**MINCKS TERM 2 2022**

**MATHEMATICS FORM 4**

**PAPER 1**

MARKING SCHEMES

|  |  |  |
| --- | --- | --- |
| 1. – = 27-20 =   - = 3-2 =  18  × =    - = 84-15  8  =  = 8 | M1  M1  M1  A1 |  |
| 3 1.9 × 0.032 × 0.08 × 1000000  20 × 0.0038 × 1000000  = 3 19×32×8  20×38  = 3 64  1000  =3 43  103  =  = | M1  M1  A1 |  |
| 1. (2n – 4 ) 90 = ) 40   180n2 – 360n – 14400=0  n2 - 2n - 80 = 0  n=2 ± 324  2    n= 10 | M1  M1  A1 |  |
| 1. 840= 23 × 3× 5× 7   396= 22 ×32×11  GCD = 22 × 3 = 12  Area = 12 ×12 =144 M2 | M1  M1  A1 | For Both |
| 1. 20 × 2950000   100  = 590,000 yen  590,000  118  = 5000 dollars  76 × 5000  = sh. 380,000 | M1  M1  A1 |  |
| 1. -9-3X ≤ X-15   6 ≤ 4X  1.5 ≤ X  X–15 > 2X-18  3>X  1.5 ≤ × ˂ 3  -1 0 1 2 3 4 | B1  B1  B1 |  |
| 33(x+1) – 33X+2 = 486  33X × 33 – 33X × 32 = 486  32X (27-9) = 486  33X = 33  3X = 3  X= 1 | M1  M1  A1 |  |
| 1. Let loss be X   Profit = 3X  1040-3X=880 +X  1040 – 880 = 3X+X  160=4X  X=40  Buying price = 880+40 = 920 | M1  A1  B1 |  |
| 1. =   ASF =  Area PST = ×336 = 149    Area QRST = 336-149⅓  = 186 ⅔ cm2 | M1  M1  A1 |  |
| 5(X-10) km  250km  (5X) km  (5X)2 + (5X+50)2 = 2502  25X2+500X-60000=0  X2+10X-1200=0  X2 + 40X – 30X - 1200 = 0  X(X+40) – 30 (X+40)=0  (X-30) (X+40) =0    X=30  30+10 = 40Kmh-1 | M1  M1  A1  B1 |  |
| 1. Sin X + 2 cos X   1-Sin X    Tan X =    + 2 () =  =  = ×  = 22   1. 1 = 10 × 0.3077   3.25 × 10-1  = 3.077  0.000125 = (1.25 ×10-4) ½  = 1.118  100  = 0.01118  = 3.077 × 0.01118  = 0.0344 | M1  M1  A1  M1  M1  A1 |  |
| 1. 2 (X+7) (X-7) × 3X +5   (3X+5) (X-7) X+7  = 2 | M1  M1  A1 |  |
| 1. 3X+ 8 = 16+ X + X + 12   X = 20  X= 16  Fatuma = 3×16  = 48 yrs. | M1  A1  B1 |  |
| 1. Let r = 3.555……. (i)   10r = 35.55…….(ii)  Substract e.g (i) from equation(ii)  qr = 32  r =  = 3       |  |  | | --- | --- | | Class | Frequency | | 5- 9 | 8 | | 10 - 19 | 24 | | 20-39 | 16 | | 40-49 | 16 | | M1  M1  A1  B1  B2 | For correct classes  For correct frequencies |
| 1. (a) T 1+3 , -2+10   2 2    T (2,4)  (b) (i) 10+2 = 12  3-1 2  = 6  Gradient of perpendicular = -  (ii)  Y – 4 = - 1  X – 2 6  6Y – 24 = -X +2  6Y = -X + 26  Y= - 1 X + 26  6 6  (c) R (0, T (2,4)    TR = 0 - 2  4  -2  ⅓  /TR/ = (-2)2 + (⅓)2  4+  = 2.028 units  (d) 1 + x = 3  -2 y 10  X = 2  Y 12  0 + 2 = 2  12    R ( 2, 16 ) | M1  A1  B1  M1  A1  M1  M1  A1  M1  A1 |  |
| (a) (i) A= ԯrl  3.142 × 3 ×5  = 47.13  (ii) 3.142 ×6×8  = 150.82  (iii) 2×3.142×3×3  = 56.56  (iv) 47.13 + 150.85 + 56.56  = 254.51  (b) L.S.F = = =  (L.S.F.)2  = (2    =  254.51 ×1600  = 407216cm2  = 40.721m2 | M1  M1  A1  M1  A1  B1  M1  M1  A1 |  |
| 1. × 80 + × 40   48.40 + 32.20  = 80.6 kg   1. × 100   = 67.17%   1. y = 50   Y= 40  A B  37 55  40  15 3  15: 3  5:1   1. (20×50) – (20×40)   1000 – 800  = Sh.200 | M1  M1  A1  M1  A1  B1  M1  A1  M1  A1 |  |
| (a) = 9X2 – 8X  (b) Gradient = 9 (1)2- 8(1)  9-8  = 1  (c) 9 (22) – 8 (2)  36-16  G=20  (x,y) (2,3) G=20  y-3 = 20  x-2  y - 3 = 20x – 40  y = 20x – 37  (d)Tan Ɵ = Gradient  Tan Ɵ = 20  Ɵ = 87.1°  (e)Gradient of L =-  y-3 = - 1  x-2 20  20 y – 60 = -x + 2  20y = -x + 62  Y= -x +  y= - x + 3.1 | B1  M1  A1  B1  M1  A1  A1  B1  M1  A1 |  |
| 2. Plotting ABC   Plotting A1B1C1   1. Rotation about   (0,0) through + 90°   1. Location of A11B11C11   Plotting A11B11C11   1. Reflection   Y= -X   1. ABC and A11B11C11   A1B1C1 and A11B11C11 | B1  B1  B1  B1  B1  B1  B1  B1  B1  B1 |  |
| 2. Tan 11.3 = 20   BP  BP = 20  Tan 11.3  BP = 100.1 M   1. (i) 36000 = 10m/s   3600  Distance = 10×5  = 50m  (ii) Tan x =  Tan X = 0.1332  X= 7.6°   1. (i) CD = 50.92 – 49.92   2590.81 – 2490.01  100.8  = 10.04  (ii) Tan y = 9.96  200.0    Tan y = 0.0498  Y= 2.85° | M1  A1  B1  M1  A1  M1  A1  M1  M1  A1 |  |
| 2. 3+15+19+2+x=50   39 + X = 50  X= 11   1. 150 ≤ × ˂ 155   150- 154   1. F= 19  |  |  |  |  |  | | --- | --- | --- | --- | --- | | Class | X | Freq | Fx | Cum fre | | 140-144 | 142 | 3 | 426 | 3 | | 145-149 | 147 | 15 | 2205 | 18 | | 150-154 | 152 | 19 | 2888 | 37 | | 155-159 | 157 | 11 | 1727 | 48 | | 160-164 | 162 | 2 | 324 | 50 | |  |  | ∑f=50 | ∑fx=7570 |  | |  |  |  | B1 | B1 |   x- = ∑fx = 7570  ∑f 50    = 151.4      Median class = 150 - 154   1. L+ N- C.F i   2 F  149.5 + × 5  = 151.47 | B1  B1  B1  M1  A1  B1  M1  A1 |  |
| 2. Ps = 342 - 256   1156 – 256    900  PS= 30 cm   1. Sin S =   S= 28.1  28.1 × 2 = 56.2  180 – 56.2  POS = 123.8   1. ( × 3.142 × 17 ×17)   ½ × 17× 17 sin 123.8  312.26 – 120.08  = 192.18 cm2 | M1  M1  A1  M1  M1  A1  M1  M1  M1  A1 |  |