

FORM 2 END TERM 2 2020

MATHEMATICS

ANSWER ALL THE QUESTIONS IN THE SPACES PROVIDED BELOW EACH QUESTION

SECTION 1(50 MARKS)

1. Evaluate $\frac{-8 \div 2 + 12 \times 9 - 4 \times 6}{56 \div 7 \times 2}$ [3 Marks]

2. A matatu travelling at 56 Km/h take 2 ½ hours to move from town A to town B.
Find the distance between towns A and B. [2 Marks]

3. Determine the gradient and the co-ordinates of the x and y intercepts of the line whose equation is $2y + 3x = 1$ [3 Marks]

4. Find the correct 3s.f the value of

$$\frac{1}{6.43} + \frac{2}{3.56} + \frac{1}{8.51}$$

[2 Marks]

5. Without using mathematical tables, evaluate

$$27^{2/3} \times \left(\frac{81}{16}\right)^{-1/4}$$

[3 Marks]

6. The diagonals of a rhombus measure 9.2 cm and 7.5 cm respectively. Calculate the area of the rhombus

[2 Marks]

7. A man is three times as old as his daughter. In twelve years time he will be twice as old as his daughter. Find their present age.

[3 Marks]

8. Use logarithm tables to evaluate

[4 Marks]

$$\sqrt[4]{\frac{37^2 \times 0.0168}{75.63}}$$

9. An artisan has 63Kg of metal of density 7000Kg/m³. He intends to use it to make a rectangular pipe with external dimension 12 cm by 15 cm and internal dimension 10 cm by 12 cm. calculate the length of the pipe in metres. [4 Marks]

10. Determine the equation of a line that passes through (-2,5) and is parallel to the line whose equation is $5y + 2x = 10$ [4 Marks]

11. Use the elimination method to solve the simultaneous equations

$$2x + 3y = 1$$

$$3x = 2y + 8$$

[4 Marks]

12. A trader sold a wrist watch for sh. 3,150 after giving a 10% discount. Find the marked price of the watch. [2 Marks]

13. Express as a fraction in its lowest form [3 Marks]
3. $\frac{71}{100}$

14. Seven people can build five huts in 30 days. Find the number of people working at the same rate that will build nine similar huts in 27 days. [3 Marks]

15. The size of each interior angle of a regular polygon is five times the size of the exterior angle. Find the number of sides of the polygon. [3 Marks]

16. Line AB below shows a side of triangle ABC. $BC = 5\text{cm}$ and $\angle ABC = 60^\circ$

A

B

- a. Using a ruler and compass only, complete the triangle ABC. [2 Marks]
- b. From C construct a perpendicular to meet line AB at point N. Measure length CN in centimetres [2 Marks]
- c. Determine the area of triangle ABC [1 Mark]

SECTION B [50 MARKS]

17. Complete the tables below for the equations of the lines $y = -\frac{3}{4}x + 4$ and $y = -3 + 2x$

a.

$$y = -\frac{3}{4}x + 4$$

x	-2	0	2
y		4	

$$y = -3 + 2x$$

x	-2	0	2
y		-3	

b. using one big square to represent 1 unit on y – axis and 2 big squares to represent 1 unit on x – axis, draw the lines $y = -\frac{3}{4}x + 4$ and $y = -3 + 2x$ [5 Marks]

c. use your graphs to solve the simultaneous equations

$$3x + 2y = 8$$

$$2x - y = 3$$

[1 Mark]

18. a school hall measure 10m long, 7m wide and 4m high. All its inside walls and ceiling are painted.

Calculate,

- i. the total surface area painted
- ii. the cost of painting at 200/= per square metre.

[10 Marks]

19. a bird flies from tree P to another tree Q which is 50m on a bearing of 030° from P. from Q the bird flies 80m due west to another tree R and finally flies due south to another tree S which is on a bearing of 120° from P.

a. using the scale 1cm = 10m, construct an accurate scale drawing showing the positions of P,Q,R, and S [5 Marks]

b. by measurement from your scale drawing determine;

i. the distance and bearing of R from Q

[2 Marks]

ii. the distance and bearing of S from R

[2 Marks]

iii. the distance of S from P

[1 Mark]

20. a. On a Cartesian plane plot and draw the triangle ABC, A(1,2), B (1,6), C (5,5) [2 Marks]
- b. Draw the image of triangle ABC after reflection on the line $y = x$
- c. Draw $\triangle A''B''C''$ the image of $\triangle ABC$ after reflection along y – axis [2 Marks]
- d. Draw $\triangle A''B''C''$ the image of $\triangle ABC$ after rotation through -180° about the origin [2 Marks]
- e. Determine the mirror line that makes $\triangle A''B''C''$ the image of triangle ABC [2 Marks]

21. The table shows recordings from surveyors' field book.

		B	
		280	
	E25	200	
		160	B 80
	C70	120	
		100	D 50
			A

a. Draw a sketch diagram from the data in the field book

[2 Marks]

b. Given that the recordings are in metres, determine the area of the land in hectares.

[8 Marks]