

Expected Values

- multiply probability of outcome by the outcome's amount

EX → A company is going to invest in a product. There is a 40% chance that the investment will have a return of \$25,000, a 40% chance that the return will be \$0, and a 20% chance of a \$50,000 loss. What is the expected return of the product?

$$(\$25,000)(0.4) + (\$0)(0.4) + (-\$50,000)(0.2)$$

$$\$10,000 + \$0 - \$10,000 = \$0$$

EX → A restaurant has a coupon giveaway. There is a 10% chance to get a \$20 coupon, a 20% chance to get a \$15 coupon, + a 70% chance to get a \$1 coupon. What is the expected discount?

$$(\$20)(0.1) + (\$15)(0.2) + (\$1)(0.7)$$

$$\$2 + \$3 + \$0.70 = \$5.70$$

EX → A game has 4 outcomes. There is a 5% chance to gain 1,000 points, a 20% chance to gain 500 points, a 50% chance to gain 200 points, and a 25% chance to lose 750 points. What is the expected value of playing the game?

$$(0.05)(1000) + (0.2)(500) + (0.5)(200) + (0.25)(-750)$$

$$50 + 100 + 100 - 187.5 = \underline{62.5}$$

HW: p. 866 → 10-16