

Name _____

Investigation 13: What Is the Expected Cost to Raise a Child?

Worksheet 13.3 Application of Expected Value

Scenario

The high school band is selling raffle tickets to raise money for new uniforms. The winner of the random drawing will receive a necklace designed and made by one of the band parents. The raffle tickets cost \$1 and the necklace has a value of \$100. The band sells 200 tickets.

Let G represent the amount gained if you buy one ticket.

There are two possible outcomes – you win or lose. If you lose then you have lost your \$1, which can be a gain of -1. If you win your gain would be 100 minus the 1 for the ticket or a gain of \$99.

1. If a person buys 1 raffle ticket, find the probability distribution for the gain/loss.

<i>Gain/loss</i>	<i>Probability of Gain/loss</i>
<i>-\$1</i>	
<i>\$99</i>	

2. Find the expected gain/loss for a player who buys 1 raffle ticket.

3. What would the expected gain/loss be if a person bought 10 tickets?

<i>Gain/loss</i>	<i>Probability of Gain/loss</i>
<i>-\$10</i>	
<i>\$90</i>	

4. What would the expected gain/loss be if person bought 100 tickets? Can you find the answer without creating a probability distribution?