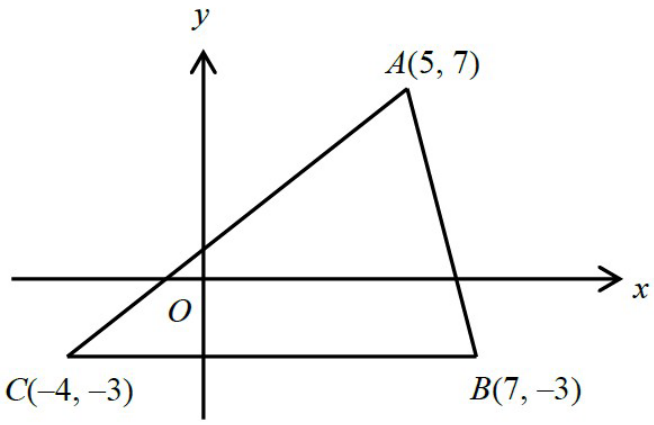
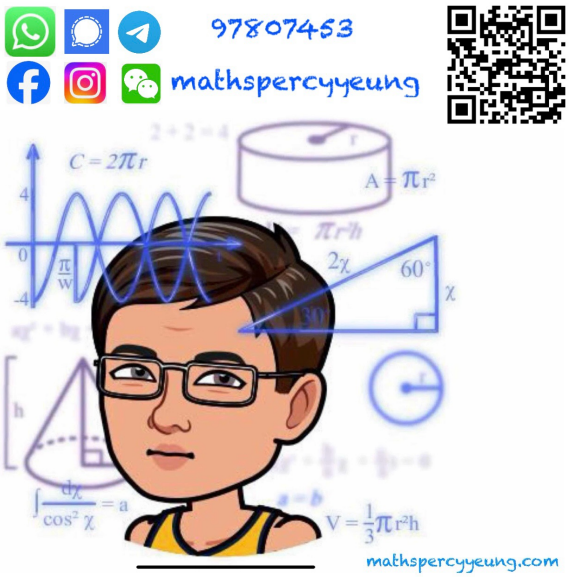
GHS Sorted Past Paper - MC
S1-12 Introduction to Coordinates

1. [20 - 21 S1 Final Exam - 11] (95%)

11. In the figure, the area of ΔABC =





A. 20 square units.

B. 49.5 square units.

C. 55 square units.

D. 110 square units.

2. [20 - 21 S1 Final Exam - 13] (75%)

13. L is a straight line parallel to the x-axis and passing through $B(3, 4)$. If $A(1\ , -5)$ is reflected with respect to L to C, find the coordinates of C.

A. (1, 11)

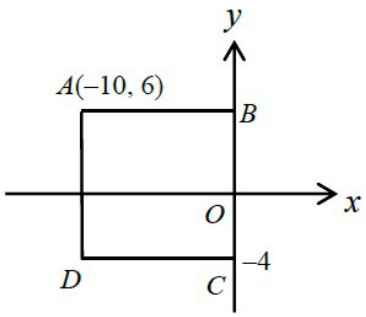
B. (1, 13)

C. (5, –5)

D. (7, –5)

3. [20 - 21 S1 Final Exam - 20] (64%)

20. In the figure, B and C lie on y-axis and $ABCD$ is a quadrilateral where AB and CD are parallel to x-axis and $AD//BC$. Which of the following is/are true?



I. The coordinates of D are $(-4, -10)$.
II. $(-5, -3)$ is a point inside the rectangle $ABCD$.
III. $AD = DC$.

A. I only
B. II only
C. I and II only
D. II and III only

4. [22 - 23 S1 Final Exam - 10] (73%)

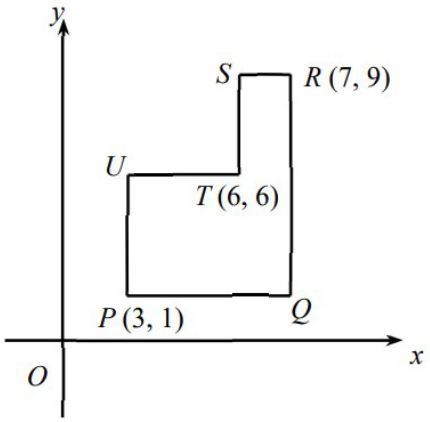
10. $P(3,4)$ is a point on the rectangular coordinate plane. Which of the following are true?

I. If P is reflected with respect to the y-axis to P_1, the coordinates of P_1 are $(-3,4)$.
II. If P is rotated about the origin through $180°$ to P_2, the coordinates of P_2 are $(-3,-4)$.
III. If P is translated downwards by 8 units to P_3, the coordinates of P_3 are $(3,-4)$.

A. I and II only
B. I and III only
C. II and III only
D. I, II and III

5. [22 - 23 S1 Final Exam - 19] (88%)

19. In the figure, PQ, UT and SR are all horizontal lines, while PU, TS and QR are all vertical lines. The perimeter of $PQRSTU$ is



A. 12 units.
B. 24 units.
C. 25 units.
D. 32 units.

6. [22 - 23 S1 Final Exam - 20] (70%)

20. If P is a point on the x-axis and the distance between P and the origin is 5 units, the coordinates of P are

A. $(0,5)$.
B. $(5,0)$.
C. $(0,5)$ or $(0,-5)$.
D. $(5,0)$ or $(-5,0)$.

7. [23 - 24 S1 Final Exam - 13] (19%)

13. Consider three points $A(3, 4)$, $B(3, -1)$ and the origin O. Point A is rotated about O through 270° anti-clockwise to A_1. Which of the following are true?

I. B lies in the quadrant IV.
II. AB is a vertical line.
III. $OA = OA_1$.

A. I and II only
B. I and III only
C. II and III only
D. I, II and III

8. [23 - 24 S1 Final Exam - 24] (78%)

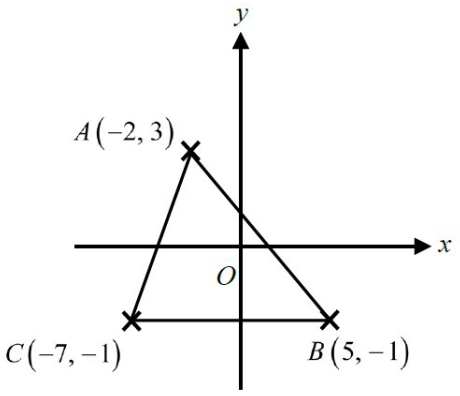
24. A point P is rotated about the origin through 90° anti-clockwise and then translated downwards by 5 units to (–2, –4). The coordinates of P are

A. (1, 2).
B. (4, 3).
C. (4, –7).
D. (–1, –2).

9. [24 - 25 S1 Final Exam - 12] (95%)

12. The coordinates of the points A, B and C are $(-2,3)$, $(5,-1)$ and $(-7,-1)$ respectively. The area of ΔABC is

A. 18 square units.
B. 24 square units.
C. 32 square units.
D. 48 square units.



10. [24 - 25 S1 Final Exam - 24] (44%)

24. A point P is first reflected with respect to the horizontal line passing through $(1,-3)$ and then it is rotated 90° clockwise about the origin to $(-1,4)$. The coordinates of P are

A. $(-4,-5)$.
B. $(-4,-7)$.
C. $(4,-7)$.
D. $(4,-5)$.

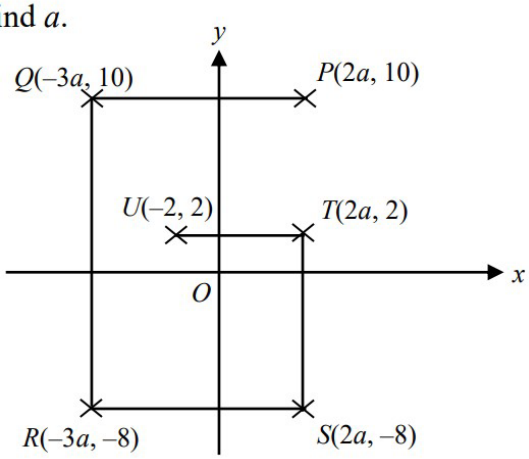
11. [22 - 23 S2 Final Exam - 01] (82%)

1. Point $A(5, 7)$ is reflected about the x-axis to point B. The coordinates of B are

A. $(-7, 5)$.
B. $(-5, 7)$.
C. $(5, -7)$.
D. $(7, -5)$.

12. [22 - 23 S2 Final Exam - 19] (64%)

19. In the figure, if the length of the path $PQRSTU$ is 66 units, find a.



A. 3
B. $\frac{10}{3}$
C. $\frac{13}{3}$
D. 5

13. [22 - 23 S2 Mid-year Exam - 07] (77%)

7. Which of the following statements is/are correct?

I. $(-1, -2)$ is a point in quadrant IV .
II. $(5, 0)$ is a point on the x-axis .
III. $(3, 3)$ and $(-3, 3)$ lie on the same horizontal line.

A. I only
B. II only
C. I and III only
D. II and III only

14. [22 - 23 S2 Mid-year Exam - 14] (52%)

14. If $A(a, a+3)$ and $B(2-a, 2a+5)$ lie on the same vertical line, then $AB =$

A. 1 unit .
B. 2 units .
C. 3 units .
D. 6 units .

15. [22 - 23 S2 Mid-year Exam - 15] (68%)

15. The coordinates of the point P are $(2, -3)$. P is reflected with respect to the x-axis and then rotated anti-clockwise about the origin through $90°$ to the point Q. Find the y-coordinate of Q.

A. –3
B. –2
C. 2
D. 3

16. [22 - 23 S5 Final Exam - 28] (78%)

28. The coordinates of the point A are (–4, 5). A is rotated clockwise about the origin through 90° to the point B. B is then translated upwards by 3 units to the point C. Find the y-coordinate of C.

A. 1
B. 2
C. 7
D. 8

17. [24 - 25 S5 Standardized Test - 01] (80%)

1. A point $P(-1, 2)$ is first translated 4 units to the left and then rotated anti-clockwise through $90°$ about the origin to Q. Find the coordinates of Q.

A. $(2, 5)$
B. $(-2, -5)$
C. $(-2, 3)$
D. $(2, -3)$

18. [22 - 23 S6 Mock Exam - 24] (73%)

24. The coordinates of the point P are $\left(-3, 3\sqrt{3}\right)$. P is rotated anticlockwise about the origin through 90° to the point Q. Q is then reflected with respect to the y-axis to the point R. Find the y-coordinate of R.

A. $-3\sqrt{3}$
B. -3
C. 3
D. $3\sqrt{3}$

GHS Sorted Past Paper - Conventional Questions
S1-12 Introduction to Coordinates

1. [20 - 21 S1 Final Exam - 07]

7. Refer to **Figure 1**,

(a) Write down the coordinates of the point of intersection of the straight lines L_1 and L_2 **(1 mark)**

(b) If the point of intersection is rotated anti-clockwise about the origin through 90° to P, write down the coordinates of P. **(1 mark)**

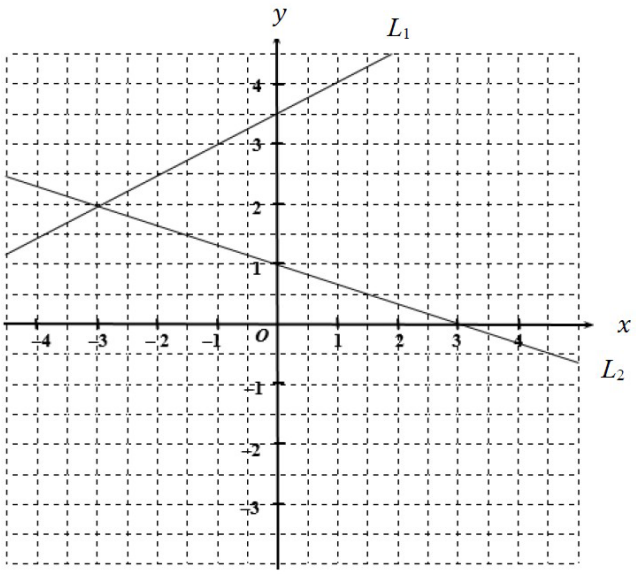


Figure 1

2. [20 - 21 S1 Final Exam - 22]

22. The coordinates of A, B and C are $(-5k, 5k)$, $(-5k, -4k)$ and $(2k, k)$ respectively where k is a positive number.

(a) Show that the area of ΔABC is $31.5k^2$ sq. units. **(2 marks)**

(b) It is given that L is a line passing through the point $(-4k, 0)$ and parallel to the y-axis. A and B is reflected with respect to L to E and F respectively. C is rotated clockwise about the origin through 90° to G. Someone claims that the area of ΔABC is larger than the area of ΔEFG by 75%. Do you agree? Explain your answer. **(4 marks)**

3. [22 - 23 S1 Final Exam - 08] (83%)

8. P (3, –2) and Q (3, –9) are two points on the rectangular coordinate plane.

(a) Do P and Q lie on the same horizontal line or the same vertical line? **(1 mark)**

Answer: P and Q lie on the same horizontal / vertical line.
(Circle the correct answer)

(b) Write down the length of PQ. **(1 mark)**

4. [22 - 23 S1 Final Exam - 17] (69%)

17. **(a)** **Figure 6(a)** shows a parallelogram $ABCD$. The coordinates of A, B, C and D are $(-5, 3)$, $(5, 3)$, $(4, -2)$ and $(-6, -2)$ respectively. Find the area of $ABCD$. **(2 marks)**

(b) **Figure 6(b)** shows a triangle PQR. The coordinates of P, Q and R are $(2, 4)$, $(6, 1)$ and $(-5, 0)$ respectively. Find the area of ΔPQR. **(2 marks)**

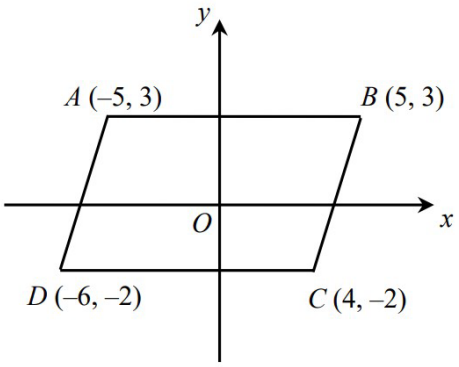


Figure 6(a)

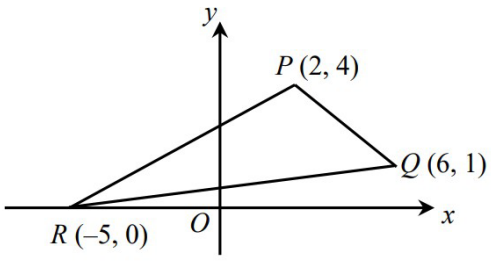


Figure 6(b)

5. [23 - 24 S1 Final Exam - 06] (92%)

6. In a rectangular coordinate plane, the coordinates of three points A, B and C are $(2, 5)$, $(2, -3)$ and $(-7, -3)$ respectively. It is given that $ABCD$ is a rectangle.

(a) Write down the coordinates of D. **(1 mark)**

(b) Find the perimeter of the rectangle $ABCD$. **(2 marks)**

6. [23 - 24 S1 Final Exam - 10] (65%)

10. In **Figure 2**, the coordinates of three points A, B and C are $(-3, -1)$, $(3, 8)$ and $(9, 4)$ respectively. Find the area of ΔABC. **(2 marks)**

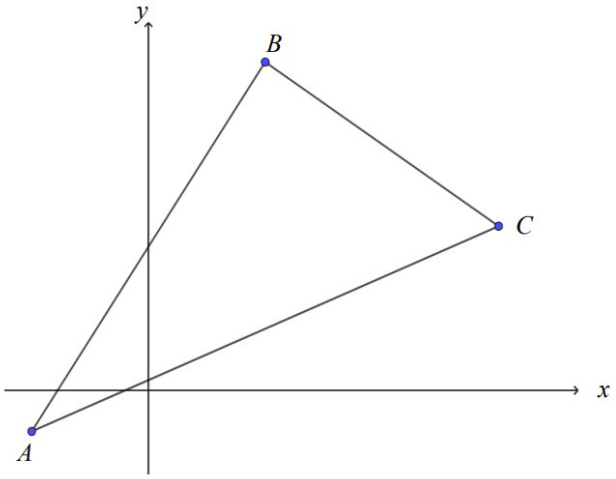


Figure 2

7. [23 - 24 S1 Final Exam - 16] (24%)

16. In a rectangular coordinate plane, the coordinates of four points A, B, C and D are $(-a, 6)$, $(a+3, 6)$, $(a+3, 0)$ and $(-2, 0)$ respectively, where $a > 0$.

(a) Find the area of the polygon $ABCD$ in terms of a. **(2 marks)**

(b) A is reflected about the y-axis to A_1.

(i) Write down the coordinates of A_1 in terms of a. **(1 mark)**

(ii) Write down the area of ΔAA_1D in terms of a. **(1 mark)**

(iii) It is given that the area of the polygon A_1BCD is 40% less than that of the polygon $ABCD$. Find the value of a. **(2 marks)**

8. [24 - 25 S1 Final Exam - 06] (82%)

6. The coordinates of A and B are $(-3, 5)$ and $(-3, b)$ respectively. If $AB = 4$ units, write down the possible values of b. _____ and _____ **(1 mark)**

9. [24 - 25 S1 Final Exam - 14] (76%)

14. $A(-1, 7)$, $B(4, 4)$ and $C(2, 2)$ are three points on a rectangular coordinate plane as shown in **Figure 3**. Find the area of ΔABC. **(3 marks)**

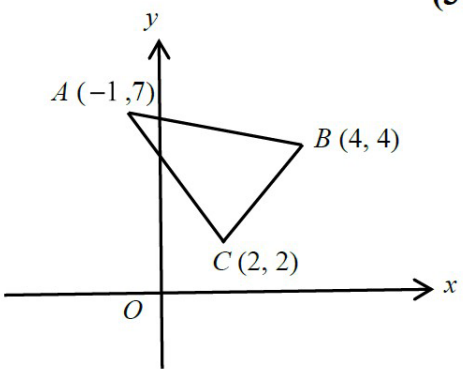


Figure 3

10. [24 - 25 S1 Final Exam - 22] (30%)

22. On a rectangular coordinate plane, the coordinates of the points A, B and C are $(-5, 4)$, $(-5, -3k)$ and $(9, 2)$ respectively, where $k > 0$.

(a) Express the area of ΔABC in terms of k. **(2 marks)**

(b) Suppose A is reflected with respect to the y-axis and then is translated downwards by $8k$ units to D; and B is rotated 180° anti-clockwise about the origin to E. It is given that E is above D.

(i) Express the coordinates of D in terms of k.

(ii) Express the area of ΔADE in terms of k.

(iii) If the area of ΔABC is 40% more than the area of ΔADE, find the value of k.

(6 marks)

11. [22 - 23 S2 Final Exam - 13] (72%)

13. The coordinates of point P are (3, 6).

(a) P is translated downwards by 9 units to Q. Write down the coordinates of Q. **(1 mark)**

(b) P is rotated anti-clockwise about the origin through 90° to R. Write down the coordinates of R. **(1 mark)**

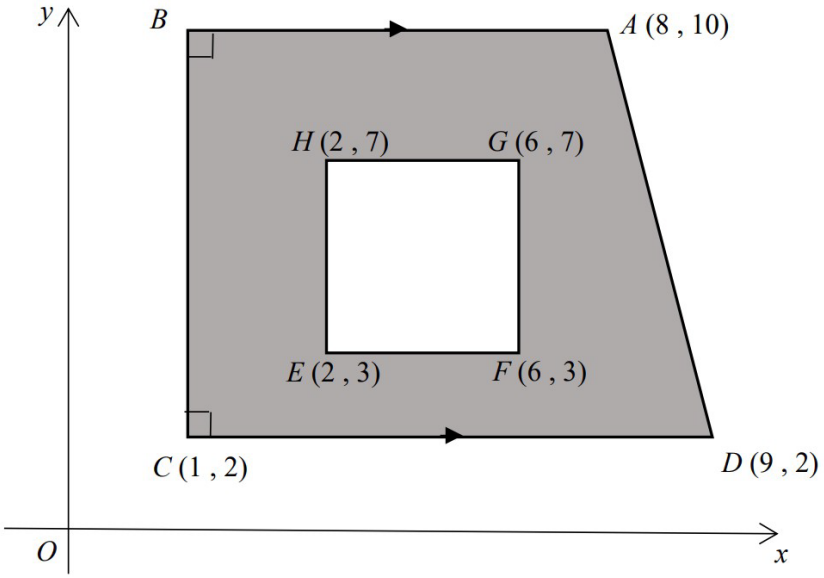
(c) Hence, find the area of ΔPQR. **(2 marks)**

12. [22 - 23 S2 Mid-year Exam - 02] (87%)

2. **Figure 1** shows a trapezium $ABCD$ with $BA \,//\, CD$ and a square $EFGH$.

(a) Write down the coordinates of B. **(1 mark)**

(b) Find the area of the shaded region. **(3 marks)**



13. [22 - 23 S2 Mid-year Exam - 12] (33%)

12. The coordinates of the point A are $(2k\,,\,k+1)$ where k is a positive constant. A is translated leftwards by $3k$ units to the point B. B is then rotated about the origin through 180° to the point C.

(a) Write down the coordinates of B and C. **(2 marks)**

(b) Express the area of ΔABC in terms of k. **(2 marks)**