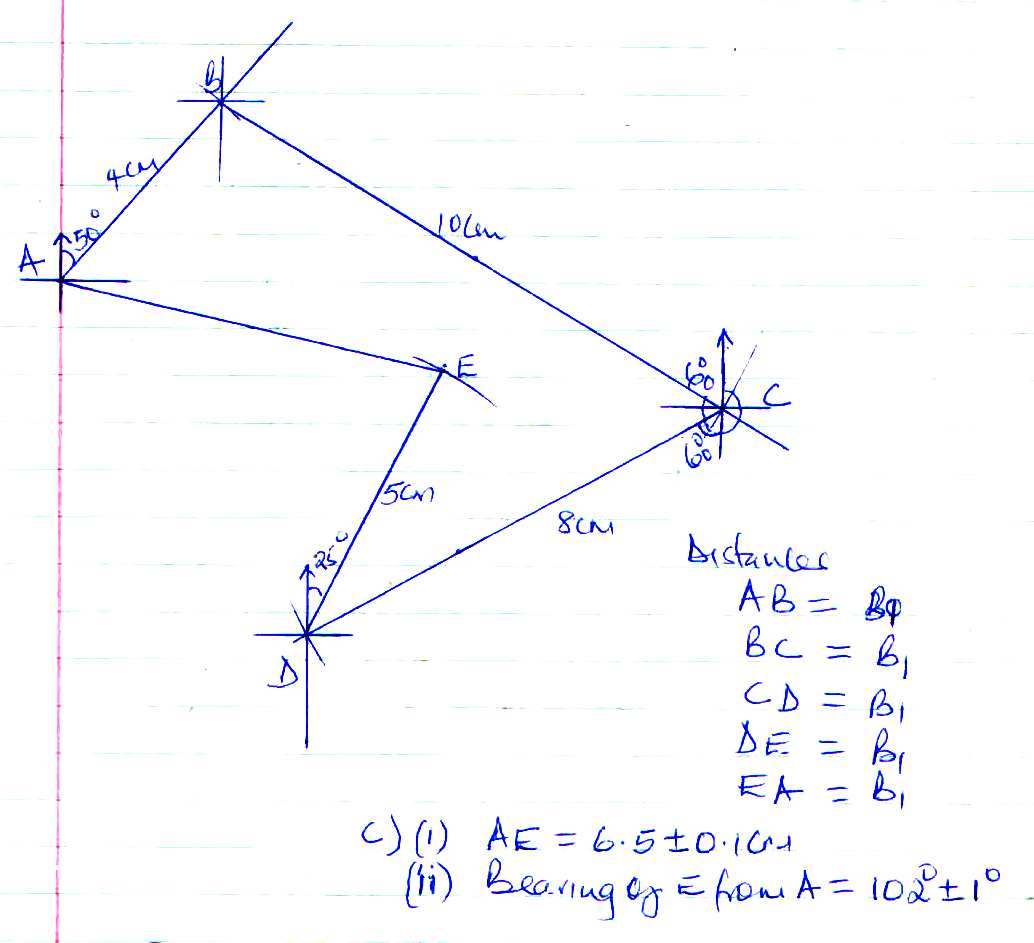
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| **MATHEMATICS 121/1 MARKING SCHEME** | | | | | |
| 1. | =  =  = 0.625 or | M1  A1 | 6 | (a) Sum of interior angles = number of triangles x 180  Let t be the number of  triangles  ⇒1080 = t x 180  t = 6  But t = n – 2 where n =  Number of sides  n = 6 + 2 = 8  (b) The size by one interior angle =  =  Size of one interior angle  180 =  180 – 45  = 1350 | M1  A1  M1  A1 |
|  |  | 2 Marks |
| 2. | M:F = 2:3  ∴ m = F ---- (i)  Sunday service ratio =  =  ∴3m – 30 = f + 6  m = + 12 …. (ii)  also m = f  ∴f = + 12  f = 12  f = 36  m = 24  Total no. = 60 | B1 or equivalent  B1 or equivalent  B1 |
|  |  | 3 marks |  |  | 4 Marks |
| 3. | 5000 x 84.15  = 420,750  420 750  289 850  130 900  = 1627.50  ≈ 1628 | M1  M1  A1 | 7 | (3x)2 – 4(3x) + 13 = 0  Let 3x = t  t2 – 4t + 3 = 0  t2 – 3t – t + 3 = 0  t(t – 3) -1(t - ) = 0  (t – 3) (t – 1) = 0  ∴ t = 3 or t = 1  but 3x = 3  x = 1  or  3x = 1 (30)  x = 0 | M1  M1  A1 |
|  |  | 3 Marks |  |
| 4. |  | M1 for factorizing numerator and denominator M1  A1 |  |
|  |  | 3 Marks |  |  | 3 marks |
| 5  3cm  2cm  2cm  3cm  2cm  5cm  5cm  2cm | Surface area =  3 x 5 x 2 = 30  2 x 5 x 2 = 20  2 x 3 x 2 = 12  = 62cm2 | B2 Check for other alternatives  M1  A1 | 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 alternative methods may be applied  M1  A1 |
|  |  | 4 Marks |  |  | 3 Marks |
| 9 | Let the digits be x and y  x + y = 16 ……….. (i)  original no. = 10x + y  reversed no. = 10y + x  (10y + x) – (10x + y) = 18 ii  x + y = 16  9y – 9x = 18  9y + 9x = 144  9y – 9x = 18  18x = 126  x = 7  y = 9  The no. is 79 | B1 both equations (i)  and (ii)  M1  A1 | 14 | Let the cost price (C.P) be Sh. x  Profit ⇒ Sh (420 – x)  Loss ⇒ Sh (x – 320)  Cost price = Sh. 345  420 – x = 3x – 960  -x – 3x = - 960 – 420  -4x = - 1380  4x = 1380  x =  = 345  Cost price = Sh. 345 | M1 for both profit and loss  M1 for forming the equation and solving it  A1 for correct answer |
|  |  | 3 Marks |  | 420 – x = 3(x – 320) | 3 Marks |
| 10. | (x – 1) + = (x – 4)    =  10 (x – 1) = x – 4  10x – 10 = x – 4  x = | M1  M1  A1 | 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 = 20.740  Area of triangle PQS = x 9 x 10sin 20.740 = 15.94cm2 | M1  A1  M1  A1 |
|  |  | 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 = 105  e = 15  Substitute in (ii)  2P + 75 = 93  2P = 18  P = 9  Cost of exercise book Sh. 15  Cost of a pen Sh. 9 | M1  M1  M1  A1 | 16. | Cost (x – 20)0 = Sin (2x + 32)0  x – 20 + 2x + 32 = 90  3x + 12 = 90  3x + 78  x = 260  Tan (x – 4) = Tan (26 – 4)  = Tan 22  = 0.4040 | M1  A1  B1 |
|  |  | 3 marks |
| SECTION II | | |
| 17.  A  D  C  C  E | Sketch  (c) (i) AE = 6.5 ± 0.1cm  (ii) Bearing of E from A = 1020±10  KINDLY 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 | M1  A1 |
|  |  | 2 Marks |
| 13. | 7y = 3x – 20  y = x -  g =  Gradient of tar =  (512) (x.y) =  =  3y – 6 = -7x + 35  3y = -7x + 41  y = x + | M1 rewriting in y = mx + C  M1 or equivalent  A1 or equivalent  3y + 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 = 54  100(242) + 80 (54)  = 28,520  Profit = 28520 – 25600  = 2920  (d) Percentage profit  = 11.41% | | | | B1 or Any other letter  B1  M1 Simultaneous equations  M1  M1  A1  M1  A1 | |  | L =  ∴ l = 25.24  Curved surface area larger cone  = x 3.5 x 25.24  = 277.64cm2  Curved S.A of the small cone  x 277.64 = 99.9cm2  Total surface area of frustrum  + + 99.95 cm2  24.64 + 38.5 + 99.95  = 163.09cm2  (b) Volume of small cone  h = 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 | B1  B1  B1  M1  A1  B1  B1  M1  A1 |
|  |  | | | | 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 feeding  x =  =  147.2  (ii) Median = L (  = 144.5 + ()9  144.5 + x 9  144.5 + 2.625  = 147.125 | | | | B1  B1 C.F column  B1 median class  B1 mid point  B1 xF column  M1  A1  M1 Substitution  M1 attempt to simplify  A1 | |  |  | 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-ordinates  2 marks  2 Marks |
|  |  | | | | 10 marks | |  |  |  |
| 20. | 2.80cm  3.5cm  h  5cm  (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 + 20  h = 20cm  Length 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 | M1  M1  A1  M1  A1  M1  A1  M1  M1  A1 |
| 23 | (a) x 30hr x40hr 60h = 2090  95h = 2090  h = 22m/s  max speed =  = 79.2 km/h  (b) a =  =  (c) x 20 x 11 =  = 110m  (d) Time for half journey  x 22 (30 + t + t) = x 2090  11 (30 + 2t) = 1045  330 + 22t = 1045  22t = 919  t = 32.5 | | | | M1  A1  B1  M1  A1 v 0.7333 m/s  accept km/h  M1  A1  M1  M1  A1 | | 24. | (a) Let no. of members be = n  Each member was to contribute Shs.  When 15 members failed to pay  No. of members who contributed was n – 15  Each member had to contribute  Sh.  But this was Sh. 60 more  ⇒ - = 60  n(4000) = (n -15) (4000) + 60(n2 – 15n)  4000n = 4000n – 60000 + 60n2 – 900n  n2 – 40n + 15n – 1000 = 0  (n – 40) (n + 25) = 0  n = 40 or n = 25  ∴ = 40 There are 40 members  (b) Each member was to contribute  Sh. = Sh. 100  Increase was 60  ∴% increase x 100 = 60% | M1  M1 expression  M1  A1 simplified  M1 factorisation  A1  M1A1 |
|  |  | | | | 10 Marks | |  |  | 10 Marks |



No. 17

No. 21

