*Candidate's Examination Number*_____

SMZ

ZANZIBAR EXAMINATIONS COUNCIL

FORM THREE ENTRANCE EXAMINATION

041 MATHEMATICS

TIME: 2:30 HOURS **TUESDAY 29th NOVEMBER, 2017 am**

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 answers in the spaces provided.**
4. **Write your examination number on each page.**
5. **Cellular phones and calculators are not allowed in the examination room.**

FOR EXAMINER'S USE ONLY		
QUESTION NUMBER	**MARKS**	**SIGNATURE**
1.		
2.		
3.		
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10		
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13.		
14.		
TOTAL		

This paper consists of 18 printed pages

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SECTION A: (60 Marks)

Answer ALL questions in this section

1. a) Evaluate

$$\Big(\big((-5)+(-3)\big)^2 \times \big((-2)+8\big)\Big) \div 4$$

b) i) Which is greater of $\frac{2}{3}$ and $\frac{3}{4}$.

ii) Asha is 12 years old. Her mother is $3\frac{3}{4}$ times as old as she is.
How old is her mother?

2. a) i) Find the value of $\sqrt{\frac{m}{n}}$, $when \;\; m = 81 \; and \; n = 9$.

ii) Find the reciprocal of 4.5

b) i) Why 2 and -3 cannot be combined in the expression $\sqrt{5} + 2 - 3\sqrt{5}$.

ii) Rationalize the denominator of the expression $\frac{6}{\sqrt{7}-2}$

3. a) i) Find $87\frac{1}{2}\%\ of\ 8{,}000/-$

ii) A pencil is $6cm$ long. How much is left after cutting off $8mm$?

b) Khamis drinks $3000cm^3$ of milk in a day. How man liters does khamis drink in a week?

4. a) i) Simplify the expression $6m \div 2 + 2mn \div n$.

ii) Solve the equation $4x + 3 = 2x + 15$.

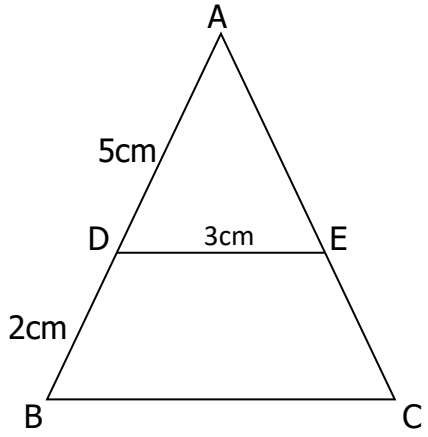
b) Given that $\log a = 2.4 \; and \; \log b = 1.5$. Find $\log\left(\frac{b}{a}\right)^2$.

5. a) Write 524.3678 correct to:

i) **Four** significant figure

ii) **Three** decimal places

b) In the figure below DE is parallel to BC, find the length of $\overrightarrow{BC}$.



6. a) The running track is a circle, with radius 40m.What is the length of the track?

b) i) A compressor is bought for 120,000/- and sold for 150,000/-.
What is the percentage profit?

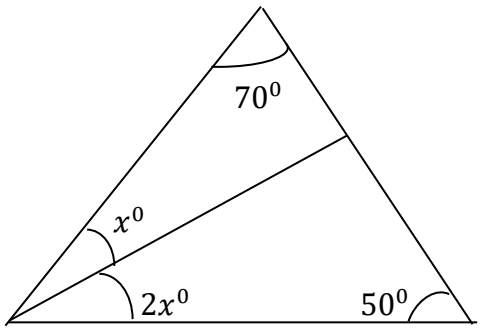
iii) A loan was made at $8\%\ p.a$ for 6 month. If the interest charged was 20,000/-, find the amount borrowed.

7. a) i) Express $\frac{3}{8} : \frac{9}{10}$ as whole number.

ii) Convert $\mathbf{0.\dot{6}}$ to exact fraction.

b) Find the actual length represented by 4cm on a map, if the scale used to draw a map is 1:100000.

8. a) In the figure below, find the value of x^0



b) If $x * y$ is defined as $3x - y$ for any integers of $x \; and \; y$, find:

i) $(5 * 2)$

ii) $y, if \; (4 * y) = 6$

SECTION B: (40 Marks)

Answer any FOUR (4) questions in this section

9. Carefully study the frequency distribution table which shows the marks for 40 students in mathematics examination.

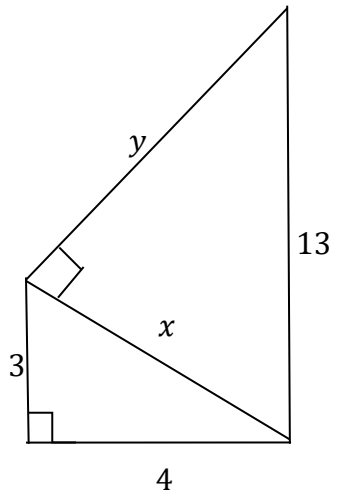
Marks	11 - 20	21 -30	31 - 40	41-50	51-60	61-70
frequency	3	9	12	8	6	2

a) Draw the histogram for the data (on the graph paper).

b) Draw cumulative frequency curve O give (on the graph paper).

10. a) Is a triangle whose sides are $11cm, 7cm \ and \ 8cm$ a right angled triangle?

b) Find the length marked $x \ and \ y$ in the figure below.



11. a) Find the image of point $P(3,-1)$ under translation which move 2 right and 3 up.

b) A triangle ABC with the coordinates $A(-2,1), B(3,3)\ and\ C(4,1)$is reflected along the $x\ axis$. Find

i. The coordinate of the image triangle $\boldsymbol{A'B'C'}$.

ii. Sketch the triangle ABC and its image on the same xy plane.

12. a) let $\mu = \{a, b, c, d, e, f, g, h, i, j\}, M = \{a, c, e, g, i\},$ $and\ N = \{f, g, h, i, j\}$. Find:

i) $\boldsymbol{n(M)'}$ ii) $n(M \cup N)$ iii) $n(M \cap N)$

b) i) List all subsets of the set $A = \{p, q, r\}$

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ii) In class of 30 pupils 12 are taking geography, 8 are taking both history and geography. How many students in this class take history, if 6 students take neither geography nor history?

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13. a) A plane flies so that it is $60\ km\ south\ and\ 48\ km\ west$ of its starting point. On what bearing has it been flying?

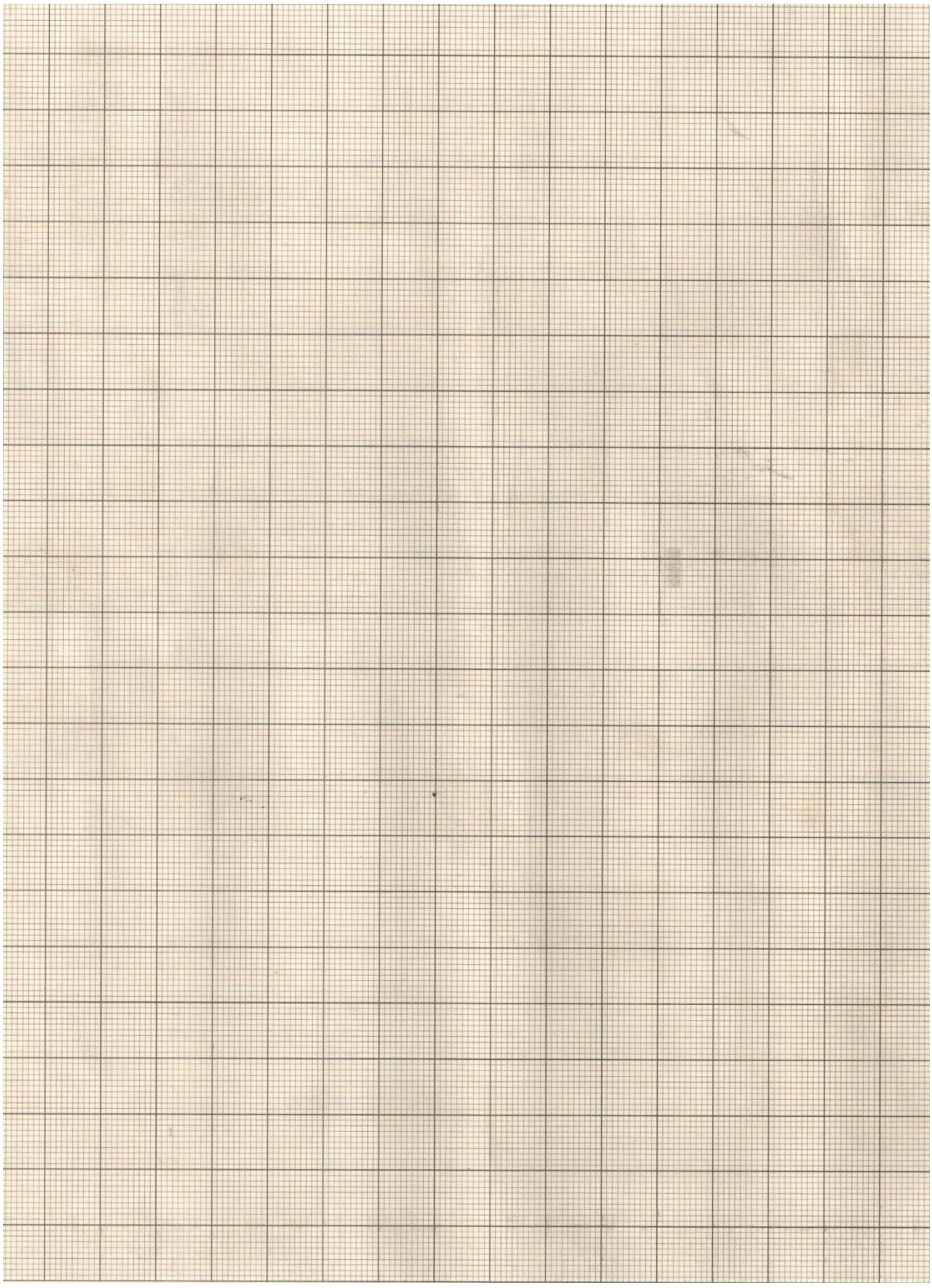
b) Juma is on the top of a 100m cliff, looking down at a boat which is 800m out to sea. What is the angle of depression of the boat from the top of the cliff?

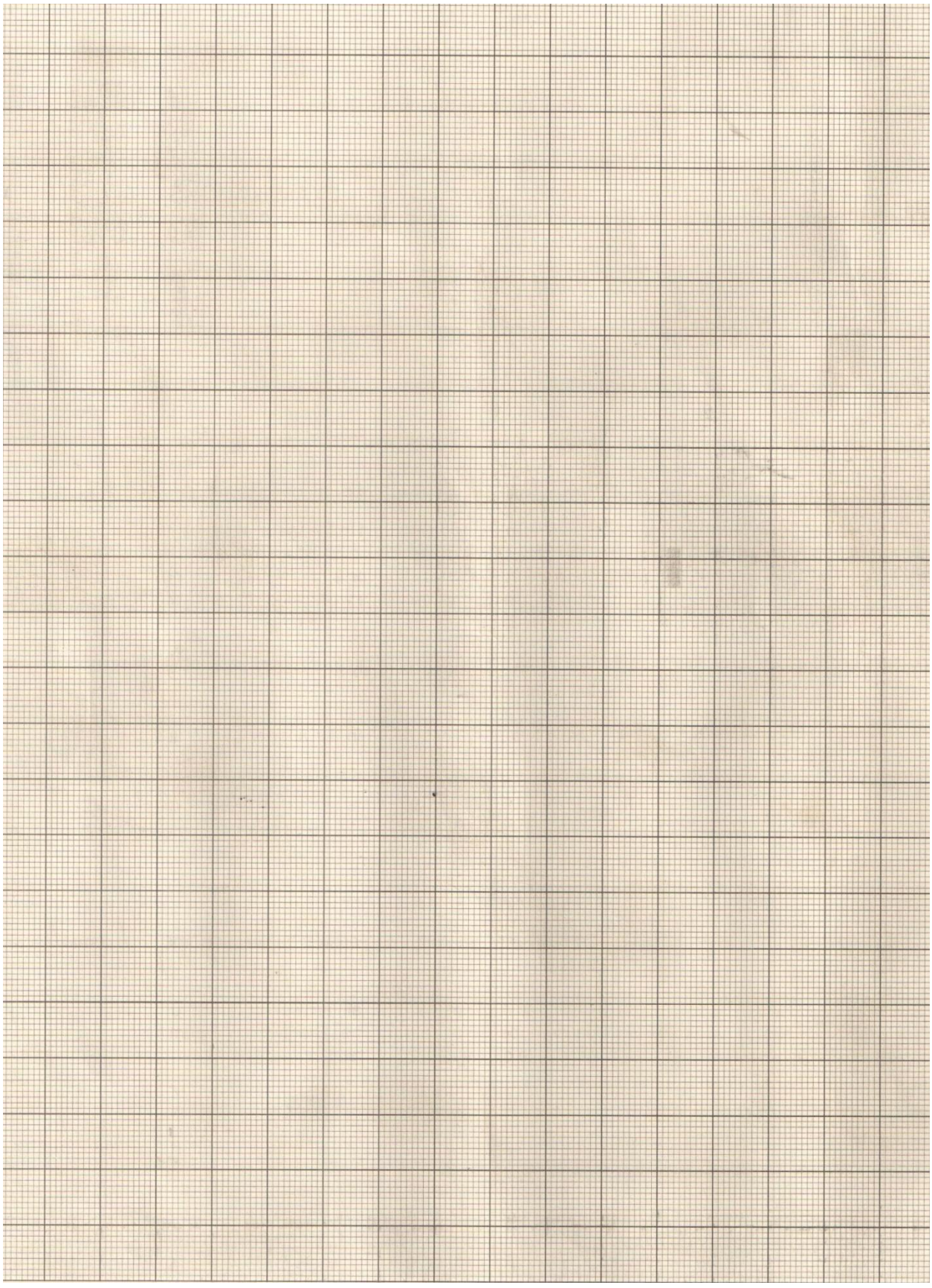
14. a) i) Find the value of x

$$\left(\frac{1}{2}\right)^{x} \times \left(\frac{1}{4}\right)^{x} = 64$$

ii) If $x^2 + kx + 9$ is perfect square, find the value of k

b) Solve for x in the quadratic equation $x^2 + 5x + 6 = 0$





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FOR ROUGH WORK