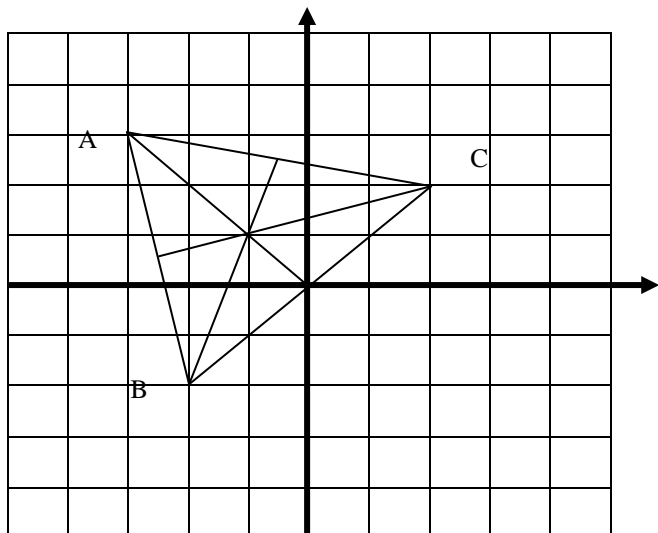


NAME.....

CO-ORDINATE GEOMETRY PROBLEMS. ANS

1.(a) Draw triangle ABC where A is (-3,3), B is (-2,-2), C is (2,2)



(b) Determine, **with clear reasons** to back up your conclusion, whether the triangle ABC is scalene, isosceles or equilateral.

$$AC^2 = 5^2 + 1^2 = 26$$

$$AB^2 = 1^2 + 5^2 = 26$$

$$BC^2 = 4^2 + 4^2 = 32$$

$AC = AB$ so ISOSCELES.

(c) Find M, the mid point of AB. $M = (-2.5, 0.5)$

(d) Find N, the mid point of AC. $N = (-.5, 2.5)$

(e) A MEDIAN joins the mid point of one side to the opposite corner.
Draw all three medians of this triangle.

(f) The CENTROID, G, is the point of intersection of the medians. $G = (-1, 1)$

(g) What is the equation of the median from A to BC ? $y = -x$

(h) Calculate the LENGTH of the median from A to BC.

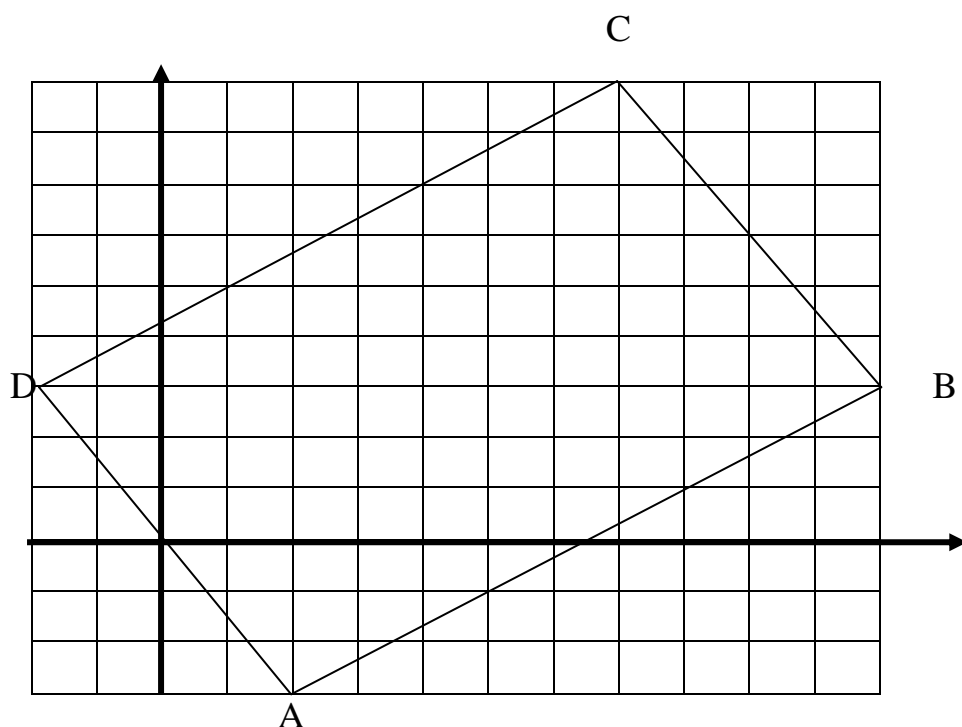
$$L^2 = 3^2 + 3^2 = 18 \quad \text{so } L = \sqrt{18}$$

(i) Calculate, by any method, the AREA of triangle ABC but be sure to explain what you are doing.

Could find length of $BC = \sqrt{32}$ and median is at right angles because it is an Isosceles triangle so area = $\frac{\sqrt{32} \times \sqrt{18}}{2} = 12 \text{ cm}^2$

3(a) **Prove** conclusively that the following four points form a **rectangle** and find its area **exactly**.

A(2, -3), B(11, 3), C(7, 9), D(-2, 3)



$$\text{Grad AB} = \frac{6}{9} = \frac{2}{3} \quad \text{Grad CD} = \frac{6}{9} = \frac{2}{3} \quad \text{so } AB \parallel CD$$

$$\text{Grad AD} = -\frac{6}{4} = -\frac{3}{2} \quad \text{Grad BC} = -\frac{6}{4} = -\frac{3}{2} \quad \text{so } AD \parallel BC$$

$$\text{Also } \frac{3}{2} \times -\frac{2}{3} = -1 \quad \text{so ALL angles are } 90^\circ$$

$$ABCD \text{ is a rectangle.} \quad \text{AREA} = AB \times BC = \sqrt{(9^2 + 6^2)} \times \sqrt{(6^2 + 4^2)} = 78 \text{ cm}^2$$