INTRODUCTION TO COORDINATES

Form 1

Vol 6

Part 7 – Rotation

1. (a) (–1, –2)
   (b) (–5, –5)
   (c) (–2, –8)
   (d) (1, –1)
   (e) (6, 2)
   (f) (4, –4)
   (g) (2, 4)
   (h) (–4. –1)
   (i) (–3, –3)
   (j) $(-y, -x)$
   (k) $(3 - x, x + 2)$
   (l) (0, –1)
   (m) (–4, 2)
   (n) (–5, –1)

2. (a) 90°
   (b) 270°
   (c) 270°
   (d) 180°
   (e) 90°
   (f) 270°

3. (a) $B(6, -5)$
   (b) (i) $C(-5, 6)$
   $D(-6, -5)$
   (ii) Area of $ABCD$ = (Area of ΔBCD) + (Area of ΔABD)
   $= \dfrac{(6+6)(6+5)}{2} + \dfrac{(6+6)(-5+6)}{2}$
   = 72 sq. units

Part 8 – Mixed Problem

1. (a) (–6, 2)
   (b) (9, 3)
   (c) (–3, –1)
   (d) (1, 10)
   (e) (–3, 1)
   (f) (9, –1)

2. A 3. A 4. D 5. B 6. D

2.	A	$B(5, 6)$ Transformation I gives (5, –2). Transformation II gives (–5, 6). Transformation III gives (–5, –6).
3.	A	$B(-6, -8)$ Transformation I gives (6, –8). Transformation II gives (6, –8). Transformation III gives (8, –6).
4.	D	$B(-3, -3)$ Transformation I gives (–3, 3). Transformation II gives (–3, 3). Transformation III gives (–3, 3).
5.	B	$B(y-2, 2-3x)$ Thus, $2-3x = 5-2x$ $x = -3$ $y-2 = 4x+1 = -11$ $y = -9$
6.	D	$B(1-2k, 8-k)$ Since AB is parallel to the x-axis, $2k-1 = 8-k$ $k = 3$

7. (a) (i) $B(-8, 0)$

(ii) $OB = 8$

Height of ΔAOB corresponding to base $OB = 8$

Area of $\Delta AOB = \dfrac{8\times 8}{2} = 32$ sq. units

(b) $C(-8, 8)$

$AC = -6 - (-8) = 2$

Height of ΔAOC corresponding to base $AC = 8$

Area of $\Delta AOC = \dfrac{2\times 8}{2} = 8$ sq. units

8. $B(4, 2)$

By filling, the area of ΔAOB

$= (2+4)(5) - \dfrac{5\times 4}{2} - \dfrac{4\times 2}{2} - \dfrac{(2+4)(5-4)}{2}$

$= 30 - 10 - 4 - 3$

$= 13$ sq. units

9. (a) $B(4, 2)$

$C(4, -2)$

(b) Extend BC to a point D such that AD is parallel to the x-axis.

Let BC intersects the x-axis at point E.

The area of $OABC$ = (Area of ΔOCE) + (Area of $OADE$) – (Area of ΔABD)

$= \dfrac{4\times 2}{2} + \dfrac{(4+4+2)(4)}{2} - \dfrac{(4+2)(4-2)}{2}$

$= 4 + 20 - 6$

$= 18$ sq. units

10. (a) (i) $B(5, -3)$

$C(5, -3 - k)$

$D(-5, -3 - k)$

(ii) Let E a point on CD such that AE is parallel to the y-axis.

$E(3, -3 - k)$

$BC = k$

$AE = 5 - (-3 - k) = 8 + k$

$DE = 3 - (-5) = 8$

$CE = 5 - 3 = 2$

Area of quadrilateral $ABCD$

= (Area of $ABCE$) + (Area of ΔAED)

$= \dfrac{(k+8+k)(2)}{2} + \dfrac{(8+k)(8)}{2}$

$= 2k + 8 + 4(8 + k)$

$= 6k + 40$

(b) The area $= 6k + 40 = 88$

$k = 8$