

What is Discount Rate?

Worksheet

The discount rate is the interest rate used to convert future money into its present value (PV).

Formula: $PV = FV / (1+r)^n$, where r is the discount rate and n is the number of periods.

$$PV = FV / ((1+r)^n)$$

PV = Present Value (currency)

FV = Future Value (currency)

r = Discount Rate (%)

n = Number of Periods (years)

Questions

1. What does discount rate measure?

- A) inflation only
- B) time value of money
- C) loan fees
- D) stock growth

2. \$5,000 in 2 years, 6% discount rate. PV ≈?

- A) \$4,450
- B) \$5,618
- C) \$4,701
- D) \$3,900

3. Higher discount rate → present value is...

- A) higher
- B) lower
- C) unchanged
- D) zero

4. Discount rate is commonly used for...

- A) retail sales
- B) investment valuation
- C) weather prediction
- D) cooking

5. You will receive \$10,000 in 5 years. If the discount rate is 5%, what is its present value?

6. A bond pays \$1,000 in 3 years. Using a 10% discount rate, what is it worth today?

7. You are offered 50,000 now or 65,000 in 8 years. Using a 4% discount rate, which is better?

8. Define: What is discount rate?

9. Define: Why does money have time value?

10. Define: What does a higher discount rate mean for PV?

Answer Key

1. B) time value of money — Discount rate reflects the opportunity cost of money—the reason future money is worth less today.
2. A) \$4,450 — $PV = 5,000 / (1.06)^2 = 5,000 / 1.1236 \approx \$4,450$.
3. B) lower — Dividing by a larger $(1+r)^n$ gives a smaller PV.
4. B) investment valuation — Finance professionals use it to evaluate bonds, stocks, projects, and loans.
5. $PV = FV / (1+r)^n$ $PV = 10,000 / (1.05)^5$ $PV = 10,000 / 1.2763$ $PV \approx \$7,835$
6. $PV = 1,000 / (1.10)^3$ $PV = 1,000 / 1.331$ $PV \approx \$751$
7. PV of 65,000 in 8 years = $65,000 / (1.04)^8 = 65,000 / 1.3686 \approx 47,500$ Since $47,500 < 50,000$, take the \$50,000 now.
8. The interest rate used to convert future money into its present value in today's dollars.
9. A dollar today can be invested and grow; a dollar in the future is worth less due to opportunity cost and inflation.
10. A higher rate lowers the present value—future money is worth even less today.

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