

Schedule

Two formulas and three key rules, each with a worked example, then the two model sheets. They serve IPMA, PMI and APM exams alike; APM's PMQ asks more for the reasons.

FORMULAS AND KEY RULES

Crashing (after Kerzner)

cost per day saved = extra cost ÷ days saved

Critical activities only, the cheapest day first, until the gap is closed. Recheck the paths after each step: another chain may become critical.

Example: 6 days too long; migration and testing are critical. Migration: 3 days for €4,500 (€1,500 a day), so first. Testing: 4 days for €12,000 (€3,000 a day), so 3 of them. €4,500 + 3 × €3,000 = €13,500 for 6 days

Fast-tracking: worth it?

chance of rework × cost of rework < cost of crashing the same days

Overlap only soft links, never those set by the work, the law or a contract. Check the worst case too.

Example: Overlap saves 3 days that crashing would buy for €6,000; a 30% chance of €5,000 of retraining: 0.3 × €5,000 = €1,500 < €6,000

Four kinds of link

finish-to-start (usual) · finish-to-finish · start-to-start · start-to-finish (rare)

A lead starts the next activity early; a lag makes it wait. Hard links: PMI mandatory, APM logical; soft: discretionary, preferential. APM adds resource links.

Example: Editing starts 5 days after writing starts: start-to-start, 5-day lag. Training starts 3 days before testing ends: finish-to-start, 3-day lead

A milestone is a state (our advice)

milestone = a state + a check + who decides + a date

A key point or event with zero duration. Five to eight on one page for the people who steer.

Example: 'End-to-end test passed': no open critical defects; the sponsor decides; 10 working days before go-live

Timeboxes and the release plan

iterations in a release = release length ÷ timebox length

Time, people and cost are fixed; the scope flexes. The release plan shows what each timebox should deliver.

Example: A 12-week release in 2-week timeboxes: 12 ÷ 2 = 6 iterations; unfinished items go back to the backlog

IN THIS HANDOUT

Milestone plan

p. 2

Crashing and fast-tracking

p. 3

Sources: IPMA ICB4 (2015); PMI, PMBOK® Guide, 8th ed.; PMI, PMP® Examination Content Outline (2026); APM Body of Knowledge, 8th ed.; APM, PMQ handbook (v6, 2026); IPMA International Certification Regulations (ICR) v4.4 (2025); Kerzner, Project Management: A Systems Approach (11th ed.)

Key: IPMA = International Project Management Association; ICB4 = IPMA's Individual Competence Baseline; PMI = Project Management Institute; PMBOK® Guide = PMI's body-of-knowledge guide; PMP® = PMI's Project Management Professional; APM = Association for Project Management; PMQ = APM's Project Management Qualification; ICR = IPMA's International Certification Regulations. Unofficial study material for IPMA®, PMI® and APM exams. Not affiliated with, endorsed by or approved by IPMA, PMI or APM, and not an accredited or endorsed training provider. IPMA® and IPMA ICB® are registered trademarks of IPMA in Switzerland and other countries. PMI, PMP, CAPM and PMBOK are registered marks of Project Management Institute, Inc. APM is a trade mark of the Association for Project Management. Other marks belong to their owners. PMP® exam facts are from PMI's public PMP® Examination Content Outline (2026); check the current version on pmi.org. APM's qualifications are its own; this series is not an APM Accredited Provider or APM Endorsed. Examples use a fictional city and its projects.

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Milestone plan

Give the sponsor and the steering group one page of key dates, each a result that someone checks and accepts.

MILESTONE (A STATE)	CHECK	DECIDES	DUE
Plan approved	Plan and charter signed	Steering group	End of month 1
Design approved	Requirements and design signed	Sponsor	End of month 2
System links work in test	All links pass their tests	Project manager	End of month 5
End-to-end test passed	No open critical defects	Sponsor	2 weeks before go-live
Service live	Go-live checklist met	Steering group	End of month 8

Illustrative: a city project that moves parking permits online in eight months, before most residents renew in January.

WHAT IT IS

A **milestone** is a key point or event: PMI's guide gives it zero duration, and APM (Association for Project Management) ties it to accepting a deliverable. A milestone plan puts the few that matter on one page, with dates, for the people who steer; the detailed schedules sit below it. Our advice, a common convention: name each as a **state** reached, not an activity, with a check and a person who decides that it is reached.

HOW IT WORKS

- 01 Choose the stages: more uncertainty, shorter stages.
- 02 Pick five to eight: stage ends, decisions, outside dates.
- 03 Name each as a state, with a check and a decider.
- 04 Date them; only the steering body moves one.

MID-LEVEL • WORKED EXAMPLE

Apply it well

The situation: A city team has eight months to move resident parking permits online, and must go live before January, when most residents renew.

Five milestones on one page for the steering group, from 'plan approved' (month 1) to 'service live' (end of month 8). 'End-to-end test passed' means no open critical defects. The detailed schedule sits below.

In the exam: List four to six milestones as states, each with a check, a decider and a date, and say who hears first when one is at risk.

SENIOR • WORKED EXAMPLE

Design and lead it

The situation: A city is joining 14 online services under one login over 30 months, in three waves of services, replacing its old portals. The national login takes changes only once a quarter.

The board's one-page plan shows each wave's 'services live' and 'old portals switched off', plus outside dates: the quarterly release windows and the council election in month 20. Only the board moves a baseline milestone.

In the exam: Explain the planning levels and their readers, which dates you do not control, and who may move a baseline milestone.

WHERE IT SITS

IPMA • ICB4	PMI • PMBOK® GUIDE 8 • PMP® EXAM	APM • BOK 8 • PMQ EXAM
4.5.4.3: number, content and length of stages; more uncertainty, shorter phases. Milestones: 4.5.4 knowledge	Guide: zero duration, milestone list (p. 123); milestone schedule (glossary p. 269). Exam outline: Domain II, task 8	BoK: milestone tied to accepting deliverables (glossary); schedules from a plan on a page (\$5.5). PMQ (APM's Project Management Qualification) objective 20

Sources: IPMA ICB4 (2015); PMI, PMBOK® Guide, 8th ed.; PMI, PMP® Examination Content Outline (2026); APM Body of Knowledge, 8th ed.; APM, PMQ handbook (v6, 2026)

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Crashing and fast-tracking

Shorten a schedule without cutting scope: choose between more resources and more overlap, knowing what each costs and risks.

QUESTION	CRASHING	FAST-TRACKING
What you do	Add people, overtime or money	Overlap activities planned in sequence
What it costs	Extra money per day saved	Rework risk, more coordination
Works only if	More people make it faster	The link is soft, not hard
Which first	The cheapest day saved	The least risky overlap
Watch for	A new critical path	Changes that undo work done

The series' own comparison, after Kerzner (pp. 620–622) and the PMBOK® Guide 8 (PMI's body-of-knowledge guide) (pp. 196–197).

WHAT IT IS

The PMBOK® Guide calls both **schedule compression**. **Crashing** adds people, overtime or money to critical activities; Harold Kerzner's order is the lowest cost per unit of time first, with the paths rechecked after each step, since a new critical path can appear. **Fast-tracking** overlaps activities planned in sequence: little extra money, but rework risk. The ICB4 (IPMA's Individual Competence Baseline) names crashing.

HOW IT WORKS

- 01 Confirm the gap, and which date is really fixed.
- 02 Crash: extra cost ÷ days saved; the cheapest critical day first.
- 03 Fast-track: overlap only soft links; price the rework.
- 04 Recheck the paths after each step. Scope or date: the sponsor.

MID-LEVEL • WORKED EXAMPLE

Apply it well

The situation: A city team moving parking permits online must win back four working days before a fixed go-live. Configuration and testing are on the critical path.

The service-desk guide has spare time, so speeding it up gains nothing. Weekend work saves 2 days of configuration for €3,000 (€1,500 a day); a second tester saves 2 days for €5,000 (€2,500 a day). Cheaper first, then the other: 4 days for €8,000.

In the exam: Show the critical activities, the cost per day saved, the cheapest choice and the recheck of the paths. Name each option's risk and your fallback.

SENIOR • WORKED EXAMPLE

Design and lead it

The situation: A city joins 14 online services under one login in 30 months. One wave of services will miss the national login's quarterly release window by two weeks.

Waiting would cost up to three months. The project manager weighs borrowing shared integration specialists (the portfolio meeting decides), overlapping build and test, or moving one service to the next wave, and takes the options to the board.

In the exam: Treat compression as a board trade-off: cost, risk, people's load and other projects. Say who decides, and when a scope or date change is better.

WHERE IT SITS

IPMA • ICB4	PMI • PMBOK® GUIDE 8 • PMP® EXAM	APM • BOK 8 • PMQ EXAM
4.5.4: crashing the schedule in the element's knowledge; re-planning after disturbances (4.5.4.5)	Guide: schedule compression by crashing and fast tracking; negative float (pp. 196–197). Exam outline: Domain II, task 8	BoK (APM's Body of Knowledge) §5.5.1: the critical path is reviewed constantly. PMQ (APM's Project Management Qualification) 20c: re-estimating and schedule optimisation

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