

Resources

Five formulas for resources, each with a worked example, then the model sheet. They serve IPMA, PMI and APM exams alike; APM's PMQ asks more for the purpose than for the arithmetic.

FORMULAS

Effort

effort (person-days) = Σ each person's working days $\times$ their share of time

Effort is the amount of work. Stretching the dates does not shrink it, and new people may add some while they learn.

Example: 3 people full-time for 4 weeks (20 working days): $3 \times 20 = 60$ person-days

Duration

duration (working days) = effort $\div$ (people $\times$ share of their time)

Duration is the time from start to finish. More people rarely cut it in proportion: some work cannot be split, and newcomers need time to learn.

Example: A 30 person-day task: 2 people full-time take $30 \div 2 = 15$ working days; the same 2 at half time take $30 \div (2 \times 0.5) = 30$

Shortfall

shortfall = effort needed – capacity offered

Size the gap before you negotiate. Then offer options: backfill the lending team, find another person, or cut the effort (test the riskiest parts first). Agree it in writing.

Example: A 3-week job (15 working days) needs 3 people: $3 \times 15 = 45$ person-days. One is offered at 60%: $2 \times 15 + 0.6 \times 15 = 39$. Short $45 - 39 = 6$, or 2 days a week of one more person

Capacity for an iteration

capacity = people $\times$ working days in the iteration – leave – other duties

In iterative work, the team is stable, so capacity is the planning unit: the team takes only the work that fits. Book shared specialists for each iteration.

Example: 6 people $\times$ 10 working days = 60 person-days; less 5 days of leave and 1 day each of support (6): $60 - 5 - 6 = 49$

Utilisation

utilisation = hours spent on the work $\div$ hours available

Compare planned and actual use, and correct early. Plans that book everyone at 100% leave no room for meetings, support or surprises; use your organisation's own history.

Example: 32 of 40 hours a week on project work: $32 \div 40 = 80\%$

IN THIS HANDOUT

Resource plan

p. 2

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)

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.

All episodes, sheets and handouts: pm.fannarmaximus.com · Watch: youtube.com/@fannarmaximus



Scan for the episode

Resource plan

What the project needs, how much, when, from whom, and who agrees.

RESOURCE	HOW MUCH · WHAT SKILL	WHEN	SOURCE · WHO AGREES
City team	7 staff, some lent (matrix)	Months 1–8	Departments' line managers
Supplier developers	5, on four integrations	Months 3–5	Supplier, under contract
Old-database know-how	1 specialist, the only one	Weeks 3–5	IT Operations manager
Desk-guide writers	2 half-time = 1 person	Weeks 3–4	Customer Service Centre
Devices and a room	Handhelds; room for 58 users	Weeks 7–10	Parking Services; IT Operations

Illustrative: an eight-month city project that moves parking permits online. Weeks count the last ten before go-live.

WHAT IT IS

A resource plan answers four questions for each resource: what, how much, when, and from whom. The ICB4 (IPMA's Individual Competence Baseline) asks for two layers: a **strategic** layer (who owns each part of resourcing) and a **detailed** one, drawn from the schedule. The PMBOK® Guide (PMI's body-of-knowledge guide) adds resource calendars (when each person or item is free); the APM (Association for Project Management) Body of Knowledge, a responsibility matrix. The table is our own form.

HOW IT WORKS

- 01 Strategic: who asks, lends, pays, settles clashes.
- 02 Detailed: amount, skill, weeks and source per row.
- 03 Agree each row in writing; mark gaps and experts.
- 04 Set demand per period against availability.

MID-LEVEL · WORKED EXAMPLE

Apply it well

The situation: A city team of 7 staff and a supplier team of 5 have eight months to move parking permits online. Some staff are lent by departments, keeping their line managers.

The project manager builds it from the schedule, each row agreed in writing. Data migration needs 2 people for 3 weeks: 2 × 15 days = 30 person-days. Only one, lent by IT Operations, knows the old database, so the other learns beside her.

In the exam: Give a small table: resource, amount and skill, when, source and who agrees. Then name one weak point, such as an irreplaceable person, and your response.

SENIOR · WORKED EXAMPLE

Design and lead it

The situation: A city is joining 14 online services under one login over 30 months. Only 6 integration specialists serve all its projects, shared out by a portfolio meeting.

The project manager writes the strategic layer first: the portfolio meeting allocates the specialists, line managers release them, and the steering board pays for extra. She brings each group's demand a quarter ahead, with its value and dependencies.

In the exam: Show the strategic layer: who allocates, releases and pays for people. For a shortage, give options with their effect on other projects, and say who decides.

WHERE IT SITS

IPMA · ICB4	PMI · PMBOK® GUIDE 8 · PMP® EXAM	APM · BOK 8 · PMQ EXAM
4.5.8 Resources: strategic resource plan (4.5.8.1); type, quantity and quality (4.5.8.2); allocation (4.5.8.4)	Guide: Resources domain §2.6: resource management plan, requirements, calendars (pp. 79–83). Exam outline: Process task 4	BoK (APM's Body of Knowledge) §5.6.1: requirements by skill and capacity; §5.7.2: responsibility matrix from the work and organisation breakdowns. PMQ (APM's Project Management Qualification) 21a–21b

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)

Key: IPMA = International Project Management Association; PMI = Project Management Institute; PMP® = PMI's Project Management Professional. 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. Levels (this series' labels): Mid-level = moderately complex projects (IPMA Level C, PMI's PMP®); Senior = complex projects and people (IPMA Level B, APM's Chartered Project Professional).

All episodes, sheets and handouts: pm.fannarmaximus.com · Watch: youtube.com/@fannarmaximus



Scan for the episode