Name _____          Date _____

## The Expected Value of Random Variable - Step-by-Step Lesson

A number wheel has 16 equally likely spaced slots numbered 1,2,3......16.

Jake bets $1 on one of the numbers and wins $25 when the wheel lands on his number. If the wheel stops at another number, he would have lost his money.

The random variable X assigns $ 25 to the wheel landing on number chosen and -$1 to having the wheel land on any other number. What is expected value of number on wheel?

**Explanation:**

The payoff table of number wheel is

| X | $ 25 | -$1 |
|---|------|-----|
| $p$ | $\dfrac{1}{16}$ | $\dfrac{15}{16}$ |

The expected value of the game is:

$E(X) = 25 \left(\dfrac{1}{16}\right) + (-1)\left(\dfrac{15}{16}\right) = 1.5625 - .9375 = 0.625$