Simon and the Snoring Pigs

The Story:

Simon is a pig farmer in eastern Colorado who loves taking afternoon naps in his hammock. He is very good at sneaking away for naps without his wife, Sarah, know about it. Unfortunately, he snores. According to Sarah, his snoring can be heard inside the house because it is so loud. Simon insists that Sarah is hearing the pigs snore, not him. Sarah decides to find out for herself whether Simon really snores like a pig or not. Sarah, who enjoys creating electronic equipment, devises an instrument that registers, on a scale from -10 to 10, the sound of snoring. When someone exhales, the machine registers positive values. When someone inhales, the machine registers negative values.

One night, Sarah stealthily records both her husband and the pigs' snores. She discovers the following:

*a) The loudest Simon's snores register on her scale is 7 when he exhales and -7 when he inhales. In one minute, he snored **A** (see below) times.*

*b) The pigs' snores register 6 and -6 for their exhales and inhales. Between any two snores, the pigs need **B** (see below) seconds.*

The Assignment:

Assume that you know the snores can be modeled by sinusoidal functions.

Write a conversation between Simon and Sarah in which Sarah explains her findings to Simon. She will draw graphs and us eth terms "period" and "Amplitude" because she and Simon met in a high school Trigonometry class.

Make the conversation understandable to someone who has taken high school trigonometry. Your script must include:

a) the amplitude of the pigs' snores and Simon's snores.

b) the period of both snores – decimal approximations, to the nearest hundredth, are acceptable.

c) equations of the sinusoidal waves.

d) an explanation of how you obtained your equations.

e) an accurate graph of each snore wave. The graphs should be graphed on the same set of axes. Graph units of time vs. snore loudness

f) a comparison of the snores. For example: "One snore is louder and faster."

A = _____

B = _____

Grading Rubric

Mathematics:

_____/9	Correctly identified amplitudes
_____/9	Correctly identified periods
_____/20	Correct equations
_____/20	Mathematically accurate explanations of equation development
_____/20	Accurate graphs
_____/9	Mathematically accurate comparison of snores

Presentation and writing:

_____/4	Creativity
_____/4	Mechanics
_____/5	Presentation (neatness, labeling, etc.)

TOTAL:

_____/100