

INTRODUCTION TO COORDINATES

Form 1

Vol 6

Part 3 – Plane Figure

1. (a) $Q(-6, 8), S(9, -5)$
 (b) $PQ = 9 + 6 = 15, QR = 8 + 5 = 13$
 Perimeter $= 2(15 + 13) = 56$ units

2. (a) Since $ABCD$ is a square,

$$AB = \frac{72}{4} = 18$$
 (b) $C(11, 5)$.

3. (a) $AB = 13 + 10 = 23$
 $BC = 12 + 9 = 21$
 $DE = 12 + 3 = 15$
 (b) Since $CD + EF + GH = CH = AB$ and $DE = FG$,
 the required perimeter $= 2(AB + BC) + 2DE$
 $= 2(23 + 21) + 2(15)$
 $= 118$ units

4. (a) $b = 1$
 (b) The perimeter $= 2[(5 + 7) + (10 - a)] = 44 - 2a$
 (c) $44 - 2a = 60$
 $a = -8$
 Thus, the coordinates of H is $(-8, 1)$.

5. (a) $AF = 12 - (2 - a) = a + 10$
 $AB = a + 2 + 7 = a + 9$
 (b) Perimeter of $ABCDEF$
 $= 2 [(a + 10) + (a + 9)] = 4a + 38$
 $4a + 38 = 82$
 $a = 11$

Part 4A – Area (A)

1. (a) $G(4, -4)G(4, -4)$

(b) $\text{Area} = \frac{(9+13)(16)}{2} = 176$

2. (a) $CD = 2$

$$AB = 3 \times 2 = 6$$

(b) $AB = (2x + 1) - (x - 4) = 6$

$$x + 5 = 6$$

$$x = 1$$

(c) $\text{Area} = \frac{(2+6)(5)}{2} = 20$

3. (a) The height $= 2 - (-5) = 7$

(b) Area of $ABCD = \frac{(AD + AD + 4)(7)}{2} = 56$

$$2AD + 4 = 16$$

$$AD = 6$$

(c) Coordinates of $A = (2, -5 + 6) = (2, 1)$.

4. (a) The corresponding height $= \frac{30}{5} = 6$

(b) The corresponding height $= 5 - (2x - 5) = 6$

$$10 - 2x = 6$$

$$x = 2$$

(c) Since $AB = CD = 5$,
the coordinates of A are $(1 - 5, 2x - 5) = (-4, -1)$.

5. Area of $DEFG = (\text{Area of } \triangle DEF) + (\text{Area of } \triangle DFG)$

$$= \frac{(7)(4)}{2} + \frac{(7)(5)}{2} = 31.5$$

6. Let D be a point with coordinates $(-2, 0)$.

$$\text{Area of } \triangle ABC = (\text{Area of } \triangle ABD) + (\text{Area of } \triangle ACD)$$

$$= \frac{5(-1+2)}{2} + \frac{5(-2+5)}{2} = 10$$