Alternate Base Systems
for Cross-Curricular Fun & Engineering Applications

LECTURE QUESTIONS OR PRETEST

MATHEMATICS
Can you think of any counting system which does not have a base? Describe it please. (Knowledge)

Why does a counting system used by a technologically advanced civilizations need to have a base? (Understanding)

What base do you prefer and why? (Reflection)

MEASUREMENT (Answer any two)
Why is it so hard to get rid of the English System of Measurement? (Reflection)

What advantages does the English System have over the Metric System? (Analysis)

Why is the English System of measurement with inches, feet, and yards not really a good example of a pure Dozenal measuring system. (Synthesis & Evaluation)

What changes would need to be made to the English System to make it a pure Dozenal system? (Creativity)

HISTORY
Today Decimal is the base our global culture is using. What other basees have been used by civilizations in the past? (Knowledge)

How did the bases of past cultures meet the needs of those cultures at those times? Give an example. (Understanding, Knowledge, Analysis, Synthesis & Evaluation)

Culture and technology influence signs and symbols used to represent or signify numbers. What use was the Mayan Base-20 system within its culture? (Understanding, Synthesis)

ARTS AND DESIGN
What readily available resources and technology made it easy for the Babylonians to employ a Base-60 system which involved only two symbols? (Knowledge, Analysis, Evaluation)

Why do you think nobody has agreed on which symbols to utilize for Dec/Dek and El in the Dozenal Base? (Reflection)

How does the geometric art of tessellated Islamic tiles relate to alternate-base systems? (Understanding, Synthesis)

How does choice of Base influence music and musical scales in different cultures over time? (Knowledge, Reflection)

ENGINEERING APPLICATIONS
Engineers work with numbers every day. Give an example of one Engineering application of alternate bases mentioned in the lecture or from your own experience. (Understanding, Reflection)

For engineers working with computers why might the Binary, Octal, or Hexadecimal system be more useful than a Decimal or Dozenal system? (Knowledge, Understanding, Analysis, Synthesis, Evaluation)