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| **MATHEMATICS 121/1 MARKING SCHEME** |
| 1. | = = = 0.625 or  | M1 A1 | 6 | (a) Sum of interior angles = number of triangles x 180Let t be the number of triangles⇒1080 = t x 180t = 6But t = n – 2 where n = Number of sidesn = 6 + 2 = 8(b) The size by one interior angle =  = Size of one interior angle180 = 180 – 45= 1350 | M1A1 M1 A1 |
|  |  | 2 Marks |
| 2. | M:F = 2:3∴ m = F ---- (i)Sunday service ratio = = ∴3m – 30 = f + 6m = + 12 …. (ii)also m = f ∴f = + 12f = 12f = 36m = 24Total no. = 60 | B1 or equivalentB1 or equivalentB1 |
|  |  | 3 marks |  |  | 4 Marks |
| 3. | 5000 x 84.15= 420,750420 750289 850130 900 = 1627.50≈ 1628 | M1 M1 A1  | 7 | (3x)2 – 4(3x) + 13 = 0Let 3x = tt2 – 4t + 3 = 0t2 – 3t – t + 3 = 0t(t – 3) -1(t - ) = 0(t – 3) (t – 1) = 0∴ t = 3 or t = 1but 3x = 3x = 1or 3x = 1 (30)x = 0 | M1 M1A1 |
|  |  | 3 Marks |  |
| 4. |  | M1 for factorizing numerator and denominator M1 A1 |  |
|  |  | 3 Marks |  |  | 3 marks  |
| 53cm2cm2cm3cm2cm5cm5cm2cm | Surface area = 3 x 5 x 2 = 302 x 5 x 2 = 202 x 3 x 2 = 12= 62cm2  | B2 Check for other alternativesM1A1 | 8. | HCF of 240, 320 and 380 120 320 3802 120 160 1902 60 80 955 12 16 19HCF = 2 x 2 x 5 = 20 cmArea = 202 = 400cm2 | M1 alternative methods may be appliedM1 A1 |
|  |  | 4 Marks  |  |  | 3 Marks |
| 9 | Let the digits be x and yx + y = 16 ……….. (i)original no. = 10x + yreversed no. = 10y + x(10y + x) – (10x + y) = 18 iix + y = 169y – 9x = 189y + 9x = 1449y – 9x = 18 18x = 126x = 7y = 9The no. is 79 | B1 both equations (i) and (ii)M1A1 | 14 | Let the cost price (C.P) be Sh. xProfit ⇒ Sh (420 – x)Loss ⇒ Sh (x – 320)Cost price = Sh. 345420 – x = 3x – 960-x – 3x = - 960 – 420-4x = - 13804x = 1380x = = 345Cost price = Sh. 345 | M1 for both profit and lossM1 for forming the equation and solving itA1 for correct answer |
|  |  | 3 Marks |  | 420 – x = 3(x – 320) | 3 Marks |
| 10. | (x – 1) + = (x – 4) = 10 (x – 1) = x – 410x – 10 = x – 4x =  | M1 M1A1 | 15. | (a) 42 = 92 + 62 – 2 x 6 x 9 Cos Q 108Cos Q = 101 Cos Q = 09352 Q = Cos-1 0.9352 Q = 20.740(b) ∠PSQ = 20.740Area of triangle PQS = x 9 x 10sin 20.740 = 15.94cm2 | M1A1 M1A1 |
|  |  | 3 Marks |  |  | 4 Marks  |
| 11. | 3P + 4e = 87 ………. (i)2P + 5e = 93 ………. (ii)2(2P + 4e = 87)3 (2P + 5e = 93)6P + 8e = 174 (iii)6P + 15e = 279 (iv)7e = 105e = 15Substitute in (ii)2P + 75 = 932P = 18P = 9Cost of exercise book Sh. 15Cost of a pen Sh. 9 | M1 M1 M1A1 | 16. | Cost (x – 20)0 = Sin (2x + 32)0 x – 20 + 2x + 32 = 903x + 12 = 903x + 78x = 260Tan (x – 4) = Tan (26 – 4)= Tan 22= 0.4040 | M1A1B1  |
|  |  | 3 marks  |
| SECTION II |
| 17.ADCCE | Sketch (c) (i) AE = 6.5 ± 0.1cm (ii) Bearing of E from A = 1020±10KINDLY SEE DRAWING ON PAGE 4 |  |
|  |  | 4 Marks |
| 12. | 45 cows can feed for 3 days∴ 1 cow can feed (30 x 45) days⇒ 50 cows can feed = 27 days | M1A1 |
|  |  | 2 Marks |
| 13. | 7y = 3x – 20y = x - g = Gradient of tar = (512) (x.y) =  = 3y – 6 = -7x + 353y = -7x + 41y = x +  | M1 rewriting in y = mx + CM1 or equivalentA1 or equivalent3y + 7x = 41, 7x + 3y – 41 = 0 |
|  |  | 3 Marks |  |  |  |

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|  18. | (a) 100q + 80r = 25600 50q + 160r = 18200(b) 200q + 160r = 51200 50q + 160r = 18200 150q = 33000 q = 220 r = 45(c) x 220 = 242 x 45 = 54100(242) + 80 (54) = 28,520Profit = 28520 – 25600 = 2920(d) Percentage profit = 11.41% | B1 or Any other letterB1 M1 Simultaneous equations M1M1A1M1A1  |  | L = ∴ l = 25.24Curved surface area larger cone = x 3.5 x 25.24= 277.64cm2Curved S.A of the small cone  x 277.64 = 99.9cm2Total surface area of frustrum + + 99.95 cm224.64 + 38.5 + 99.95= 163.09cm2(b) Volume of small coneh = x x 2.8 x 2.8 x 20 = 164.3cm3 ­Using volume scale factor (V.S.F)Volume of larger cone = x 164.3cm3∴Volume of frustrum = x 164.3 x 164.3= 156.6cm3 | B1B1B1M1 A1 B1B1M1A1  |
|  |  | 10 Marks |
| 19.  | Length(cm) | Mid pt (x) | F | xf | CF |  |
| 118 -126 | 122 | 3 | 366 | 3 |  |
| 127 – 135 | 131 | 4 | 524 | 7 |  |
| 136 – 144 | 140 | 10 | 1400 | 17 |  |
| 145 – 153 | 149 | 12 | 1788 | 29 |  |
| 154 – 162 | 158 | 5 | 790 | 34 |  |
| 163 – 171 | 167 | 4 | 668 | 38 |  |
| 172 – 180 | 176 | 2 | 352 | 40 |  |
|  |  | 40 | 5888 |  |  |
| (a) (i) Modal class ⇒ 145 – 153 (ii) Median class 145 – 153(b) (i) Mean of feedingx = = 147.2(ii) Median = L (= 144.5 + ()9144.5 + x 9144.5 + 2.625= 147.125 | B1 B1 C.F columnB1 median classB1 mid pointB1 xF columnM1A1M1 SubstitutionM1 attempt to simplifyA1  |  |  | 10 Marks |
| 21. | A1 (-4,6) B1 (-8,3) C1 (-4, 3)A2 + = , A2 B2 = + = , B2 (2,5) C2 = + =, C2 (6,5)(a) Transformation is a reflection  on the line y = 1 (b) Simple transformation is  rotation centre (2,0) through  ± 1800 KINDLY SEE PAGE 5 | 2 Marks correct co-ordinates2 marks2 Marks |
|  |  | 10 marks |  |  |  |
| 20. | 2.80cm3.5cmh5cm(a) Linear scale factor (L.S.F) = Area scale factor (A.S.F) ()2 = Volume scale factor (V.S.F)  = From similar triangles = 5h = 5h + 20h = 20cmLength of larger cone L2 = 252 + 3.52 = 625 + 12.25 |  | 22  | (a) (i) ∠BAC = ∠BCA = 450 ABC = 900 and Δ ABC is  isosceles  ∠DAC = 1800- (900 + 350) = 180 – 125 = 55 ∴∠BAD = 45 + 55 = 1000(ii) Reflex ∠BOD = 2 x 100 = 2000∴ Obtuse ∠ BOD = 3600 – 2000 =  1600(iii) BDG ABGD is a cyclic quad.∴BGD = 180 – 100 = 1800(b) ∠ABE = ∠CBF ∠ABE = 450 (∠S in alt. segment)∠CBF = 45 (∠S in alternate segment) ∴∠ABE = ∠CBF | M1M1A1M1 A1 M1A1M1 M1 A1 |
| 23 | (a) x 30hr x40hr 60h = 209095h = 2090h = 22m/smax speed = = 79.2 km/h(b) a = = (c) x 20 x 11 = = 110m(d) Time for half journey x 22 (30 + t + t) = x 209011 (30 + 2t) = 1045330 + 22t = 104522t = 919t = 32.5 | M1A1 B1M1A1 v 0.7333 m/s accept km/hM1 A1M1 M1 A1 | 24. | (a) Let no. of members be = nEach member was to contribute Shs. When 15 members failed to payNo. of members who contributed was n – 15Each member had to contributeSh. But this was Sh. 60 more⇒ - = 60n(4000) = (n -15) (4000) + 60(n2 – 15n)4000n = 4000n – 60000 + 60n2 – 900n n2 – 40n + 15n – 1000 = 0(n – 40) (n + 25) = 0n = 40 or n = 25∴ = 40 There are 40 members(b) Each member was to contribute Sh. = Sh. 100Increase was 60∴% increase x 100 = 60% | M1M1 expressionM1 A1 simplifiedM1 factorisationA1M1A1 |
|  |  | 10 Marks |  |  | 10 Marks  |



No. 17

No. 21

