INTRODUCTION TO COORDINATES

Form 1
Vol 6

Part 1 – Points on coordinate plane

1.	D	2.	D	3.	C	4.	D	5.	A
6.	C	7.	D	8.	B	9.	A	10.	C

5.	A	Drawing segment BD, we can observe that segment AC and segment BD intersect at $(2, -1)$.
6.	C	The coordinates of A are $(5, 0)$. $h + 2 = 5$ $h = 3$ $k + 4 = 0$ $k = -4$
7.	D	The coordinates of B are $(-3, 5)$. $1 - 2m = -3$ $m = 2$ $2n + 3 = 5$ $n = 1$
8.	B	P lying on the x-axis implies that the y-coordinates of P is 0. $2c + 5 = 0$ $c = -\frac{5}{2}$
9.	A	Q lying on the y-axis implies that the x-coordinates of Q is 0. $2k + 4 = 0$ $k = -2$ Hence, the coordinates of Q are $(0, -6)$.
10.	C	R lying on the x-axis implies that the y-coordinates of R is 0. $4h + 16 = 0$ $h = -4$ Hence, the coordinates of Q are $(-27, 0)$.

Part 2 – Line Segment

1.	B	2.	A	3.	A	4.	B	5.	D
6.	B	7.	D	8.	B	9.	C	10.	D
11.	A	12.	A	13.	B	14.	A	15.	D
16.	A	17.	B	18.	A	19.	A	20.	C

1.	B	Coordinates of $C = (3-6, -3+4) = (-3, 1)$
2.	A	Coordinates of $F = (3-6+4, -3+4-3+1) = (1, -1)$
3.	A	The length of the path $ABCDEFGH$ $=$ (Vertical distance from A to H) $+$ (Horizontal distance from A to H) $= (3+1)+(3+4)$ $= 11$
4.	B	CD is parallel to the y-axis. $CD = 7-(-2d+3) = 4+2d$ $4+2d = 14$ $d = 5$
5.	D	MN is parallel to the y-axis. $MN = (3-k)-k = 3-2k$ $3-2k = 7$ $k = -2$
6.	B	Note that $AB = 23$ AB is parallel to the x-axis. $AB = 4h+5-(2-h) = 5h+3$ $5h+3 = 23$ $h = 4$
7.	D	$BC = 3 - 2y = 5$ $y = -1$ Since AB is parallel to the x-axis, $3x - 5 = 2y = -2$ $x = 1$
8.	B	$AB = (y + 5) - (-4x + 1)$ $= (-1 + 5) - (-4 + 1)$ $= 4 + 3$ $= 7$ units

9.	C	$AB = 10 - (c + 8) = 2 - c$ $AC = 2 - (5c + 16) = -5c - 14$ Given that $AB = AC$, we have $2 - c = -5c - 14$ $c = -4$
10.	D	Coordinates of $A = (2, -4 + 8) = (2, 4)$ $AB = 10 - 4 = 6$ Since $AB = AD$, the coordinates of $D = (2, 4 - 6) = (2, -2)$
11.	A	Since A is located above B, $AB = 2x - 7 - (3x - 5) = -x - 2$ $-x - 2 = 12$ $x = -14$
12.	A	Since A is located to the left of B, $AB = -3k - (2 + k) = -4k - 2$ $-4k - 2 = 18$ $k = -5$
13.	B	Since P and Q lie on the same vertical line, $4x + 5 = 2x + 7$ $x = 1$ Thus, $P(9, 5)$ and $Q(9, 3)$. $PQ = 5 - 3 = 2$ units.
14.	A	Since M is located horizontally to the right of N, the two points have the same y-coordinate. $3x + 1 = x - 1$ $x = -1$ $MN = x - 2 - (y + 5) = -8 - y$ $-8 - y = 6$ $y = -14$
15.	D	We have $PQ = 2 + x - (3x - 1) = -2x + 3$, or $PQ = 3x - 1 - (2 + x) = 2x - 3$. Thus, $-2x + 3 = PQ = 5$ $x = -1$, or $2x - 3 = PQ = 5$ $x = 4$

16.	A	We have $PQ = 6m+1-(2m-5) = 4m+6$, or $PQ = (2m-5)-(6m+1) = -4m-6$. Thus, $4m+6 = PQ = 2$ $m = -1$, or $-4m-6 = PQ = 2$ $m = -2$
17.	B	Since A and B are lying on the same horizontal line, $AB = 4x-1-(x+8) = 3x-9$, or $AB = x+8-(4x-1) = -3x+9$ Case 1: $3x-9 = AB = 6$. Then, $x = 5$. $y+5 = 2x-3$ $y = 2(5)-3-5 = 2$ Case 2: $-3x+9 = AB = 6$. Then. $x = 1$. $y+5 = 2x-3$ $y = 2(1)-3-5 = -6$
18.	A	Since A and B are lying on the same vertical line, $5y+3 = 3y-1$ $y = -2$ Thus, $A(-7,-1)$. $AB = -1-(x-2) = 1-x$, or $AB = x-2-(-1) = x-1$. Then, $1-x = AB = 4$ $x = -3$, or $x-1 = 4$ $x = 5$

19.	A	I is true. Since it is given that a is a negative number, $a-3$ is negative, while $3-a$ is positive. Thus, P is located to the left of Q. II is not true. Since $a-3$ is negative, and $3-a$ is positive, P and Q do not have the same x-coordinate. Thus, PQ is not parallel to the y-axis. III is not true. Since P and Q have the same y-coordinate, PQ is parallel to the x-axis. Thus, since $a-3$ is negative, and $3-a$ is positive, $PQ=3-a-(a-3)=6-2a$, which is not equal to 6 for a being negative.
20.	C	I is true. Since P and Q are lying on the same vertical line, $a+3=b-2$ $b-a=5$ II is not true. Suppose P is located above Q, then $PQ=(b-7)-(a+4)$ $=b-a-7-4$ $=5-7-4$ (by I) $=-6$, which is negative. Since the length of PQ should be non-negative, Q should be located above P instead. III is true. By II, $PQ=(a+4)-(b-7)$ $=-\left[(b-7)-(a+4)\right]$ $=6$