Final Question 1

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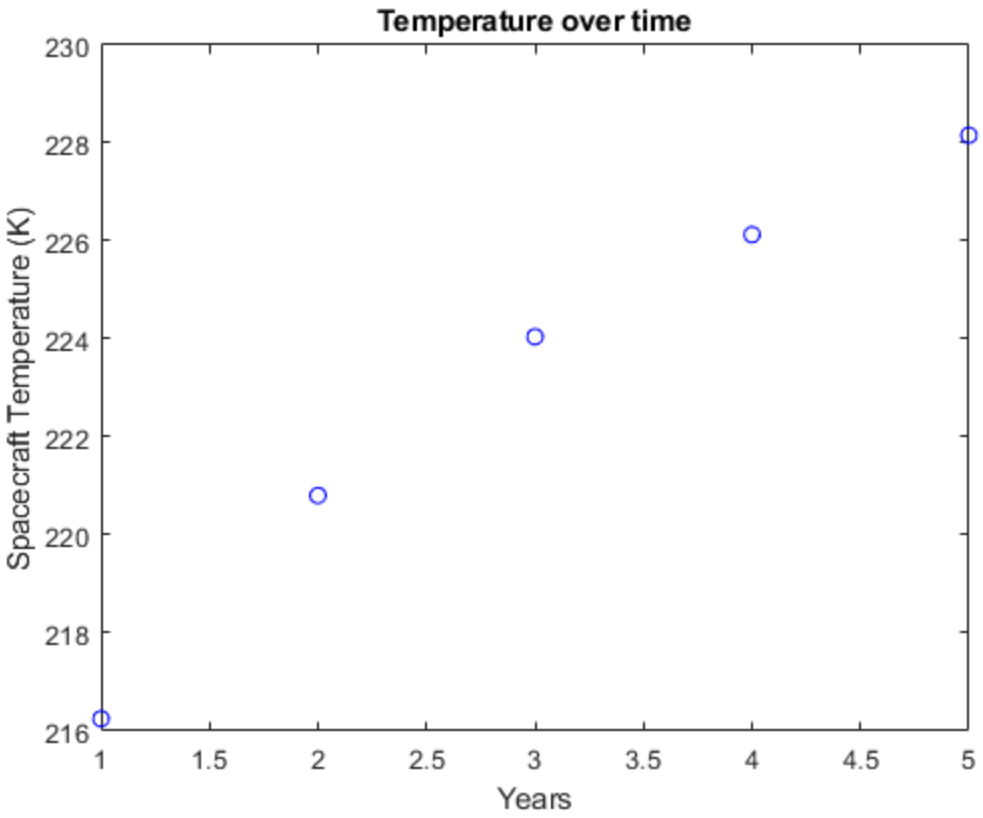
```
clear; close all; clc;

% Given
abs = .40 ;
emit = .75 ;
nsa = 3.7 ; % surface area of surface normal to solar flux
tsa = 25 ; % total surface area

% changes
cum_d = [ .06 , .10 , .13 , .15 , .17 ] ; % cumulative change
rabs = abs + cum_d ; % absorption factor
sbc = 5.67e-8 ; % stefan-boltzman constant
Se = 1366 ;

qsab = rabs .* Se .* nsa ; % heat absorbed
T = ( qsab ./ ( emit * sbc * tsa ) ).^(1/4) ; % Temp of s/c

figure
plot( 1:length(T) , T , 'ob')
title( 'Temperature over time' )
xlabel( 'Years' )
ylabel( 'Spacecraft Temperature (K)' )

disp( 'The spacecraft increases in temperature as the absorption
 increases' )
disp( 'because the emittance stays the same. This means more thermal
 energy' )
disp( 'is entering the s/c while the energy leaving remains the
 same.')
```

The spacecraft increases in temperature as the absorption increases because the emittance stays the same. This means more thermal energy is entering the s/c while the energy leaving remains the same.



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