A quadrilateral ABCD has coordinates A(0, 12), B(6, 0) , C(12, 6), D(10, 22).

**PRACTISING THE ESSENTIALS OF COORDINATE GEOMETRY.**

1. Find the gradients of:

(i) AB (ii) BC

(iii) CD (iv) DA

What type of quadrilateral is ABCD?

2. Find the lengths of:

(i) AB (ii) BC

(iii) CD (iv) DA

3. Find the coordinates of P, the **mid point** of AB

Find the coordinates of Q, the **mid point** of BC

Find the coordinates of R, the **mid point** of CD

Find the coordinates of S, the **mid point** of DA

Find the coordinates of T, the **mid point** of the diagonal AC

4. Find the equation of the **median** from A to BC in triangle ABC

Find the equation of the **median** from B to AC in triangle ABC

Find the equation of the **median** from C to AB in triangle ABC

What is the name of the point U which is where the **medians intersect**?

Calculate the coordinates of U.

5. Find the equation of the **mediator** (perpendicular bisector) of AD in triangle ACD

Find the equation of the **mediator** of AC in triangle ACD

Find the equation of the **mediator** of CD in triangle ACD

What is the name of the point V which is where the **mediators intersect**?

Calculate the coordinates of V.

6. Calculate the **distance UV.**

ANSWERS.

This involves showing ABCD is a TRAPEZIUM.

Splitting it into 2 triangles.

Finding the CENTROID of one triangle

Finding the CIRCUMCENTRE of the other

Finding the distance between the Centroid and Circumcentre.

Y

27

26

25

24

23

22

21

20

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**ANSWERS.**

A quadrilateral ABCD has coordinates A(0, 12), B(6, 0) , C(12, 6), D(10, 22).

1. Find the gradients of:

(i) AB = **-2** (ii) BC = **1**

(iii) CD = **-8** (iv) DA = **1**

What type of quadrilateral is ABCD? **TRAPEZIUM**

2. Find the lengths of:

(i) AB = **13.4** (ii) BC **= 8.49**

(iii) CD = **16.1** (iv) DA = **14.1**

3. Find the coordinates of P, the **mid-point** of AB **(3, 6)**

Find the coordinates of Q, the **mid-point** of BC **(9, 3)**

Find the coordinates of R, the **mid-point** of CD **(11, 14)**

Find the coordinates of S, the **mid-point** of DA **(5, 17)**

Find the coordinates of T, the **mid-point** of the diagonal AC **(6, 9)**

4. Find the equation of the **median** from A to BC in triangle ABC

***y = -x + 12***

Find the equation of the **median** from B to AC in triangle ABC

***x = 6***

Find the equation of the **median** from C to AB in triangle ABC

***y = 6***

What is the name of the point U which is where the **medians intersect**?

**CENTROID**

Calculate the coordinates of U**. (6, 6)**

5. Find the equation of the **mediator** (perpendicular bisector) of AD in triangle ACD

***y = -x + 22***

Find the equation of the **mediator** of AC in triangle ACD

***y = 2x – 3***

Find the equation of the **mediator** of CD in triangle ACD

***y = x/8 + 101/8 or y = x/8 + 12.625***

What is the name of the point V which is where the **mediators intersect**?

**CIRCUMCENTRE**

Calculate the coordinates of V. **(25/3, 41/3)** **or ( 8.33, 13.67)**

6. Calculate the **distance UV. = 8.016 ≈ 8.02**