**Name: ……………………………………………. ADM NO: …………………………………..**

**Student’s signature: ……………………………. Date: ..…………….…………………………**

**FANAKA GIRLS HIGH SCHOOL**

**DECEMBER HOLYDAY ASSIGNMENT**

**MATHEMATICS**

**FORM 3**

**INSTRUCTIONS TO CANDIDATES**

* **Write your name and index number in the spaces provided above.**
* **Answer ALL the questions in the spaces provided in the question paper.**

1. Use tables to evaluate (4mks)
2. Solve for x in +=36 (3mks)
3. A line L passes through the point (3,1) and is perpendicular to the line 2y=4x+5. Determine the equation of the line L (3mks)
4. Given that 3x=cos 2x,find the value of x (3mks)
5. Simplify the expression (3mks)
6. Simplify (3mks)
7. Solve the equation log10(6x2)1 =log10 (x3) (3mks)
8. A financial institution charges compound interest on money borrowed. A business women borrowed sh. 16000 from the financial institution. She paid back sh. 25000 after 2 years. Find the interest rate per annum

(4mks)

1. Make n the subject B = (3mks)
2. Draw a triangle PQR with PQ=6cm,QR=7cm and PQ=8cm draw a circle passing through points P,Q, and R. measure the radius of the circle. (4mks)
3. Expand (2+x)4, hence use the expansion to approximate the value of (2.03) (4mks)
4. A box contains 10 balls of which 3 are red,5 are white and 2 are green. Another bag contains 12 balls of which 4 are red,3 are white and 5 are green. A bag is chosen at random and then a ball chosen at random from the bag .find the probability that the ball chosen is red (4mks)
5. Two pipes P and Q each running alone can fill a trough in6 hours and 10 hours respectively. A drainage pipe R can empty the full trough in 15 hours. Pipes P and Q are turned on and left running for hours .the drainage pipe R is then opened and all three left running. Find how much longer it takes to fill the trough

(4mks)

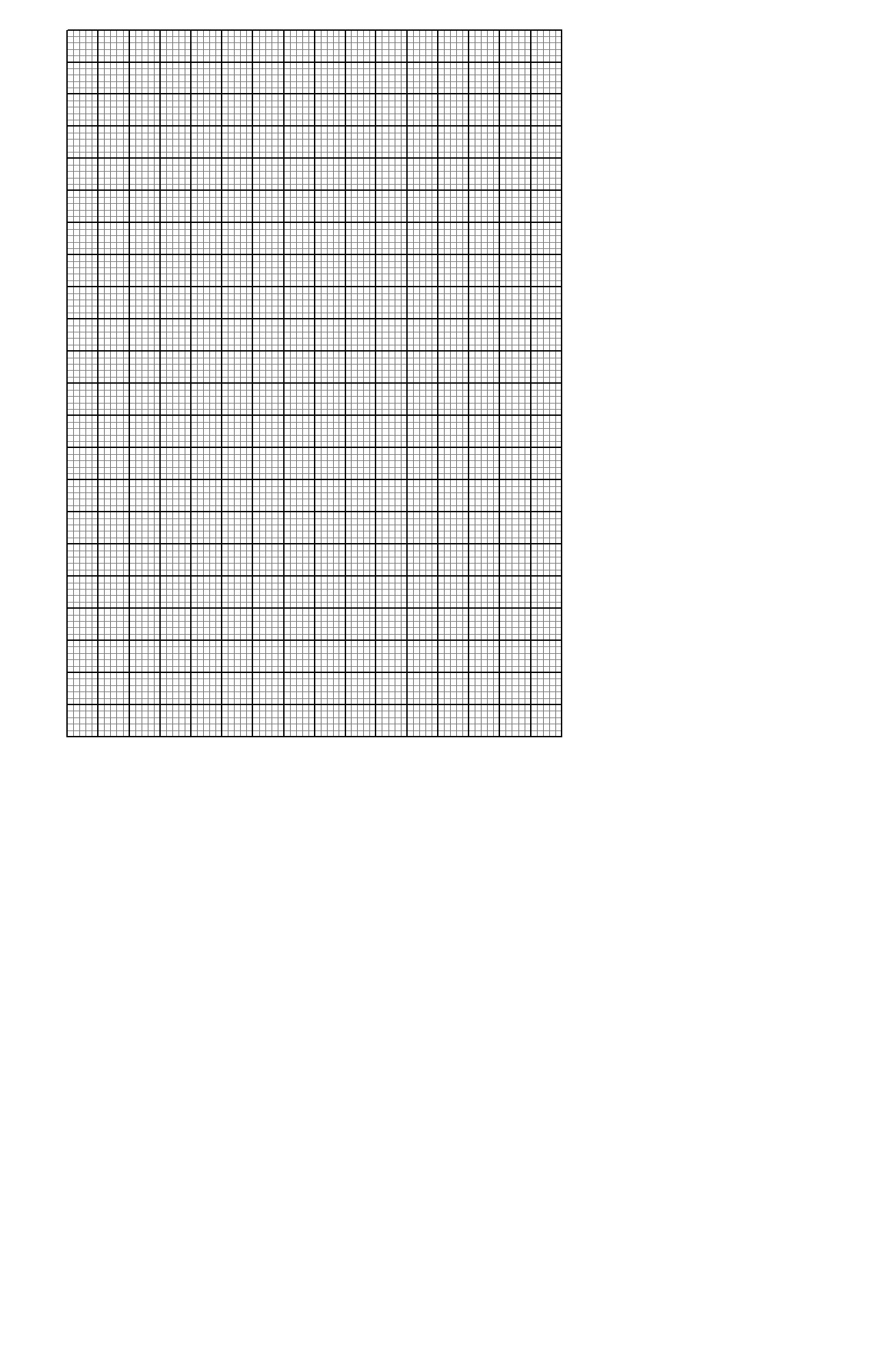
1. Sixteen men working at the rate of 9 hours a day can complete a piece of work in 14days. How many **more** men working a the rate of 7 hours a day would complete the same job in 12days (3mks)
2. The points with coordinates (5,5) and ()are the ends of a diameter of a circle center A. determine
3. The coordinates of A (1mks)
4. The equation of the circle ,expressing it in the form x2+y2+ax+by+c=0 (3mk)
5. Use matrix method to solve

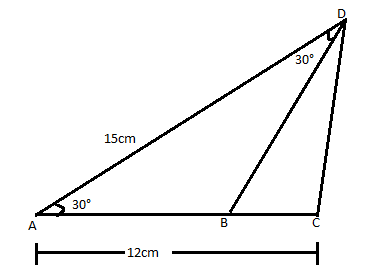
2x3y=5

x+2y=3 (3mks)

1. Complete the table below for equation: (2mks)

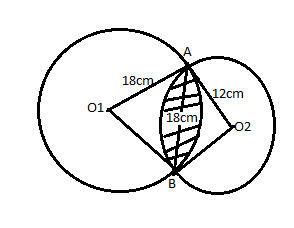
|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| X | 4 | 3 | 2 | 1 | 0 | 1 | 2 |
| 2x3 | 128 | 54 |  |  | 0 | 2 | 16 |
| 5x2 | 80 | 45 | 20 | 5 | 0 | 5 | 20 |
| x | 4 | 3 |  |  | 0 | 1 |  |
|  | 6 | 6 |  |  | 6 |  |  |
| Y | 50 |  |  |  | -6 | 0 |  |

1. On the graph provided draw the graph of y=2x3+5x2x6 for use 1cm to represent 1 unit on the x-axis and 1cm to represent 5 units on the y- axis. (4mks)
2. Use your graph to solve
3. 2x3+5x2x6=0 (2mks)
4. 2x3+5x2x4=0 (2mks)
5. In a livestock research station a new drug for a certain fowl disease is being tried. A sample of 36 fowls was diagnosed to have the disease. Twenty (20) fowls were treated with the drug and the rest were not.
6. Calculate the probability that a fowl picked at random is
7. Treated with the drug (1mks)
8. Not treated with the drug (1mks)
9. If a fowl is treated, the probability of dying is while if not treated the probability is. Calculate the probability that ,a fowl picked at random from the 36 fowls is
10. Treated with the drug and will die (2mks)
11. Not treated with the drug and will die (2mks)
12. Treated with drug and will not die (2mks)
13. Not treated with the drug and will not die (2mks)
14. A paint dealer mixes three types of paints A, B, and C, in the ratios A: B=3:4 and B: C =1:2, the mixture is to contain 168 litres of C.
15. Find the ratio A:B:C (2mks)
16. Find the required litres of B (2mks)
17. The cost per litre of type A is Ksh.160 ,type B is Ksh.205 and type C is Ksh.100
18. Calculate the cost per litre of the mixture (2mks)
19. Find the percentage profit if the selling price of the mixture is Ksh.182 perlitre (2mks)
20. Find the selling price of a litre of the mixture if the dealer makes a 25% profit (2mks)
21. The first terms of an A.P are 2. The sum of the first 8 terms of the A.P is 156.
22. Find the common difference of the A.P (2mks)
23. Given that the sum of the first n terms of the A.P is 416, find n (2mks)
24. The 3rd , 5th and 8th terms of the another A.P form the first three terms of a G.P. if the common difference of the A.P is 3. Find :
25. The first term of the G.P (4mks)
26. The sum of the first 9 terms of the G.P (2mks)
27. In the figure below, AC =12cm, AD=15cm and B is a point on AC . Angle BAD =angle ADB=30°



Calculate, correct to one decimal place :

1. The length of CD (3mks)
2. The length of AB (3mks)
3. The area of triangle BCD (2mks)
4. The size of angle BCD (2mks)
5. Three quantities R, S and T are such that R varies directly as S and inversely as the square of T.
6. Given that R=480 when S=150 and T =5, write an equation connecting R,S and T (4mks)
7. Find the value of R when S=360 and T=1.5 (2mks)
8. Find the percentage change in R if S increases by 5%and T decreases by 20% (4mks)
9. Two intersecting circles are such that the circles have their radii 18cm and 12 cm respectively and the chord AB is 18cm long .



1. Find angle AO1B (3mks)
2. Find angle AO2B (2mks)
3. Find the area of the shaded part (5mks)
4. The table below shows the rates at which income tax was charged in Kenya in a certain year

|  |  |
| --- | --- |
| Monthly taxable income (sh) | Tax rates (%) |
| 1. 9840 | 10% |
| 9841- 18960 | 15% |
| 18961- 28080 | 20% |
| 28081- 37200 | 25% |
| 37201- 46320 | 30% |
| 46321- 55440 | 35% |
| 55441 and above | 40% |

kasule , a chief executive officer earned a monthly income as follows:

Basic salary =sh.28600

House allowance =sh.15000

Medical allowance =sh. 3200

Transport allowances =sh.10780

Kasule was married and hence entitled to a tax relief of sh.1056 per month.

1. Calculate his monthly taxable income (2mks)
2. Calculate the net income tax he paid per month. (6mks)
3. In addition to income tax , the following deductions were also made from his monthly income

Loan =sh.500

NHIF =sh.1200

2% of his basic salary for window and children pension.

Determine kasule’s net salary (2mks)