**MINCKS TERM 2 2022**

**MATHEMATICS FORM 4**

**PAPER 1**

MARKING SCHEMES

|  |  |  |
| --- | --- | --- |
| 1. $\frac{9}{4}$ – $\frac{5}{3}$ = 27-20 = $\frac{7}{12}$

 $\frac{1}{6}$ - $\frac{1}{9}$ = 3-2 = $\frac{1}{18} $ 18$ $ $ \frac{7}{12}$ × $\frac{18}{2}$ = $\frac{21}{2}$  $\frac{21}{2}$ - $\frac{15}{8}$ = 84-15 8 = $\frac{69}{8}$  = 8 $\frac{5}{8}$ | M1M1M1A1 |  |
| 1.

3 1.9 × 0.032 × 0.08 × 1000000 20 × 0.0038 × 1000000 = 3 19×32×8 20×38 = 3 64  1000 =3 43 103 = $\frac{4}{10}$ = $\frac{2}{5}$ | M1M1A1 |  |
| 1. (2n – 4 ) 90 = $(\frac{360}{n}$) 40

 180n2 – 360n – 14400=0 n2 - 2n - 80 = 0 n=2 ± 324 2  n= 10   | M1M1A1 |  |
| 1. 840= 23 × 3× 5× 7

 396= 22 ×32×11 GCD = 22 × 3 = 12 Area = 12 ×12 =144 M2 | M1M1A1 | For Both |
| 1. 20 × 2950000

 100 = 590,000 yen 590,000 118 = 5000 dollars 76 × 5000 = sh. 380,000 | M1M1A1 |  |
| 1. -9-3X ≤ X-15

 6 ≤ 4X 1.5 ≤ X X–15 > 2X-18 3>X1.5 ≤ × ˂ 3 -1 0 1 2 3 4 | B1B1B1 |  |
| 1.

33(x+1) – 33X+2 = 48633X × 33 – 33X × 32 = 48632X (27-9) = 48633X = 333X = 3 X= 1 |  M1M1A1 |  |
| 1. Let loss be X

Profit = 3X1040-3X=880 +X1040 – 880 = 3X+X 160=4X X=40Buying price = 880+40 = 920 |  M1A1B1 |  |
| 1. $\frac{12}{8}$ = $\frac{3}{2}$

ASF = $\frac{9}{4}$Area PST = $\frac{4}{9}$ ×336 = 149 $\frac{1}{3}$  Area QRST = 336-149⅓ = 186 ⅔ cm2 | M1M1A1 |  |
| 1.

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 | M1M1A1B1 |  |
| 1. Sin X + 2 cos X

1-Sin X  Tan X = $\frac{12}{5}$  $\frac{12}{13}$ + 2 ($\frac{5}{13}$) = $\frac{22}{13}$$1-\frac{12}{13}$ = $\frac{1}{13}$= $\frac{22}{13}$ × $\frac{13}{1}$= 221. 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 |  M1M1A1M1M1A1 |  |
| 1. 2 (X+7) (X-7) × 3X +5

(3X+5) (X-7) X+7 = 2  | M1M1A1 |  |
| 1. 3X+ 8 = 16+ X + $\frac{3}{4}$ X + 12

 $\frac{5}{4}$X = 20 X= 16Fatuma = 3×16 = 48 yrs. | M1A1B1 |  |
| 1. Let r = 3.555……. (i)

 10r = 35.55…….(ii)Substract e.g (i) from equation(ii)qr = 32 r = $\frac{32}{9}$ = 3 $\frac{5}{9}$1.

|  |  |
| --- | --- |
| Class | Frequency |
| 5- 9 | 8 |
| 10 - 19 | 24 |
| 20-39 | 16 |
| 40-49 | 16 |

 | M1M1A1B1B2 | For correct classesFor correct frequencies |
| 1. (a) T 1+3 , -2+10

 2 2  T (2,4) (b) (i) 10+2 = 12 3-1 2 = 6Gradient of perpendicular = -$\frac{1}{6}$ (ii)  Y – 4 = - 1 X – 2 6 6Y – 24 = -X +2 6Y = -X + 26 Y= - 1 X + 26 6 6 (c) R (0, $\frac{13}{3}$ T (2,4)  TR = 0 - 2 $\frac{13}{3}$ 4 -2 ⅓/TR/ = (-2)2 + (⅓)2 4+ $\frac{1}{9}$ = 2.028 units (d) 1 + x = 3 -2 y 10 X = 2 Y 12 0 + 2 = 2 $\frac{13}{3}$ 12 $\frac{49}{3}$  R ( 2, 16 $\frac{1}{3}$) | M1A1B1M1A1M1M1A1M1 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 = $\frac{15}{600}$ = $\frac{5}{200}$ = $\frac{1}{40}$ (L.S.F.)2  = ($\frac{1}{40})$2  = $\frac{1}{1600}$ 254.51 ×1600 = 407216cm2 = 40.721m2 | M1M1A1M1A1B1M1M1A1 |  |
| 1. $\frac{60.5}{100}$ × 80 + $\frac{80.5}{100}$ × 40

48.40 + 32.20 = 80.6 kg1. $\frac{80.6}{120}$ × 100

= 67.17%1. $\frac{125}{100}$y = 50

Y= 40 A B 37 55 40 15 3 15: 3 5:11. (20×50) – (20×40)

1000 – 800 = Sh.200 | M1M1A1M1A1B1M1A1M1A1 |  |
|  (a) $\frac{dy}{dx}$ = 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 =- $\frac{1}{20}$ y-3 = - 1 x-2 20 20 y – 60 = -x + 2 20y = -x + 62 Y= -$\frac{1}{20}$x + $\frac{62}{20}$ y= - $\frac{1}{20}$x + 3.1 | B1M1A1B1M1A1A1B1M1A1 |  |
| 1.
2. Plotting ABC

Plotting A1B1C11. Rotation about

(0,0) through + 90°1. Location of A11B11C11

Plotting A11B11C111. Reflection

Y= -X1. ABC and A11B11C11

A1B1C1 and A11B11C11 | B1B1B1B1B1B1B1B1B1B1 |  |
| 1.
2. Tan 11.3 = 20

 BP BP = 20 Tan 11.3 BP = 100.1 M1. (i) 36000 = 10m/s

 3600  Distance = 10×5 = 50m (ii) Tan x = $\frac{20}{150.1}$ 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° | M1A1B1M1A1M1A1M1M1A1 |  |
| 1.
2. 3+15+19+2+x=50

 39 + X = 50 X= 111. 150 ≤ × ˂ 155

150- 1541. F= 19
2.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 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  = 151.41.

 Median class = 150 - 1541. L+ N- C.F i

 2 F 149.5 + $\frac{7.5}{19}$ × 5 = 151.47 | B1B1B1M1A1B1M1A1 |  |
| 1.
2. Ps = 342 - 256

 1156 – 256  900 PS= 30 cm1. Sin S = $\frac{16}{34}$

 S= 28.1 28.1 × 2 = 56.2 180 – 56.2 POS = 123.81. ( $\frac{123.8}{360}$ × 3.142 × 17 ×17)

½ × 17× 17 sin 123.8312.26 – 120.08 = 192.18 cm2 | M1M1A1M1M1A1M1M1M1A1 |  |