Scenario 1

The following problems use the following information

* You have a warehouse that's value is 1,000,000 (between actual structure and contents).
* If a fire were to occur it is expected that 40% of the warehouse would be damaged.
* the risk of a fire PER year is 8%

1) what is the Exposure Factor (it's directly given in the problem above)

2) What is the Single Loss Expectancy of a fire

3) What is the Annual Rate of Occurance (note it doesn't have to be a "whole number", it WILL be a decimal or percentage)

4) what is the Annual Loss Expectancy of a Fire to the warehouse

Now suppose we can buy some countermeasure that would reduce the damage to the warehouse if a fire occurred to 15% (from 40%).

The cost of the countermeasure is $5,000.00

5) What would the new Exposure Factor be?

6) What would the new SLE be?

7) What the ARO change?

8) Whould the ALE change?

9) If the ALE changes, what’s the new ALE?

10) Should you buy the counter measure for this year?

11) if so how much money would you be “saving” this year?

12) if we have to renew the countermeasure every year (ie pay $5,000 per year) is it still worth it?

Answers to Scenario 1

1) what is the Exposure Factor (it's directly given in the problem above)

The exposure factor is 40% (.40)

2) What is the Single Loss Expectancy of a fire

SLE = EF \* Asset Value

SLE = .40 \* $1,000,000

SLE = $400,000

3) What is the Annual Rate of Occurance (note it doesn't have to be a "whole number", it WILL be a decimal or percentage)

This is given to you, it is 8% (.08)

4) what is the Annual Loss Expectancy of a Fire to the warehouse

ALE = SLE \* ARO

ALE = $400,000 \* .08

ALE = $32,000

5) What would the new Exposure Factor be?

This is given to you, it is 15% (.15)

6) What would the new SLE be?

SLE = EF \* Asset Value

SLE = .15 \* $1,000,000

SLE = $150,000

7) Would the ARO change?

No it’s still 8%, the countermeasure only affected the ARO

8) Whould the ALE change?

YES! The EF, changed the SLE, which changes the ALE

9) If the ALE changes, what’s the new ALE?

ALE = SLE \* ARO

ALE = $150,000 \* .08

ALE = $12,000

10) Should you buy the counter measure?

YES

11) if so how much money would you be “saving”

$15,000

(ALE before countermeasure) – (ALE after countermeasure) – cost of countermeasure

$32,000 - $12,000 - $5000 = $15000

12) On this you need to think, there is no formula. The answer is YES it is still worth it! This is because we expect the ALE damage ($32,000 before counter measure) EVERY year, that’s why it’s called “Annual Loss Expectancy!”. So even if we have to pay $5000.00 per year, it will ends up saving us $15,000 every year!

Scenario 2

When performing a risk assessment you have developed the following values for a specific threat/risk pair. Asset value = 100K, exposure factor = 35%; Annual rate of occurrence is 5 times per year; the cost of a recommended safeguard is $5000 per year, which will reduce the annual loss expectancy in half. What is the SLE?

a) $175,000  
b) $35,000  
c) $82,500  
d) $87,500

**Answer**  
The correct answer is b) $35,000. SLE is simply AV x EF. a) is ALE; c) the ALE improvement given the safeguard is put in place; d) is the safeguard value.

Scenario 3

A widget manufacturer has installed new network servers, changing its network from a peer-to-peer network to a client/server-based network. The network consists of 200 users who make an average of $20 an hour, working on 100 workstations. Previously, none of the workstations involved in the network had anti-virus software installed on the machines. This was because there was no connection to the Internet, and the workstations didn’t have floppy disk drives or Internet connectivity, so the risk of viruses was deemed minimal. One of the new servers provides a broadband connection to the Internet, which employees can now use to send and receive email, and surf the Internet. One of the managers read in a trade magazine that other widget companies have reported an 80 percent chance of viruses infecting their network after installing T1 lines and other methods of Internet connectivity, and that it may take upwards of three hours to restore data that’s been damaged or destroyed. A vendor will sell licensed copies of anti-virus software for all servers and the 100 workstations at a cost of $4,700 per year. The company has asked you to determine the annual loss that can be expected from viruses, and determine if it is beneficial in terms of cost to purchase licensed copies of anti-virus software.

1.   What is the Annualized Rate of Occurrence (ARO) for this risk?

2.   Calculate the Single Loss Expectancy (SLE) for this risk.

3.   Using the formula ARO x SLE = ALE, calculate the Annual Loss Expectancy.

4.   Determine whether it is beneficial in terms of monetary value to purchase the anti-virus software by calculating how much money would be saved or lost by purchasing the software.

**ANSWERS TO Scenario 3**

1.   The Annualized Rate of Occurrence (ARO) is the likelihood of a risk occurring within a year. The scenario states that trade magazines calculate an 80% risk of virus infection after connecting to the Internet, so the ARO is 80% or .8.

2.   The Single Loss Expectancy (SLE) is the dollar value of the loss that equals the total cost of the risk. In the case of this scenario, there are 200 users who make an average of $20 per hour. Multiplying the number of employees who are unable to work due to the system being down by their hourly income, this means that the company is losing $4,000 an hour (200 x $20 = $4000). Because it may take up to three hours to repair damage from a virus, this amount must be multiplied by three because employees will be unable to perform duties for approximately three hours. This makes the SLE $12,000 ($4,000 x 3 = $12,000).

3.   The ALE is calculated by multiplying the ARO by the SLE (ARO x SLE = ALE). In this case, this would mean that you would multiply $12,000 by 80 percent (.8) to give you $9,600 (.8 x $12,000 = $9,600). Therefore, the ALE is $9,600.

4.   Because the ALE is $9,600, and the cost of the software that will minimize this risk is $4,700 per year, this means that the company would save $4,900 per year by purchasing the software (

$9,600 - $4,700 = $4900).