

Pre-Class Discovery: Tokenized Assets — SOLUTIONS

Digital Finance – BSc Course

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Complete before class. No prior knowledge required. Work alone or in pairs.

Activity 1: Splitting the Painting

A painting is valued at \$1 million. You want 1,000 people to each own a share.

- (a) How would you track who owns which share? Compare two approaches: a paper registry vs. a blockchain token. List one advantage and one disadvantage of each.

- (b) When the painting is eventually sold for \$1.2 M, how do you distribute the proceeds fairly? What if someone owns 3 shares and another owns 50?

- (c) Who gets to decide when to sell? Design a simple voting rule (e.g. majority, supermajority, or auction trigger).

Activity 2: Fractional Math

A property worth \$500,000 is divided into 10,000 tokens at \$50 each. Annual rental income is \$36,000. A management company charges 2% of rental income.

- (a) Calculate the rent per token per year.

- (b) Calculate the gross rental yield (before fees) as a percentage of the token price.

- (c) Calculate the net yield after the 2% management fee. Compare this to a typical REIT that yields 4%.

Activity 3: Who Holds the Building?

You own 50 tokens (out of 10,000) in the tokenized property above. The roof needs replacing at a cost of \$50,000.

- (a) Who decides whether to fix the roof? Propose a governance mechanism.

(b) How is the \$50,000 cost distributed among token holders? What is your share?

(c) What happens if 3,000 token holders vote against the repair? What are the consequences for the property and token value?

Answer Key

A1: (a) Paper registry: advantage is legal clarity; disadvantage is slow transfers and single point of failure. Blockchain token: advantage is instant, global transfers and transparent ledger; disadvantage is regulatory uncertainty and smart-contract risk. (b) Pro rata: $\$1.2\text{M}/1,000 = \$1,200$ per share. 3-share holder gets \$3,600; 50-share holder gets \$60,000. A smart contract can automate this distribution. (c) Common rule: supermajority (e.g. 67%) of token holders must approve a sale. Alternative: automatic auction trigger if token trades below appraised value for 90 days.

A2: (a) $\$36,000/10,000 = \3.60 per token per year. (b) Gross yield: $\$3.60/\$50 = 7.2\%$. (c) Fee: $2\% \times \$36,000 = \720 . Net rent: \$35,280. Per token: \$3.528. Net yield: $\$3.528/\$50 = 7.06\%$. This exceeds a typical 4% REIT yield, though REITs offer greater liquidity and diversification.

A3: (a) Token-weighted vote: each token = 1 vote, simple majority (50%) decides. (b) Pro rata: $\$50,000 \times (50/10,000) = \250 from you. Each token bears \$5. (c) If the vote fails, the roof deteriorates, property value falls, and all token holders lose value—a collective-action problem similar to the tragedy of the commons.