QUESTIONS 9 APRIL

(1) Reading Questions from other document
(2) I am having difficulty defining direct sum and tensor product on commutative rings with identity. If I define it for modules, it seems that in order to extend it to rings, I must show that if the initial modules have a ring multiplication (and multiplicative identity), then the tensor product also adopts a ring multiplication (and multiplicative identity). This seems tricky though. It seems for the direct sum, I will have to ditch the promise of a multiplicative identity. I am not sure how this plays out for tensor product.
(3) Is there a good introductory example of a functor? For a covariant functor, I can do a forgetful functor.
(4) I am considering including a brief summary/introductionish at the beginning that will likely have material comparable
(5) It terms of material, what should I aim to get through for the presentation.