

# Sample question from ACEPhysics activity:

A. Compute  $XZ$  and  $ZX$  using matrices.



Do this on scrap paper.

Does the order matter?

Yes, order matters

No,  $XZ = ZX$

In general, order of matrix multiplication matters. However, if it happens that  $AB = BA$ , then the operators  $A$  and  $B$  are said to *commute*. (So above, we saw that  $X$  and  $Z$  do *not* commute.)

B. Does  $Z$  commute with itself?

Yes

No