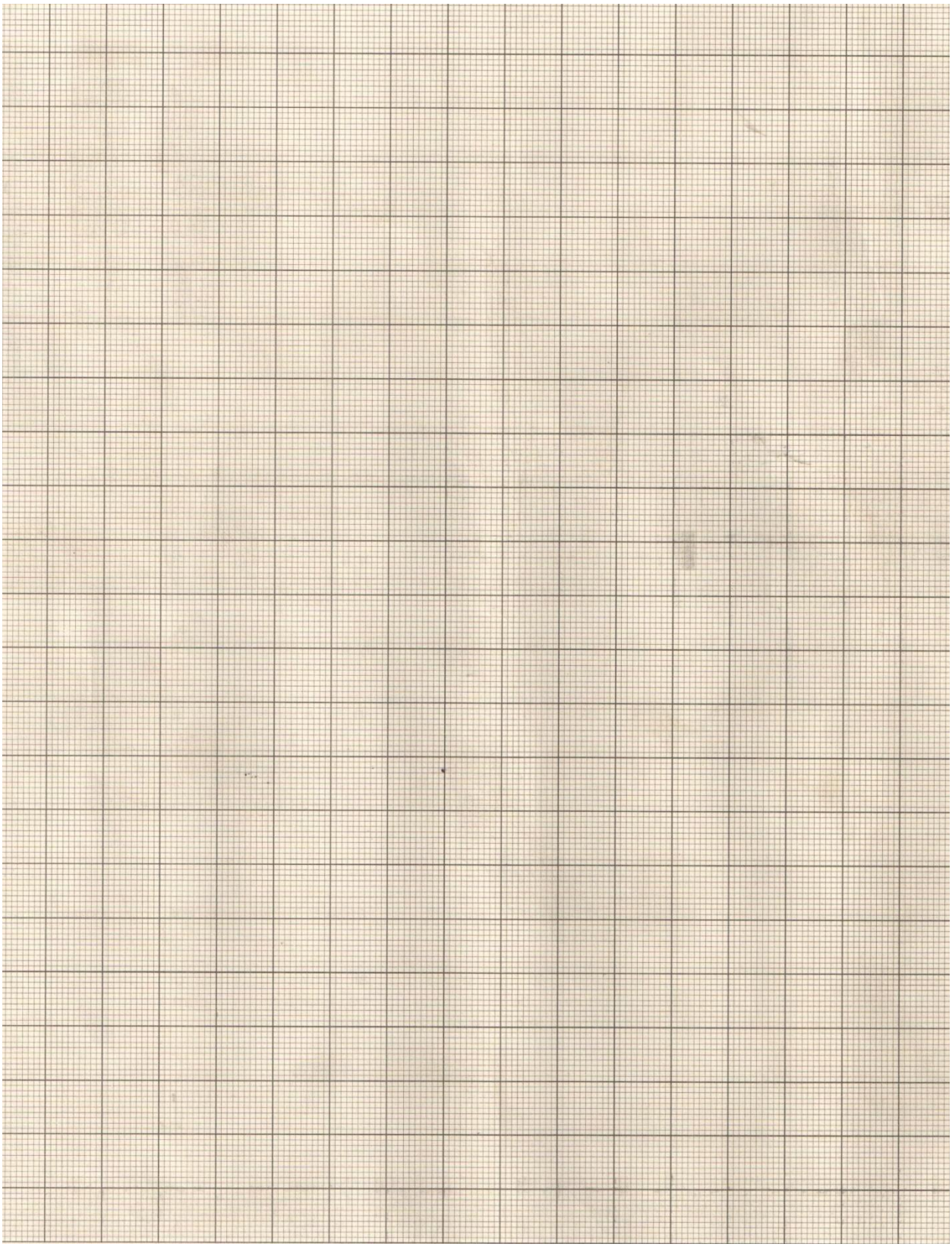
13. a) If $z = \frac{z_1 z_2}{z_1 + z_2}$, evaluate $z \; when \; Z_1 = 50 \; and \; Z_2 = 65$

b) Every morning Asha walks 9km to and from school. How far does she walk in 150 days?

14. x and y are connected by the formula $y = 3x + 6$. Plot the graph of x against y for the values of x lies between -4 and 3 inclusive. Use your graph to find

a) y when $x = 2.5$

b) y when $x = -1.5$



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ROUGH WORK