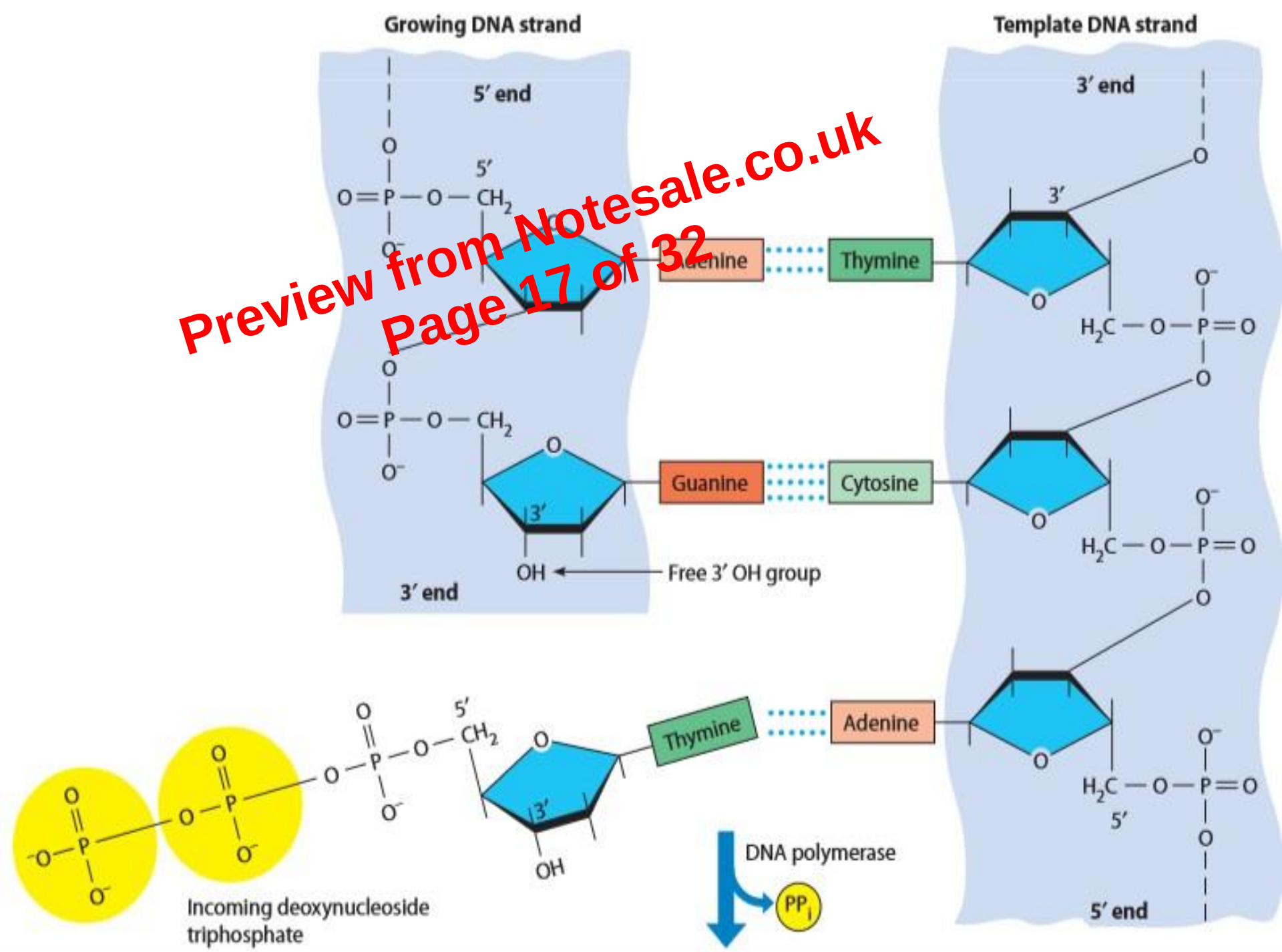
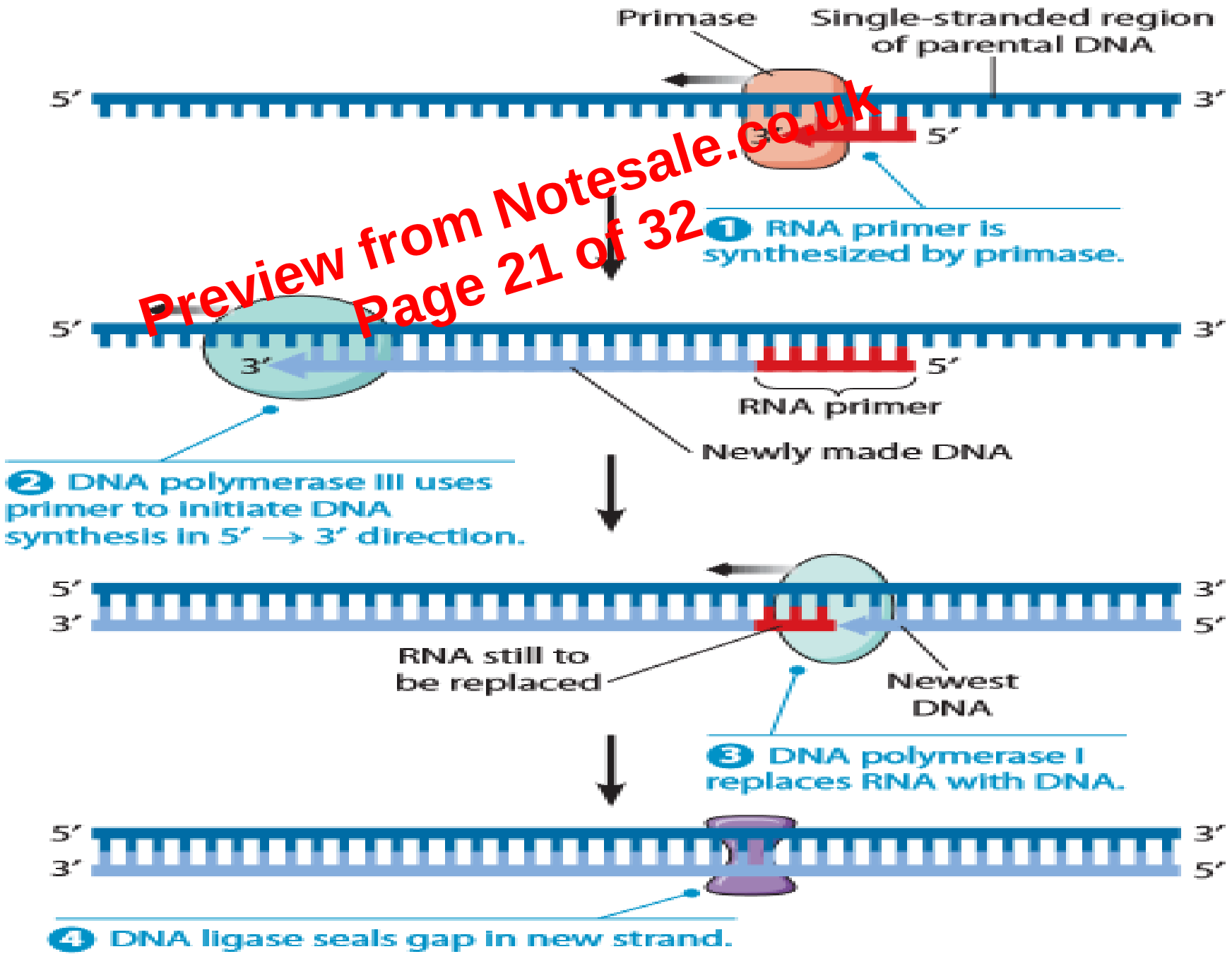
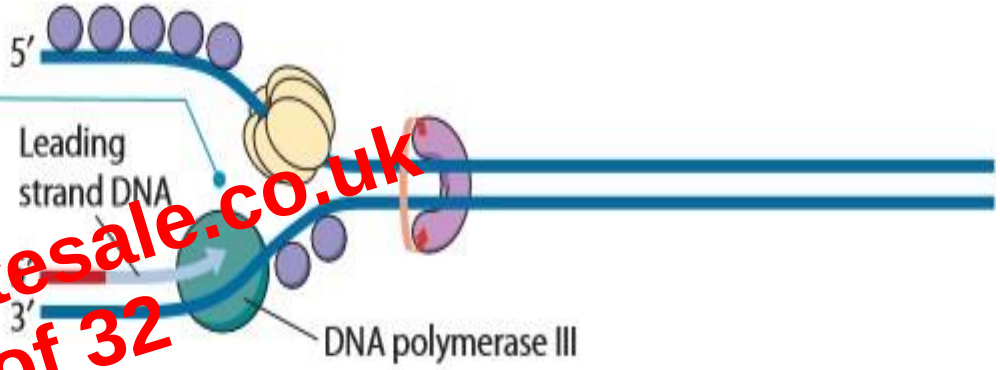
Human Embryonic and Foetal Development

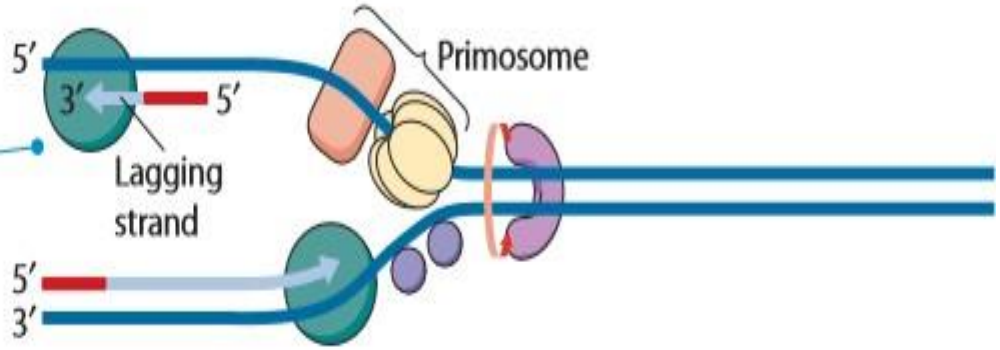




4 DNA polymerase III (polymerase α followed by polymerase δ or ε in eukaryotes) uses the primer to initiate DNA synthesis by adding deoxyribonucleotides to its 3′ end. The leading strand requires only one priming event because DNA synthesis is continuous in the 5′ → 3′ direction.



5 An RNA primer is made for the lagging strand and DNA polymerase then extends the strand. In *E. coli*, the primase is part of the primosome, a protein complex that includes the DNA helicase.



6 For the lagging strand, DNA synthesis is discontinuous and requires a series of RNA primers (shown in red). DNA is synthesized at the 3′ end of each primer, generating an Okazaki fragment that grows until it meets the adjacent fragment. The RNA primer is then removed by the 5′ → 3′ exonuclease activity of DNA polymerase I and replaced with DNA by the polymerase activity of the same enzyme.