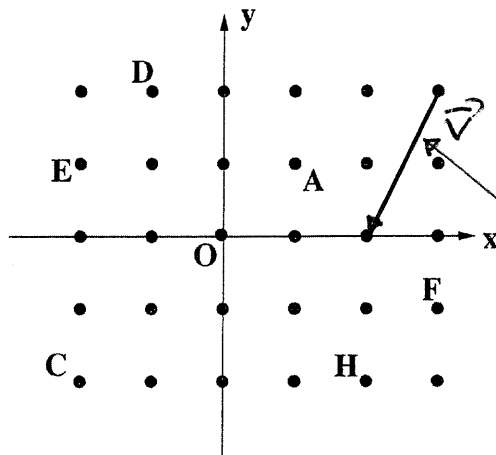


Give your name and student number:

## ANSWERS

D. Hand in the following problems, as instructed in class. Questions refer to this diagram, with various points like  $A = (1, 1)$ , etc. labelled.



1. Sketch and clearly label by  $\vec{v}$  the vector with head  $(2, 0)$  and tail  $(3, 2)$ .
2. Fill in the missing letters:

$$\vec{AD} = \vec{OE} \quad , \quad \vec{DE} = \vec{FH}$$

3. For what point  $K$  do we have  $\vec{CK} = \vec{OA}$ ? Label  $K$  in the diagram and give its coordinates here:

$$K = (-1, -1)$$

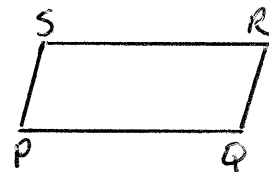
4. This question has nothing directly to do with the above diagram. But the previous parts may help you think along the right lines.

A quadrilateral  $PQRS$  is 4-sided figure, with the vertices  $P, Q, R, S$  occurring in that order as we run round the figure. Parallelograms are a special case.

We can use a vector equality to characterize parallelograms. Thus, complete in some useful vector way the following

Conjecture: Quadrilateral  $PQRS$  is a parallelogram precisely when

$$\vec{PQ} = \vec{SR} .$$



(Fill in the missing letters; no 'proof' is needed. Do you see why there is more than one correct answer?)

other answers:  $\vec{QP} = \vec{RS}$

2

$$\vec{PS} = \vec{QR}$$

$$\vec{SP} = \vec{RQ}$$

5  
points  
total