Three solved paper LBOs (free sample)

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Problem 1

Drill 1: The cash machine *(target time: 4 min)*

A sponsor buys a business with $50M of LTM EBITDA for 8.0x. It finances with 5.0x EBITDA of senior debt and the rest in equity. EBITDA stays flat. The company generates $30M a year of free cash flow after interest, all used to repay debt. The sponsor exits after 5 years at 8.0x. Ignore fees. What are the MOIC and IRR?

Your answer: MOIC _____ IRR _____

Solution

Setup and working.

Uses	$M
Purchase enterprise value	400.0
Total uses	**400.0**

Sources	$M
Senior debt	250.0
Sponsor equity (plug)	150.0
Total sources	**400.0**

Year	EBITDA	Cash interest	Tax	FCF after debt service	Senior debt (end)
1	50.0	0.0	0.0	30.0	220.0
2	50.0	0.0	0.0	30.0	190.0
3	50.0	0.0	0.0	30.0	160.0
4	50.0	0.0	0.0	30.0	130.0
5	50.0	0.0	0.0	30.0	100.0

- Exit EBITDA (year 5): **50.0**
- Exit EV = 50.0 x 8 = **400.0**
- Less net debt at exit: **100.0**
- Exit equity: **300.0**
- MOIC = **2.00x** IRR = **14.9%**

Paper shortcut. Equity in = EV minus debt. Equity out = equity in + cumulative paydown. Divide, then read the IRR off the cheat-sheet grid.

Common trap. Forgetting that flat EBITDA and a flat multiple mean the whole return is deleveraging. If you move exit EV, you broke the problem.

Headline (final case shown): MOIC 2.00x, IRR 14.9%. Where the problem asks for something else (a maximum price, a multiple, a split, a decision), that answer is stated in the working above.

Problem 2

Drill 4: Multiple contraction *(target time: 5 min)*

A sponsor pays 11.0x for a business with $60M of LTM EBITDA, using 6.0x senior debt. EBITDA grows $6M a year and free cash flow after interest is $25M a year, all repaying debt. The exit multiple is 9.0x in year 5. Ignore fees. Find MOIC and IRR. Is the deal still above a 15% IRR hurdle?

Your answer: MOIC _____ IRR _____ Above 15% hurdle? (yes/no) _____

Solution

Setup and working.

Uses	$M
Purchase enterprise value	660.0
Total uses	**660.0**

Sources	$M
Senior debt	360.0
Sponsor equity (plug)	300.0
Total sources	**660.0**

Year	EBITDA	Cash interest	Tax	FCF after debt service	Senior debt (end)
1	66.0	0.0	0.0	25.0	335.0
2	72.0	0.0	0.0	25.0	310.0
3	78.0	0.0	0.0	25.0	285.0
4	84.0	0.0	0.0	25.0	260.0
5	90.0	0.0	0.0	25.0	235.0

- Exit EBITDA (year 5): **90.0**
- Exit EV = 90.0 x 9 = **810.0**
- Less net debt at exit: **235.0**
- Exit equity: **575.0**
- MOIC = **1.92x** IRR = **13.9%**

Hurdle question: No, 13.9% is below the 15% hurdle.

Paper shortcut. Compute exit EV at the new multiple first. The multiple change is the biggest single line.

Common trap. Treating strong EBITDA growth as proof of a good return. Two turns of contraction on a larger base is a large number; compute it explicitly.

Headline (final case shown): MOIC 1.92x, IRR 13.9%. Where the problem asks for something else (a maximum price, a multiple, a split, a decision), that answer is stated in the working above.

Problem 3

Drill 16: What can we pay? *(target time: 8 min)*

A sponsor can raise $300M of senior debt regardless of price. LTM EBITDA is $60M, growing $6M a year. Free cash flow after interest is a flat $28M a year and repays debt. Exit at 10.0x after 5 years, no fees. The fund needs a 20% IRR. What is the maximum enterprise value, and what multiple of LTM EBITDA is that?

Your answer: Max enterprise value $_____M as a multiple of LTM EBITDA _____x

Solution

Setup and working.

Year	EBITDA	Cash interest	Tax	FCF after debt service	Senior debt (end)
1	66.0	0.0	0.0	28.0	272.0
2	72.0	0.0	0.0	28.0	244.0
3	78.0	0.0	0.0	28.0	216.0
4	84.0	0.0	0.0	28.0	188.0
5	90.0	0.0	0.0	28.0	160.0

- Exit EV = 900.0; net debt at exit = 160.0; exit equity = **740.0**
- Equity that earns 20% for 5 years = 740.0 / 1.2^5 = **297.4**
- Maximum EV = equity + debt = 297.4 + 300 = **597.4**, which is **9.96x** LTM EBITDA
- Check: at that price MOIC = 2.49x and IRR = 20.0%

Paper shortcut. Work backwards: exit equity / 1.2^5 = max equity. Add the debt. Because debt is fixed, FCF does not depend on price, so no iteration is needed. 1.2^5 is about 2.49.

Common trap. Solving for equity and forgetting to add the debt back. Max EV is max equity plus the debt.

Headline (final case shown): MOIC 2.49x, IRR 20.0%. Where the problem asks for something else (a maximum price, a multiple, a split, a decision), that answer is stated in the working above.
