Quiz 4 — Answers and explanations

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Correct answers are **bolded** and underlined. A short explanation follows each question.

1. A new product cannibalizes sales that the firm's old product would otherwise retain. Fixed costs are unchanged. What lost contribution should the analysis include?

   A. No adjustment, because the customers stay with the same firm.
   B. The lost old-product revenue, without subtracting any avoided costs.
   C. The lost old-product revenue minus the variable costs avoided.
   D. The old product's original development cost, even though it is already paid.

   Why: Subtract the old product's lost contribution: revenue lost minus variable costs avoided. Apply the relevant tax effects in FCF; sunk development spending stays out.

2. A supplied MACRS schedule moves deductions earlier without changing their total. Assume a constant tax rate and immediately usable tax savings. At a positive discount rate, why can NPV rise?

   A. Tax savings arrive sooner and have a higher present value.
   B. The equipment's purchase price is no longer a cash outflow.
   C. Depreciation becomes cash revenue from customers.
   D. The firm receives larger total depreciation deductions.

   Why: Earlier deductions bring tax savings forward, increasing their present value under these assumptions. Depreciation itself is not a cash receipt.

3. A project invests in net working capital today and recovers the same amount at the end. At a positive discount rate, what is the NPV effect of this investment and recovery?

   A. Zero, because the same dollar amount comes back.
   B. Positive, because the recovery is an additional profit.
   C. Positive, because working capital is an accounting expense.
   D. Negative, because the later recovery is worth less than the cash invested today.

   Why: The cash invested now is an outflow; recovery later is an inflow. Discounting makes that later inflow worth less today, so the pair reduces NPV even when recovery is complete.

4. An old machine sells below its tax book value. Assume a positive tax rate and an immediately usable loss deduction. How do after-tax proceeds compare with the sale price?

   A. They are lower because every asset sale creates a taxable gain.
   B. They are higher because the loss creates a tax saving.
   C. They are equal because book value never affects cash flow.
   D. They equal the machine's original purchase cost.

   Why: The sale creates a deductible loss equal to book value minus sale price. Under the case assumption, the resulting tax saving adds to the cash received from the buyer.

5. In HomeNet, you lower the selling price and hold all other inputs fixed. Which question does this **sensitivity analysis** answer?

   A. How does NPV respond to a change in the selling-price assumption alone?
   B. What is the probability that the selling price will fall?
   C. What happens if price, sales volume and unit cost all worsen together?
   D. Which selling price guarantees that the project will succeed?

   Why: Sensitivity analysis changes one input at a time to isolate its effect on NPV. It does not assign probabilities or guarantee an outcome.

6. A downside case combines a lower selling price, lower sales volume and higher unit cost. What is the main purpose of this **scenario analysis**?

   A. To isolate the effect of changing only one input.
   B. To prove that the downside case cannot occur.
   C. To test NPV under a coherent combination of changed assumptions.
   D. To establish the probability of a loss without additional evidence.

   Why: Scenario analysis changes several inputs together to test a coherent business case. A negative downside NPV is useful information, but it does not establish how likely that case is.

7. Goal Seek finds the annual sales volume that makes a project's NPV equal to zero. At this **financial break-even** volume, what does the project do?

   A. Earn zero accounting profit in every year.
   B. Recover the investment and cover the required return, without adding extra value.
   C. Recover the initial investment without compensating investors for waiting or risk.
   D. Eliminate uncertainty about future sales.

   Why: NPV of zero means the project just covers the initial investment and the required return. Financial break-even is different from zero accounting profit and does not remove forecast risk.

8. A project has one cash outflow today followed only by positive future cash flows. Holding those cash flows fixed, what happens if the required discount rate rises?

   A. NPV rises, making acceptance more attractive.
   B. NPV stays the same because the cash flows have not changed.
   C. NPV falls, so every previously acceptable project must be rejected.
   D. NPV falls and may turn negative, changing an accept decision to reject.

   Why: A higher rate reduces the present value of each positive future inflow; today's outlay is unchanged. NPV falls, but rejection follows only if NPV falls below zero.

9. An independent project has one initial outflow followed only by positive inflows. Its IRR is 12%. If the required return rises from 10% to 14%, with cash flows unchanged, what happens?

   A. IRR rises to 14%, so NPV remains zero.
   B. IRR stays at 12%; the project changes from positive to negative NPV.
   C. IRR stays at 12%; the project remains positive-NPV at either required return.
   D. IRR falls below 12% because the required return increased.

   Why: IRR depends on the cash-flow amounts and timing, so it remains 12%. For this conventional cash-flow pattern, NPV is positive below the IRR and negative above it: accept at 10%, reject at 14%.

10. A manager likes a project's short **payback period**. Why should payback be treated as a communication tool while NPV guides the value decision?

    A. Payback includes every cash flow and fully accounts for time value.
    B. A short payback guarantees that the project creates value.
    C. Payback conveys recovery speed but ignores time value and cash flows after recovery.
    D. NPV measures accounting profit, while payback measures dollar value created.

    Why: Ordinary payback communicates how quickly the outlay is recovered. It ignores time value and later cash flows, so a short payback need not imply positive NPV. NPV measures value after covering the required return.