

ANSWERSHEET

Answersheet 1.1

1. (i) Not a perfect square (ii) perfect square (iii) perfect square (iv) perfect square
(v) Not a perfect square

Answersheet 1.2

1. (i) Perfect cube (ii) not a perfect cube (iii) Perfect cube (iv) Perfect cube
(v) not a perfect cube (vi) not a perfect cube

2. 2 3. 13 4. 11 5.(ii) 10 (v) 484 (vi) 169

Answersheet 1.3

1. (i) 19 (ii) 20 (iii) 28 (iv) 32 (v) 48 (vi) 84, 2. 16

Answersheet 1.4

1. (i) 23 (ii) 37 (iii) 32 (vi) 76 (v) 30 (vi) 89 (vii) 225 (viii) 603
2. 43 row or column 3. 38m length or width

Answersheet 1.5

1. (i) 2.7 (ii) 4.1 (iii) 3.05
2. (i) 95 (ii) 2.24 (iii) 2.64

Answersheet 1.6

- (i) 5 (ii) 7 (iii) 11 (vi) 13 (v) 21 (vi) 55 (vii) 17 (viii) 35

Answersheet 2.1

1. (a) -125 (b) -1024 (c) 64 (d) 729
2. (a) 5^6 (b) $-(15)^{26}$ (c) $-(12)^2$ (d) $-(p)^7$

Answersheet 2.2

1. (a) $\frac{1}{343}$ (b) $\frac{16}{25}$ (c) -3125 (d) $\frac{16}{9}$
2. (a) $-\left(\frac{5}{7}\right)^2$ (b) $\left(\frac{3}{5}\right)^3$ (c) $\left(\frac{3}{2}\right)^6$
4. (a) True (b) True (c) False (d) False

Answersheet 3.2

1. $AE = 2$ cm. 2. 2.5 cm. 3. 1.2 cm.

Answersheet 4.1

1. (i) $6x^2 + 25x + 14$ (ii) $6x^2 + 17x - 45$ (iii) $105x^2 - 104x + 12$
- (iv) $\frac{3}{2}x^2 + \frac{72}{5}xy - 6y^2$ (v) $7x^2 + 34xy - 5y^2$
2. (i) $9x^2 + 10xy + 3y^2$ (ii) $3x^2 - \frac{5}{4}x + \frac{1}{8}$
- (iii) $3x^3 - 5x^2y + 3xy^2 - 5y^3$ (iv) $a^2 + 2ab + b^2$

Answersheet 4.2

1. (i) $-3xy$ (ii) $3xy$ (iii) $+xy^2$ (iv) $-4a^3b$ (v) $-4a^2b^2c^2$
2. (i) $x^2 - 3x + 2$ (ii) $-a^2b + 2a + 3$
- (iii) $-3a^3 + 4a$ (iv) $\frac{1}{4}x^2 + \frac{1}{2}x - \frac{1}{2}$
- (v) $a + b + c$

Answersheet 4.3

1. (i) $8x^4 - 4x^3 + 15x^2 - 3x - 15$ (ii) $12m^5 - 9m^3 - 6m^2 + 8m + 16$
 (iii) $9m^4 - m^3 - 16m^2 - 4m + 16$ (iv) $12y^4 - 8y^3 - 6y^2 + 4$
2. (i) to (v) the remainder is zero. So, the divisor is a factor of dividend.
3. (i) Quotient = $x^2 + 3x + 6$, remainder = 10
 (ii) Quotient = $x^2 - 2x + 6$, remainder = -42
 (iii) Quotient = $2x^3 - 4x^2 + x + 5$, remainder = -21
 (iv) Quotient = $2x^2 - 2x + 3$, remainder = 12
4. (i) Quotient = $m - 1$, remainder = 5
 (ii) Quotient = $a^2 - 4a + 9$, remainder = -16
 (iii) Quotient = $3x^2 + 4x - 3$, remainder = +6
 (iv) Quotient = $2x + 3$, remainder = $-x + 3$

Answersheet 5.1

1. (i) major arc (ii) minor arc (iii) $\angle ADB, \angle ACB$ (iv) minor arc AB
 (v) Arc CDA (vi) minor CD (vii) $\angle ADB, \angle ADC, \angle BDC$

Answersheet 5.2

- (i) $\angle A = 45^\circ$ (ii) $x = y = 33^\circ$ (iii) $p = 40^\circ$
 (iv) $m = 72^\circ, n = 57^\circ$ (v) $u = 93^\circ, v = 87^\circ$

Answersheet 5.3

1. Acute angle 2. obtuse angle 3. 180°

Answersheet 5.4

1. $\angle PRQ = 90^\circ, \angle QPR = 50^\circ$ 2. $\angle PYQ = \angle PXQ = 80^\circ$
 3. $\angle P = 90^\circ, \angle Q = \angle R = 45^\circ$ 4. $\angle BDC = 130^\circ$ 5. $\angle PTR = \angle PSR = 50^\circ$

Answersheet 5.5

1. (a) $x = 130^\circ$ (b) $x = 124^\circ$ (c) $x = y = 37^\circ$
 2. (i) $x = y = 52^\circ$ (ii) $x = 150^\circ, y = 75^\circ$
 3. $\angle COD = 70^\circ$ 4. $PQ = 3.2 \text{ cm}$
 5. (i) $x = 90^\circ, y = 115^\circ$ (ii) $x = 115^\circ, y = 65^\circ$

Answersheet 5.6

1. $BM = 3.5 \text{ cm.}, AB = 7 \text{ cm.}$ 2. $x = 90^\circ, y = 50^\circ$ 3. $PM = MQ = 4 \text{ cm.}$
 4. (1) Bisects (2) perpendicular

Answersheet 6.1

1. 72 2. 60 3. 8
 4. 30 kg. 5. 67 6. 5 7. 3
 8. 5 9. $x = 8$

Answersheet 6.3

1. $\frac{1}{4}$ 2. $\frac{1}{4}$ 3. $\frac{1}{5}$ 4. $\frac{1}{3}$ 5. $\frac{1}{2}$
 6. $\frac{1}{2}, \frac{1}{2}$

Answersheet 7.1

1. (i) Direct variation $\frac{1}{3}$ (ii) Direct variation $\frac{1}{1}$
(iii) It's not a direct variation. (iv) It's not a direct variation.
2. 100, 3, 250, 6 (3) $\frac{1}{7}$ (4) 1000 Km
5. (i), (ii), (iii), (iv), (v)
6. 60 ticket (7) 180 Km (8) Rs. 216
- (9) 50 minute (10) 5 hours (11) Rs. 2000
- (12) 29 days (13) 252 metre (14) Rs. 7.30
- (15) 1.925 cm (16) $4\frac{4}{15}$ minute or 256 seconds (17) 18 words per minute
- (18) 34 labours (19) 15.75 quintal
- (20) (i) (b), (ii) (a), (iii) (d), (iv) (c)

Answersheet 7.2

1.

x	8	6	4	72	36
y	9	12	18	10	2
2.

Speed (in Km/hr)	4	8	16	32	64
Time taken(in minute)	80	40	20	10	5
3. 10 day 4. 81 day 5. 45 Km/hr
6. 10 horses 7. 45 day 8. 175 soldier
9. 10 day 10. 15 day
11. (iii), (iv), (v) 12. 80 gm 13. 800 litre

Answersheet 8.1

1. (i) 1, 5, t, 5t, t^2 , $5t^2$ (ii) 1, 7, x, y, 7x, 7y, 7xy
 (iii) 1, 2, 7, 14, ℓ , ℓ^2 , m, 2ℓ , $2\ell^2$, 2m, 7ℓ , $7\ell^2$, 7m, 14ℓ , $14\ell^2$, $14m$, ℓm ,
 $2\ell m$, $7\ell m$, $14\ell m$, $\ell^2 m$, $2\ell^2 m$, $7\ell^2 m$, $14\ell^2 m$
 (iv) 1, 3, 13, 39, ℓ , 3ℓ , 13ℓ , 39ℓ , m, 3m, 13m, 39m, n, 3n, 13n, 39n, ℓm ,
 $3\ell m$, $13\ell m$, $39\ell m$, ℓn , $3\ell n$, $13\ell n$, $39\ell n$, mn, 3mn, 13mn, 39mn, ℓmn ,
 $3\ell mn$, $13\ell mn$, $39\ell mn$
2. (i) H.C.F. = 5 (ii) H.C.F. = 3 (iii) H.C.F. = 2a (iv) H.C.F. = m
3. (i) $6m\ell$ (ii) $4bc$ (iii) xy (iv) $7x$
 (v) $11pq^2r$ (vi) x (vii) 1

Answersheet 8.2

1. (i) x^2 (ii) $5a^2$ (iii) $2c$ (iv) $16x, 9z$
 (v) $6b^2, 4bc, 5a$.
2. (i) $2a(2x + 3ay)$ (ii) $a(a^4y + b^3)$ (iii) $q^2(pr - 2t)$
 (iv) $-5\ell m(m + 2\ell n)$ (v) $5(m + n)(m - n)$
3. (i) $2(x + 3y)(xy + 2)$ (ii) $(m - 2n)(5mn + 12)$
 (iii) $(3x + 4)(2x^2 + 3y)$ (iv) $(5x^2 + 4y)(3x^2 + 2y^2)$
 (v) $(x + 3)(x + 8)$ (vi) $(x - 4)(3x - 5)$
 (vii) $(\ell - m)(2m + 3)$
4. (i) $x - 3y^2x$ (ii) $-51x^3 + 153x^2$ (iii) $6a^3 - 8a^4$
 (iv) $9m^2 - 9mn$ (v) $9t^3 - 63t^5$

Answersheet 9.1

- (1) (i) $4a^2 + 12a + 9$ (ii) $\frac{4}{25}m^2 + \frac{3}{5}m + \frac{9}{16}$

- (2) (i) $x^2 - 10x + 25$ (ii) $\frac{9}{4}x^2 - \frac{12}{5}xy + \frac{16}{25}y^2$
 (iii) $4a^2 - 2a + \frac{1}{4}$ (iv) $x^4 - 2x^2y^2 + y^4$
- (3) (i) $16x^2 - 25$ (ii) $\frac{x^2}{4} - \frac{y^2}{9}$
 (iii) $b^4 - a^4$ (iv) $x^6 - y^6$
- (4) (i) $4a^2 + 20a + 25$ (ii) $\frac{4}{9}m^4 + \frac{10}{9}m^2n^2 + \frac{25}{36}n^4$
 (iii) $64x^6 - 80x^3y^3 + 25y^6$
- (5) (i) 1681 (ii) 4761 (iii) 9409 (iv) 7056
- (6) (i) 9975 (ii) 8096 (iii) 249991
- (7) (i) 50 (ii) 31 (iii) -13 (iv) 13
- (8) $9x^2 - 30xy + 25y^2$
- (9) $\frac{x^2}{9} + \frac{xy}{6} + \frac{y^2}{16}$

Answersheet 9.2

1. (i) $(2x + 5)(2x + 5)$ (ii) $(5a + 7b)(5a + 7b)$
 (iii) $(3x + 1)(3x + 1)$ (iv) $(1 + 9a)(1 + 9a)$
 (v) $(p + \frac{1}{2})(p + \frac{1}{2})$
 (vi) $(6a + 11b)(6a + 11b)$
2. (i) $(a - 5b)(a - 5b)$ (ii) $(4x - 13)(4x - 13)$
 (iii) $(11x - 4y)(11x - 4y)$ (iv) $(x - 15)(x - 15)$
 (v) $(6a - 1)(6a - 1)$
3. (i) $(5a + 7b)(5a - 7b)$ (ii) $(3x + 11y)(3x - 11y)$
 (iii) $(8a + 1)(8a - 1)$ (iv) $(1 + 4b)(1 - 4b)$

- (v) $(\frac{4}{5}m + \frac{2}{3}n)(\frac{4}{5}m - \frac{2}{3}n)$
4. (i) $(x + 4y + 7)(x + 4y - 7)$ (ii) $(10 + 2a + 3b)(10 - 2a - 3b)$
 (iii) $(2x + 5y + 6)(2x + 5y - 6)$ (iv) $(7x - 5y)(5y - x)$
 (v) $(xy + 4)(xy - 4)$
5. (i) $(x - 5y)$ (ii) $3, x$ (iii) $7, 7$ (iv) $(a + b - 2)$

Answersheet 10.1

1. (a)- (iii) Rectangle (b)- (iii) Rectangle (c)- (ii) 120° (d)- (ii) 28 cm
2. (i) Square (ii) trapezium (iii) 6 (iv) $(n-2)$
4. 1080° 5. $120^\circ, 60^\circ, 60^\circ$ 6. $80^\circ, 80^\circ, 100^\circ, 100^\circ$
7. 18 cm, 24 cm

Answersheet 10.2

1. 50° 2. 95° 3. $72^\circ, 108^\circ, 72^\circ, 108^\circ$
4. $60^\circ, 90^\circ, 120^\circ$ 5. $36^\circ, 72^\circ, 108^\circ, 144^\circ$
6. $80^\circ, 100^\circ, 80^\circ, 100^\circ$

Answersheet 12.1

- (1) $x = 3$ (2) $x = 1$ (3) $m = 2$
- (4) $x = \frac{3}{2}$ (5) $y = 4$ (6) $y = 2$
- (7) $k = -2$ (8) $x = 3$ (9) $x = -0.5$
-

Answersheet 12.2

- | | | | | | |
|-----|--------------------|-----|--------------------|-----|---------------|
| (1) | 14, 28 | (2) | 10, 30 | (3) | 5 cm, 2 cm |
| (4) | 62 | (5) | 34 | (6) | $\frac{5}{7}$ |
| (7) | 14 years, 10 years | (8) | 36 years, 12 years | | |

Answersheet 13.1

- | | | | | | | |
|----|-------------|----------|------|----------|-------|----------|
| 1. | (i) | Rs. 410 | (ii) | Rs. 1986 | (iii) | Rs. 1040 |
| 2. | (i) | Rs. 8427 | (ii) | Rs. 2916 | (iii) | Rs. 6480 |
| 3. | Rs. 5948.80 | | 4. | Rs. 9261 | | |

Answersheet 13.2

1. Rs. 81 2. Rs. 27783 3. Rs. 12 4. Rs. 405

Answersheet 13.3

1. (i) Rs. 7986, Rs. 1986 (ii) Rs. 1764, Rs. 164
(iii) Rs. 11241.25, Rs. 2741.25 (iv) Rs. 23152.50, Rs. 3152.50
2. Rs. 729 3. Rs. 5000 4. 15% 5. 10%
6. Rs. 46.08

Answersheet 13.4

- | | | | | | | | |
|----|-----------|----|------------|----|----------|----|-----------|
| 1. | Rs. 1820 | 2. | Rs. 1200 | 3. | Rs. 1444 | 4. | Rs. 340 |
| 5. | Rs. 12000 | 6. | Rs. 937.50 | 7. | Rs. 5400 | 8. | Rs. 13200 |

Answersheet 14.1

1. (i) 150 cm^2 (ii) 720 cm^2 (iii) 1800 cm^2
2. 185.5 cm^2 3. 15 cm^2 4. 20 m

Answersheet 14.2

- (1) 42 cm^2 (2) 18.75 cm^2 (3) 8 cm (4) 4500 dm^2

Answersheet 14.3

- (1) 120 cm^2 (2) 30 cm^2 (3) 168 cm^2 (4) 40.8 cm^2 (5) 12 cm , 18 cm

Answersheet 14.4

- (1) 156 cm^2 (2) 149 cm^2 (3) 530 cm^2 , Rs. 2782.50

Answersheet 14.5

- (1) 198 cm^2 (2) 188.57 cm^2 (3) 2794 cm^2

Answersheet 15.1

1. (i) 6 (ii) height (iii) 10^6
2. 6000 litre 3. 280 cm^3 4. 1200 cm^3
5. (i) 150 cm^3 (ii) 22.5 cm^3 (iii) 64 m^3
 (iv) 22.5 m^3 (v) 35 cm^3 (vi) 120 cm^3
 (vii) 168 cm^3 (viii) 37500 cm^3
6. 8 cm 7. 125 pic 8. 67.5 m^3 9. 1600 litre
10. 1 m 11. 1.728 cm^3
12. 432 m^3 (capacity) 288 m^3
13. 60 m^3 , 40000 litre 14. 25000 bricks

Answersheet 15.2

1. (i) 54 (ii) equal (iii) cube 2. 102.5 cm^2 3. 846 foot^2 4. 4750 cm^2 5. 69.36 cm^2
 6. 6 cm 7. 79.50 cm^2 8. Rs. 188 9. 4:1

Answersheet 16

(5) 6

Answersheet 17.1

1. (ii) $\frac{12}{13}$, (iv) $\frac{6}{7}$
 3. (i) $1, 1\frac{5}{9}$ (ii) $7, 7\frac{5}{12}$ (iii) $6, 6\frac{11}{18}$ (iv) $4, 4\frac{23}{61}$
 4. (i) $\frac{2}{5}, \frac{6}{9}, \frac{8}{9}, \frac{4}{3}$ (ii) $\frac{1}{9}, \frac{2}{9}, \frac{4}{9}, \frac{7}{9}, \frac{8}{9}$

Answersheet 17.2

2. (i) 8 (ii) - 12 (iii) 20 (iv) - 39 (v) 59
 3. (i) $\frac{5}{9}$ (ii) 0 (iii) $-\frac{5}{3}$ (iv) $\frac{-13}{-8}$
 4. 2 5. 1 6. $\frac{5}{3}$

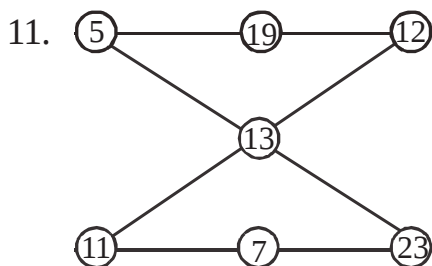
Answersheet 17.3

1. 10, two digit numbers 30, 50, 35, 53, three digit numbers 305, 350, 503, 530
 2. (A) 111, 222, 333,, etc.
 (B) 111111111, 222222222, etc.
 3. (a) 26, 37, 65, 101
 (b) 13, 34, 89
 (c) 99, 90, 80, 57 (d) 8, 6
 4. $0^1 + 6^2 + 3^3 = 0 + 36 + 27 = 63$ etc.
 5. $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 \times 9 = 100$

6. $A = 25, B = 161, C = 25, D = 12, E = 95, F = 26,$

$G = 25, H = 23, I = 167, J = 561$

10. (i) $2 + 2 - 2 + 2/2 = 3$ (ii) $22 \div 2 - 2 - 2 = 7$



Answersheet 17.4

1. (i) yes (ii) no (iii) yes (iv) no (v) no
2. (i) divisible (ii) not divisible (iii) divisible
(iv) not divisible (v) divisible
3. 1—(ii) 815, (iii) 6570
4. (i) 560 (ii) 791 (iv) 7007

Answersheet 18.1

1. (i) $2\frac{9}{34}$ (ii) $-1\frac{19}{36}$ (iii) $\frac{7}{20}$
2. (i) $\frac{-5}{9}$ (ii) $\frac{6}{31} + \frac{-11}{29}$ (iii) $\frac{13}{9}, \frac{-15}{7}$ (iv) $\frac{5}{6}$
3. Associative law
4. (i) $\frac{227}{693}$ (ii) $-1\frac{1}{6}$ (iii) $-1\frac{6}{14}$
5. $\frac{7}{12}$
6. (i) $\frac{5}{7}$ (ii) 0 (iii) $\frac{39}{51}$ (iv) $\frac{-42}{17}$
8. (i) Commutative law (ii) Associative law
(iii) Additive identity (iv) Additive inverse

Answersheet 18.2

1. (i) $-\frac{1}{20}$ (ii) $\frac{3}{8}$ (iii) $-\frac{23}{24}$ (4) $-\frac{1}{13}$
2. (i) 0 (ii) $\frac{19}{70}$ (iii) $-5\frac{29}{60}$
3. $\frac{13}{24}$ 4. $-\frac{6}{25}$ 5. (i) false (ii) false (iii) true (iv) true

Answersheet 18.3

3. (i) $\frac{2}{3}$ (ii) $\frac{1}{2}, \frac{11}{19}$ (iii) $-\frac{3}{17}, \frac{7}{9}$
4. (i) $\frac{2}{9}$ (ii) $-\frac{1}{8} \times -\frac{2}{5}$ (iii) $\left(\frac{4}{7} \times -\frac{25}{3}\right) \times \frac{1}{5}$
5. (i) Distributive law (ii) Distributive law
(iii) Commutative (iv) Multiplicative inverse
(v) Multiplicative identity
6. (i) $\frac{1}{4}$ (ii) $-\frac{5}{17}$ (iii) $-\frac{29}{6}$ (4) $\frac{q}{p}$
7. (i) true (ii) false (iii) false (iv) true

Answersheet 18.4

1. (i) $\frac{2}{9}$ (ii) $-\frac{72}{55}$ (iii) $-\frac{63}{4}$ (iv) 3 (v) $-\frac{7}{4}$ (vi) $+\frac{2}{3}$
2. (i) $-\frac{4}{5}$ (ii) $\frac{1805}{128}$ (iii) $\frac{105}{16}$ (iv) -3 (v) $\frac{2}{35}$ (vi) $\frac{7}{5}$
3. 20 4. $\frac{55}{9}$ 5. $-\frac{13}{4}$

Answersheet 18.5

1. (i) $\frac{3}{2}$ (ii) $\frac{3}{7}$ (iii) $-\frac{2}{9}, -\frac{2}{9}, \frac{2}{3}$
3. $\frac{17}{48}, \frac{3}{8}, \frac{5}{12}, \frac{11}{24}, \frac{23}{48}$
4. $-\frac{35}{168}, -\frac{11}{84}, \frac{1}{42}, \frac{5}{28}, \frac{19}{56}$

5. $-\frac{5}{96}, \frac{1}{16}, \frac{7}{24}, \frac{25}{48}, \frac{61}{96}$

6. (i) true (ii) false (iii) false

Answersheet 19.1

1. (i) Circular (ii) $\pi r^2 h$ (iii) 1078 cm^3

2. 20790 cm^3

3. (i) 6336 cm^3 (ii) 123.20 cm^3 (iii) 6600 m^3

4. $4 : 1$

5. 86.24 m^3 6. 138.6 cm^3

Answersheet 19.2

1. (i) Curved surface = 1056 lseh^2 , whole surface = 1364 cm^2

(ii) Curved surface = 1320 m^2 , whole surface = 1948.57 m^2

(iii) Curved surface = 2310 cm^2 , whole surface = 3003 cm^2

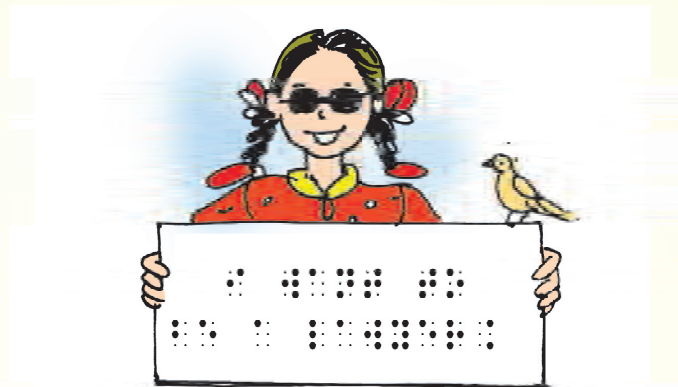
(iv) Curved surface = 8800 cm^2 , whole surface = 10032 cm^2

2. 5280 cm^2 3. 69.14 cm^2 4. 3850 m^3 , Rs. 3300

5. 264 m^2 6. 50 cm

Braille

An Introduction



Do you know what is written here?

It is: I want to be a lawyer.

Like devnaagri and Gurumukhi etc. Braille is also a script. Braille script is used by Blind persons to read and write. Braille was invented by Louis Braille in 1829. Braille script is based on six dots. These six dots are referred as the Braille cell. Each cell comprises of one Braille character. To write Braille script Blind person uses Stylus and Braille slate. Braille slate consist essentially of two metal or plastic plates hinged together to permit a sheet of paper to be inserted between the two plates. While writing on a Braille sheet (drawing sheet) it is to be written from right to left and then reverse the normal numbering of the Braille cell. Blind person reads these raised (embossed) dots with the help of their finger tip.

① ④

② ⑤

③ ⑥

Total 63 combinations are possible using these 6 dots.

Some combinatio^s given below:

Braille cell

Braille Chart

a	b	c	d	e	f	g	h	i	j
⠁	⠃	⠉	⠙	⠑	⠋	⠗	⠎	⠊	⠚
k	l	m	n	o	p	q	r	s	t
⠅	⠇	⠓	⠝	⠕	⠖	⠞	⠞	⠠	⠟
u	v	w	x	y	z				
⠥	⠦	⠡	⠭	⠣	⠵				
A Number sign (⠼) is used before the alphabets 'a' to 'j' to convert them to numbers.									
1	2	3	4	5	6	7	8	9	0
⠼⠁	⠼⠃	⠼⠉	⠼⠙	⠼⠑	⠼⠋	⠼⠗	⠼⠎	⠼⠊	⠼⠚