# 9.5 Cost of capital

Name: _____ Class: _____ Date: _____ **Total: 11 marks**

**KEY WORDS** weighted average cost of capital • tax shield

## Objective

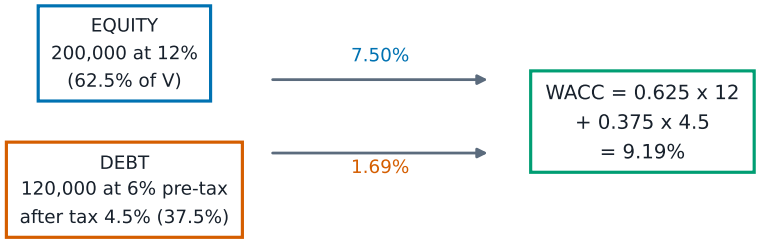
Compute WACC with market-value weights; source each input; read the debt U-curve honestly.

## 1 Key knowledge and worked examples

### The blend

WACC = (E/V)$k_e$ + (D/V)k_d(1−t) at market weights; private $k_e$ by proxy with judgements written down.

**The hurdle is a blend of market values**




*previously assumed 8%: every NPV was 2,735 too fat;*
*the proxy working: k_e = 4 + 1.1 x 6 + 1.4 private*

*A blend of market values*

### Worked example. Nimbus

E 200,000 (12%), D 120,000 (6% → 4.5%): WACC 9.19% ✓.

## 2 Practice

A design studio: 500,000 shares at £1.80; debt £270,000 at 7% pre-tax; tax 20%; $k_e$ 13.5%.

**2.1** Compute E, V, the weights, and the WACC (two decimals). [4]

**2.2** The studio's book shows equity at £0.50 par. What weight would the book method give, and why is it wrong? [2]

**2.3** $k_e$ came from a proxy: quoted rival $\beta$ 1.3, market 9.5%, risk-free 3%. Reconstruct the CAPM $k_e$ and the implied private premium. [3]

**2.4** Borrowing £150,000 more at 7% cuts the blend to 10.99%. In two lines: why will it stop cutting? [2]

## Solutions

**2.1**

- $E = 500{,}000 \times 1.80 = £900{,}000$; $V = 1{,}170{,}000$.
- Weights: 76.9% / 23.1%.
- $WACC = 0.769(13.5) + 0.231(7 \times 0.8) = 10.38 + 1.29 = 11.67\%$.

**2.2**

- Book: 250,000/520,000 = 48% equity weight – roughly the double-count of the market's.
- Investors require returns on what their stake is WORTH; the market price is the worth.

**2.3**

- $k_e = 3 + 1.3(9.5 - 3) = 11.45\%$.
- Implied private premium = $13.5 - 11.45 = 2.05$ points – a judgement, written down.

**2.4**

- Each tranche raises the equity beta ($k_e$ climbs) and the new debt prices above 7% for the riskier borrower.
- The curve is U-shaped: the bottom is the right debt, not the most available.

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