

Question	Marking Guidance	Mark	Comments
03.1	Lowercase <b>a</b> in both boxes	1	
03.2	Tick in box next to 'Crossing over';	1	
03.3	32.73 / 32.7 / 32 / 33;; Award 1 max for <b>either</b> 409 (409.2) for difference in volume (but incorrect number of mitochondria); <b>OR</b> Answer of 262 (261.9) (using diameter, rather than radius);	2	
03.4	1. Egg (created) has nucleus / DNA / genes of (affected) woman / mother; 2. It has mostly / many / lots of normal mitochondria (of unaffected woman) <b>OR</b> There are few faulty mitochondria;	2	1. Accept ref. to zygote / embryo / child for egg 1. Accept genetic information 1. Ignore references to alleles 1. Reject if nucleus from wrong egg / woman 2. Reject ref. to <b>production</b> of healthy mitochondria as result of treatment
03.5	1. Not enough / little ATP produced; 2. ATP provides <b>energy</b> for (enzyme) reactions <b>OR</b> ATP phosphorylates substrates / enzymes, <b>so</b> making them (more) reactive;	2 max	<b>One</b> reason asked for, so list rule applies 1. Ignore ref. to no ATP produced 2. Accept (leads to) lower activation energy for reaction 2. Reject if mention energy produced