PLEASE NOTE THAT THERE WILL BE A MAKE UP PCR QUIZ ON THURSDY FEB. 21.
Sample PCR Quiz1

Name

1) PCR reaction - 20 points
Set up a PCR master mix for determining the sensitivity of a PCR reaction. You want to compare the efficiency of PCR when amplifying varying numbers of templates including: 10^6, 10^5, 10^4, and 10^3 copies.
Reaction conditions:
final volume - 200 µl

Stock solutions:	final concentration or amount
10X PCR buffer	1X
25 mM $MgCl_2$	0.5 mM
20 mg/ml BSA	100 µg/ml
Primer 1 (25 µM)	1.0 µM
Primer 2 (25 µM)	1.0 µM
2.5 mM dNTPs	250 µM
Taq Polymerase (20 U/µl)	5 U

The initial DNA concentration is 10 µg/ml.
Remember that 10 pg of 10 kb plasmid is 1.54×10^{-15} moles or 9.3×10^5 molecules. (To simplify calculations, you can assume that 9.3×10^5 is equal to 10^6 molecules). Please note that the template is a plasmid which has a total length of 5 kb.

1) Show how you to set up <u>one</u> PCR reaction with 10^6 molecules of the plasmid template.
2) Then show how you will set up the PCR reactions for <u>4</u> different template numbers)ie. 10^6-10^3) and <u>a control</u>. Be very clear in showing exactly what you will do. If it is garbled, you won't get full credit.

Biology 319
Sample PCR Quiz2

Name

1) PCR reaction - 20 points
Set up a PCR master mix for determining the sensitivity of a PCR reaction. You want to compare the efficiency of PCR when amplifying varying numbers of templates including: 10^6, 10^5, 10^4, and 10^3 copies.
Reaction conditions:
final volume - 50 µl

Stock solutions:	final concentration or amount
10X PCR buffer	1X
25 mM $MgCl_2$	2.5 mM
10 mg/ml BSA	100 µg/ml
Primer 1 (10 µM)	1.0 µM
Primer 2 (10 µM)	1.0 µM
2.5 mM dNTPs	250 µM
Taq Polymerase (20 U/µl)	5 U

The initial DNA concentration is 100 µg/ml.
Remember that 10 pg of 10 kb plasmid is 1.54×10^{-15} moles or 9.3×10^5 molecules. (To simplify calculations, you can assume that 9.3×10^5 is equal to 10^6 molecules). Please note that the template is a plasmid which has a total length of 10 kb.

1) Show how you to set up <u>one</u> PCR reaction with 10^6 molecules of the plasmid template.
2) Then show how you will set up the PCR reactions for <u>4</u> different template numbers)ie. 10^6-10^3) and <u>a control</u>. Be very clear in showing exactly what you will do. If it is garbled, you won't get full credit

Biology 319
Sample PCR Quiz 3

Name

1) PCR reaction - 20 points
Set up a PCR master mix for determining the sensitivity of a PCR reaction. You want to compare the efficiency of PCR when amplifying varying numbers of templates including: 10^3, 10^2, and 10^1 copies.
Reaction conditions:
final volume - 150 µl

Stock solutions:	final concentration or amount
10X PCR buffer	1X
25 mM $MgCl_2$	0.5 mM
10 mg/ml BSA	100 µg/ml
Primer 1 (20 µM)	1.0 µM
Primer 2 (20 µM)	1.0 µM
2.5 mM dNTPs	250 µM
Taq Polymerase (20 U/µl)	5 U

The initial DNA concentration is 0.10 µg/ml.
Remember that 10 pg of 10 kb plasmid is 1.54×10^{-15} moles or 9.3×10^5 molecules. (To simplify calculations, you can assume that 9.3×10^5 is equal to 10^6 molecules). Please note that the template is a plasmid which has a total length of 50 kb.

1) Show how you to set up <u>one</u> PCR reaction with 10^6 molecules of the plasmid template.
2) Then show how you will set up the PCR reactions for <u>3</u> different template numbers)ie. 10^3-10^1) and <u>a control</u>. Be very clear in showing exactly what you will do. If it is garbled, you won't get full credit.