

**MATHEMATICS PAPER 1**

**MARKING SCHEME**

|  |  |  |
| --- | --- | --- |
| 1. |  | M1  M1  A1  **03** |
| 2. | 2.541 + (2.311)2  = 2.541 + 2(5.307)  = 2.541 + 10.61  =13.155 | M1  M1  M1  A1  **04** |
| 3. | χ + 5y = 129250  2χ - 4y = 22000  6χ + 10y= 258500 -  6χ - 12y= 66000  22y = 192500  y = 8750  χ = 28,500 | M1 both  M1eliminatio  A1  **03** |
| 4. |  | M1  M1  A1  **03** |
| 5. | x = 243  Change to base 3  x =  2 (x – 1) + 2x + 1 = 5  2x – 2 = 2x + 1 = 5  4x – 1 = 5  4x = 6  x = 1.5 | M1  M1  A1 03 |
| 6. | (x + 2 ) ( x – 5 ) = 60  x2 – 5x + 2x – 10 = 60  x2 – 3x – 70 = 0  x2 – 10x + 7x – 70 = 0  x ( x – 10) + 7(x – 10) = 0  ( x – 10) ( x +7) = 0  x = 10 x = -7  Length 10 + 2 = 12m |  |
| 7. | 98.54 x 1200 = 118248  45600 + 118248  = 163848 = 1666 dollars | M1  M1  M1 **03** |
| 8. | HCF of 240, 320 and 380  120 320 380  2 120 160 190  2 60 80 95  5 12 16 19  HCF = 2 x 2 x 5 = 20 cm  Area = 202 = 400cm2 | M1  M1  A1 03 |
| 9. | x + x = 180  x = 180  x = 180 x 8  9  = 160  Exterior ˂ = x 160 = 20  No. of sides 360 = 18  20 | M1  A1  B1 03 |
| 10. | 2ϴ + 30 + ϴ - 60 = 90  3ϴ = 120  ϴ = 40  Tan 40 = 0.8391 | M1  M1  A1  **03** |
| 11. | = 1.2 x k  k = = 5  Length in cm Frequency  7.5≤ x ≤ 9.5 12  9.5 ≤ x ≤ 11.5 5 x 1.6 = 16  11.5≤x ≤ 15.5 5 x 0.8 x 4 = 16  15.5≤ x ≤ 21.5 5 x 2 x 6 = 60 | B1 ✓Constant  B1  B1  B1 04 |
| 12. | i) at P y= o :. 3(0) + 4(x) = 12  x = 3 P(3,0)  ii) y= - 4/3 *x* + 3 m1 = - 4/3 m2 =3/4  y – 0 = 3/4  x- 3  4y = 3x – 9 :. Y = 3/4*x*– 21/4 | M1  M1  A1 |
| 13. | L. S. F 12 : 8= 3 : 2  V.S. F = 27 : 8  27 = 2litres  8 = ?  = 592.592593 | B1  M1  A1  **03** |
| 14. | AB=  -2(K+12) -9 (2K-16)=10  -2K-24-18K+144=10  -20K = -110  ∵K=5.5 | M1  M1  A1 |
| 15. | Total ration ¼ + ½ + 1/5 = 5+10+4 = 19  20 20  Vol. Shared = 19 x 1000 = 950cm3  20  Soita = ½ x 950  19/20  10 x 950 = 500cm3  19 | M1  M1  A1 **03** |
| 16. | =  2(0.48) – 0.30  0.96 – 0.30  = 0.66 | M1  M1  A1 03 |
| 17. | a) V.R = 90+110 = 200km/h  10.35a.m – 8.15a.m = 2hrs 20min = 2 1/3 hrs  Distance covered by matatu by 10.35cm  = 7/3 x 90 = 210km  Remaining distance 760 – 210 = 550km  Time taken = 550 = 2 ¾ hrs  200  Distance minibus had moved = 11 x 90 = 247.5km  4  Distance from A = 210 + 247.5  = 457.5km  b) They met at 10.35  2.45  13.20  = 1320hrs or 1:20pm  c) By 10.30a.m minibus had covered  9 x 90 = 202.5km  4  Time taken by minibus to **B**  760 – 202.5 = 67/36hrs = 6.19hrs  90  Distance covered by the motorist in this time.  6.19 x 100 = 619km | B1  B1  B1  A1  M1 for addition  A1  B1  B1  M1 A1  **10** |
| 18. | C:\Users\Lillian\Pictures\2013-05-27\008.jpg  A1 = =  B1 = =  C1 = =  A11 = B11 = C11 =  A111 = B111 = C111 =  AIV = BIV = CIV =  Object and image 1, image 3, image 4, | B1  B1B1  B1B1  B1B1  B1 |
| 19.a | (i) (4000 x 12) +(1100 x 12)  = Sh. 61,200  (ii) 1st slab 4200 x 2 8400  2nd slab 3800 x 3 = 11400  3rd slab 4600 x 5 = 23000 42800  4th slab y x 6 = (61,200 – 42800)  y = K₤ 3066.67  Taxable income= (12600 + 3066.70  = K₤ 15666.67  (iii) - 10800  = KSh. 15,311.12  (iv) 26111.12 – 4000  = Sh. 22,111.12 | M1  A1 or 5100 x 2  M1  M1  M1  A1  M1  A2  M1  A1 |
| 20. | (a) Pq = 2(8sin 35)  = 9.177 = 9.18  (b) =  = 13.42  = 13.42  (c) Area of minor segment circle centre A  x 3.142 x 8 x 8 - x 8 x 8sin 70 = 9.03  (d) Area of minor segment circle centre B  x 3.142 x 13.422 – x 13.42 x 13.42 x sin 40 =4.99  (e) Area of shades region = Area of Δs  APQ and PQB – Area =(30.07+57.88)-(9.03+4.99)  =73.93 | M1  A1  M1  A1  M1  A1  M1  A1  M1  A1 |
| 21. | (b) (i) N200W  (ii) 5420W  (c) (i) 6.4 x 100knm = 640km  (ii) 8.8 x 100km = 880  (d) (i) 3000  (ii) 2680 | B1 A located  B1 B located  B1 C located  B1 D located    B1  B1  B1  B1  B1  B1 |
|  |  | **10** |
| 22. | P  S  O  Q  R  T  OS = OP QT = OS  OR = OQ  (i) SR = SO + OR  = P + Q  = (Q – P)  (ii) QR = QO + OS  = Q + P  = P – Q  (iii) PT = PS + ST  = -P + (-QS)  = -p + (Q - P)  =-p + q - p  = - - p + q  =-p + q  = q - p  (iv) TR = TQ + QR  = QR - Q  = -(p – q) - Q  = -p + q - q  = - P + Q  = Q - P  PT = Q - P  TR = Q - P  ∴ PT = 3TR or PT = RT  Common point T  PT is a multiple of TR  PT = 3TR  Hence PTR are collinear | B1  B1  M1  A1  M1  A1  M1  A1  M1 (both seen)  M1 (both seen)  A1 conclusion |
| 23. | 1. -the angle which the chord makes with tangent is equal to the angle subtended by the same chord in the alternate segment of the circle 2. -Diameter subtends right angle at any point on the circumference of the circle 3. - The base angles of isosceles triangle are equal 4. -Angles subtended on the circumference by the same arc in the same segment are equal 5. -The angle which an arc subtends at the centre is twice that it subtends at any point on the circumference of the circle | B1  B1  B1  B1  B1  B1  B1  B1  B1 |
|  |  | 10 |
| 24. | (a)   |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | x | -8 | -7 | -6 | -5 | -4 | -3 | -2 | -1 | 0 | 1 | 2 | 3 | 4 | | 2x2 | 128 | 98 | 72 | 50 | 32 | 18 | 8 | 2 | 0 | 2 | 8 | 18 | 32 | | 5x | -4 | -35 | -30 | -25 | -20 | -15 | -10 | -5 | 0 | 5 | 10 | 15 | 20 | | -12 | -12 | -12 | -12 | -12 | -12 | -12 | -12 | -12 | -12 | -12 | -12 | -12 | -12 | | y | 76 | 51 | 30 | 13 | 0 | -9 | -14 | -15 | -12 | -5 | 6 | 21 | 40 |   C:\Users\Nzambia\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\mauth.jpg | B1  B1B1  B1B1  B1  B1  B1  B1  B1  **B1** |
|  | B1 – For half + correct values B1B1 for all values.  (b) (i) 2x2 + 5x – 12 = y  2x2 + 5x – 12 = 0  0 = y  x = -4 or 1.5  (ii) (2x2 + 5x – 12 = y)3  (3x2 + 7x –3 = 0)2  (6x2 +15x – 36 = 3y)-  (6x2 + 14x – 6 =0)  x-30=3y  y=x=-4.6, 2.4 | 10 |