**NAKURU NORTH SUB -COUNTY JOINT MOCK 2024**

**MATHEMATICS PAPER 1 MARKING SCHEME**

|  |  |  |  |
| --- | --- | --- | --- |
| QN | WORKING | MARKS | REMARKS |
|  | C:\Documents and Settings\Admin\Desktop\MATHS\MATHS - copy\FORM2 MATH\MS\pg2.jpg | M1  M1  A1 |  |
|  |  |  |  |
| 2. |  | M1  M1  A1  03 | 🗸 Numerator  🗸Denominator |
| 3. | Let no. be XY  product XY =20---------------(i)  Reversed no YX  (10y+x)-(10x+y)=9-----------(ii)  9y-9x=9  y-x=1  y=1+x  Substitution in (i) we’ve  x(1+x)=20  x+x2=20  x2+x-20=0  x2+5x-4x-20=0  x(x+5)-4(x+5)=0  (x+5)(x-4)=0  x=-5 or x=4  Number=45 | B1  M1  M1  A1  04 |  |
| 4. | |  |  |  |  | | --- | --- | --- | --- | |  | 3yrs ago | now | 2yrs time | | Juma | 3x | 3x +3 | 3x +5 | | Ali | x | x +3 | X +5 |   3x + 5 +x +5=62  4x=52  X=13  Ali = 16yrs, Juma = 42 yrs | M1  A1  \_  02 |  |
| 5. | |  |  |  |  |  | | --- | --- | --- | --- | --- | | 3 | 3 | 7 | 11 | 13 | | 7  11  13 | 1  1  1  1 | 7  1  1  1 | 11  11  1  1 | 13  13  13  1 |   Lcm 3 x 7 x 11 x 13  = 3003 + 1  = 3004 | M1  A1  02 |  |
| 6. | Let the exterior angle be x  7x + x =180  8x=180  X=22.5  n =  n = 16 sides | B1  A1 |  |
| 7. | 0.52452=(5.245 x 10-1)2= 0.2751  == 19.063  =3.635 =0.05247  (23.635)-(50.05247)  =7.27-0.26235  =7.00765 | M1  M1  M1  A1 | For both  For both |
| 8. | Area scale factor (A.s.f) =  Linear scale factor (L.s.f) =  Volume scale factor (V.s.f) = | M1  M1  A1 | Correct scale factors |
| 9. | Volume = 22000 cm3  5  = 4400cm3  4400 = 22/7 x r2  x 14  r2 = 4400 x 7 = 100  22 x 14  :. r= 10cm | M1  M1  A1 | Exp To Obtain Volume  Exp To Obtain Radius |
| 10. | → 4x = 15x – 20  - 11x = -20  X = | M1  M1  A1 |  |
| 11. |  | M1  A1  A1 |  |
| 12. | Let her salary be  Amount after Rent            ∴ | M1  M1  M1  A1 |  |
|  |  | 04 |  |
| 13. | *Time diff = 1945h Fr - 0545 Monday*  *= 1110rs*  *1 hr = ½ min*  *111 = 110 x ½ = 55 minutes*  *= 0.925 hrs*  *1945 – 55 mins= 1850 hrs*  *=6:50 p.m* |  |  |
| 14. | *9600 x 125.30 = kshs 1,202,880*  *Given = kshs 1,142, 736*  *Spent = ¾ x 1142736*  *= ksh 857052*  *Back to US $ = 1142736-857052*  *63.20*  *= 4520.3164 dollars*  *≈ $ 4520* | M1  M1  A1 |  |
| 15. | 4x – 3  x + 8 2 x + 10  x + 8  8x – x 14  7x  x  x +8  x – 2x 10 – 8  -x 2  x = -2 | B1  B1  B1 |  |
| 16. | C:\Users\Nzambia\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\GRAPPPPPPP.JPG  = 9.177  = 9.18 | B1  B1 Frequency  B1 Bars |  |
| 17. | (a) r : R  = 1:3  (b) =  R = 21cm  (c)  21  7  15  30  Vol. Big cone = x x x 45  = 20790cm3  Vol. Small cone = x x x 15  = 770cm3  Vol. of frustrum = 20790 – 770  = 20020cm3  (d) Vol. tank = 150 x 120 x 180  Buckets =  = 71.93  ≅ 72 full buckets | B1  M1  A1  M1  M1  M1  M1  A1  B1 | Alternative method:  L.S.F = 1:3  V.S.F = 1:27  V.S.F frustum = 26  ∴ Vol. = 26 x 770  = 20020  For subtraction |
| 18. | (a) h = -2t3 + 3/2t2 + 3t  V = dh = -6t2 + 3t + 3  dt  a = dv = -12t + 3  dt  at initial acceleration t = 0  a = 3ms-2  (b) (i) V =0  -6t2 + 3t + 3 =0  2t2 – t – 1 = 0  ( 2t + 1 ) ( t – 1 ) =0  t = - ½ or t = 1 sec  ∴ t = 1 sec  (ii) at t = 1  h = -2 (1)3 + 3/2 (1)2 + 3(1)  = 2 ½ m  (c ) At max speed , a = 0  -12t + 3 = 0  t = ¼ s  V = -6 ( ¼ )2 + 3 ( ¼ ) +3  = 33/8 m/s | M1  M1  A1  M1  M1  A1  M1  A1  M1  A1 |  |
| 19. | 1. **Angle CBD**   <CBD = 90 – 42 = 480  Angle sum of a triangle   1. **Angle ODB**   <ODB = 180 – 42  = = 690  Angles of an isosceles triangle   1. **Angle BAD**   <BAD = ½ x 138 = 640  Angle at the centre is twice one at the circumference   1. **Angle ABC**   <ABD = 420  Alternate segment angles   1. **Angle ODA**   <ODA = 360 – (64 + 222) |  |  |
| 20. | a)Time when bus meets Car= Distance apart  Relative speed  = 120 km = 51 minutes 43 sec  140 km/h  = 52 minutes   * 8.30 am + 52 min   = 9.22 am  b) Time car meets cyclist = Distance apart  Relative speed  = 120 = 1hr, 6min  110  (107.27 – 80.45) = 26.82 km apart  c) 115 x 30 = 57.5km  60  Distance apart = (120 – 57.5) = 62.5 km  Time taken to meet = (62.5) hrs  90  Distance from x = (62.5 x 60) km  90  = 41.67 km |  |  |
|  |  |  |  |
| 21. | (a)  (i) *PT = -b + a*  *= a – b*  (ii) *PX = b + k (a – b)*  *= (ka +(1-k) b*  (iii) *QS= 3a + 2b*  (b) *QX = t (3a + 3b)*  *= 3t a + 2tb*    *QX = b + k (a - b)*  *= k a + (1-k) b*  (c)    (d) | M1  M1  A1  M1  M1  M1  M1  A1  A1  A1 |  |
| 22. | 1. a)   AX=  =  =  b)        c) Area of sector=  Area of triangle AOB    Common region  Shaded region= | M1  M1  A1  M1  M1  A1  M1  M1  M1  A1 | 22. |
| 23. | C:\Users\Wambui Kigoro\Pictures\img013.jpg  C:\Users\Wambui Kigoro\Pictures\img013.jpg | B2  B2  B2  B2  B1  B1  10 |  |
|  |  |  |  |
| 24. | |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **x** | **-5** | **-4** | **-3** | **-2** | **-1** | **0** | **1** | **2** | **3** | | 14 |  |  |  |  |  |  |  |  |  | | -5x |  |  | 15 | 10 |  |  |  | -10 |  | | -2x² |  | -32 |  | -8 |  |  |  |  | -18 | | y |  | 2 | 11 | 16 |  |  |  | -4 | -19 | | B2  B1  B0  S1  P1  C1  L1  L1  B1  B1  B1 | All values correct  2 or 1 values incorrect  More than 2 values wrong |