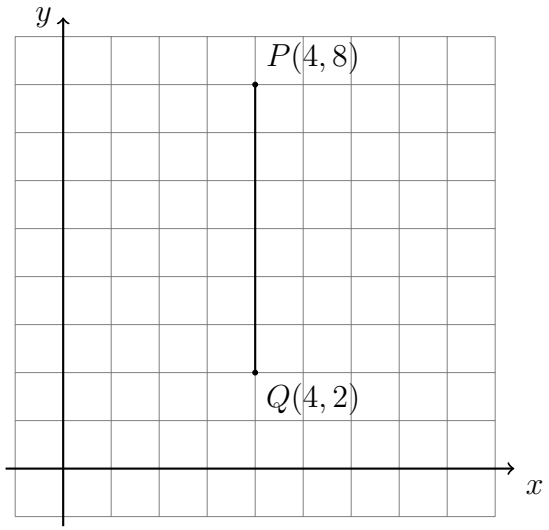
3.1 Parallelogram and triangle area

1. Do Now: The vertical line segment $\overline{PQ}$ is plotted on the coordinate plane with $P(4, 8)$ and $Q(4, 2)$.

   Find the length PQ.

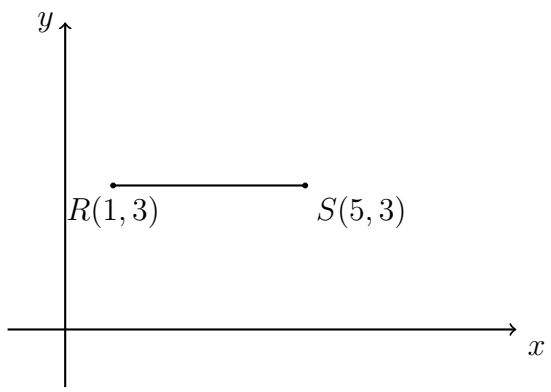
   Show the calculation, including the absolute value bars. Count on the grid as a check. (leave marks)



2. The horizontal line segment $\overline{RS}$ is plotted on the coordinate plane with $R(1, 3)$ and $S(5, 3)$.

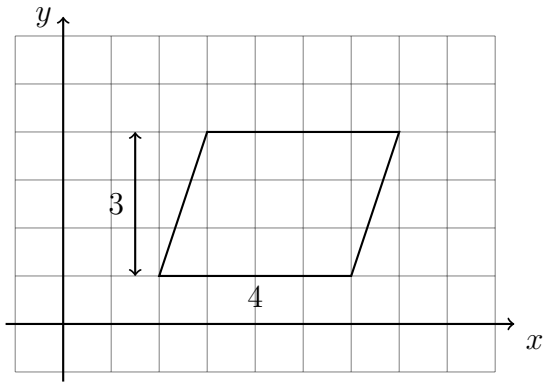
   Find the length PQ.

   Show the calculation.



3. A parallelogram is shown on the x-y plane having a base $b = 4$ and height $h = 3$.

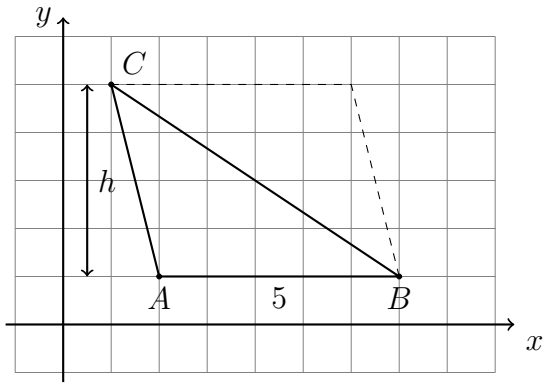
   Find its area, showing the calculation.



4. The $\triangle ABC$ is shown below with $A(2,1)$, $B(7,1)$, and $C(1,5)$. The length of the base of the triangle is $AB = 5$.

   (a) Find the height h.

   (b) Find its area, showing the calculation.



5. Spicy: Find the area of the $\triangle ABC$ is shown below with $A(3,2)$, $B(7,4)$, and $C(4,8)$.

(a) First find the area of the red rectangle with sides $b = 4$, $h = 6$.

(b) Find the area of the three triangles surrounding $\triangle ABC$ in the rectangle.

(c) Subtract their areas from the rectangle to find $A_{\triangle ABC}$