

Panzer Strike

A tactical wargame at individual-vehicle scale. One counter is one tank, one gun, one section of men or one commander, on a sheet of 100-metre hexes. A turn is one minute, and every body spends the same action points on going, on traversing its turret and on firing — so a metre driven is a shot not taken, and what you hold back is what lets a body fire during the enemy's minute.

The name and the subject come from the 1987 Strategic Simulations title. Nothing else does: every rule, table and value here was written for this engine. See LICENSE.txt for the full disclosure.

The sequence of a minute

You give every order you mean to give, then end the minute. The other command then plays its whole minute at once. There is no interrupt: what your bodies do while the enemy is moving is decided entirely by the standing order you left them with, so setting those orders is half of the game.

Standing order	Reach it will fire to	What it means
Hold fire	none	stays hidden
Close range	within 45% of the arm's reach	fires inside half reach
Fire at will	within 100% of the arm's reach	fires at anything in reach

Action points

Entering a hex costs the going for that ground, plus one for climbing a contour, plus half a point a step for a vehicle swinging its hull. A road followed from one road hex to the next costs 0.5. A turret traverses for half a point a step; a fixed mount must swing the whole hull; a towed gun manhandled outside its arc pays two points a step. Firing costs whatever the arm costs, listed in the tables below. A body that moves gives up its hole and is easier to see for the rest of the minute; a body that fires has given its position away for two minutes.

Moving the sheet about

Drag to pan, or use the arrow keys — they pan the view and never march a body, because a body is marched with Q W E A S D, which is the six directions a hex has. The wheel zooms about the pointer, two fingers pinch to zoom and pan in one motion, and a double click or double tap zooms in on that spot. F, or the square button beside the zoom controls, pulls back until the whole sheet is on screen. Zoomed all the way out the sheet always fits, however wide it is and however narrow the screen; zoomed in, the travel reaches every corner of it.

The ground

Ground	Going	Cover	Conceals	Line of sight	Height	Vehicles
Open	1	0	0	open	0	open to vehicles
Steppe	1	0	1	open	0	open to vehicles
Standing crop	1.5	1	2	screens	2	open to vehicles
Scrub	1.5	1	2	screens	2	open to vehicles
Soft sand	2	0	0	open	0	open to vehicles
Dune	3	2	2	opaque	6	open to vehicles
Wadi	2.5	3	3	screens	0	open to vehicles
Orchard	2	2	3	screens	6	open to vehicles
Wood	4	3	5	opaque	12	open to vehicles

Ground	Going	Cover	Conceals	Line of sight	Height	Vehicles
Bocage bank	5	4	5	opaque	5	open to vehicles
Village	2.5	4	4	opaque	8	open to vehicles
Rubble	4	3	4	opaque	4	open to vehicles
Marsh	5	1	2	open	0	closed to vehicles
Stream	3	1	1	open	-2	open to vehicles
Rock	6	3	3	opaque	10	closed to vehicles

One contour is 15 metres of height. Anything standing on a hex — a wood, a village, a bank — adds its own height to the sight line over it.

Gunnery

A shot is resolved in two parts. First the chance of a telling hit, which falls with range, with the cover the mark is in, with anything screening the line, and with the firer's own movement and shaking. Then, against a vehicle, penetration: the shot lands on hull or turret, front, side or rear, and is compared with the plate it meets. Below about two-thirds of the plate nothing goes through; above about four-thirds everything does.

Arm	Kind	Penetration	Loss / km	Blast	Accuracy	Reach	Points	Rounds
7.5cm L/24	gun	46	6	34	52%	14	5	1
7.5cm L/48	gun	100	17	32	62%	20	5	1
7.5cm L/70	gun	132	18	32	68%	22	5	1
8.8cm L/56	gun	120	16	44	66%	24	6	1
5cm Pak 38	gun	68	13	18	60%	16	5	1
2cm KwK	gun	26	7	8	58%	12	3	3
7.5cm le.IG	gun	20	4	36	44%	16	5	1
76mm F-34	gun	78	13	34	56%	18	5	1
76mm ZiS-3	gun	82	13	34	58%	18	5	1
85mm D-5T	gun	112	16	42	60%	20	5	1
45mm M-42	gun	58	12	14	58%	14	3	2
75mm M3	gun	82	14	34	60%	18	5	1
76mm M1	gun	108	16	26	62%	20	5	1
6-pounder	gun	84	14	12	62%	17	5	1
17-pounder	gun	140	17	22	64%	22	5	1
2-pounder	gun	52	11	0	60%	14	3	2
Machine gun	mg	6	3	14	55%	9	2	3
Heavy MG	mg	8	3	20	58%	12	2	3
Rifles	small	4	2	12	50%	5	2	2
Automatic arms	small	4	3	16	52%	3	2	3
Hollow charge	at	150	0	10	42%	2	3	1
Rocket launcher	at	92	0	10	46%	3	3	1
Anti-tank rifle	at	34	8	2	50%	5	3	1
81mm mortar	mortar	8	0	30	34%	18	4	1
5cm mortar	mortar	4	0	18	34%	10	3	1

Vehicles

Vehicle	Force	Front	Side	Rear	Deck	Turret	Points/min	Sight	Cost	Arms
Pz.38(t)	GER	50	30	22	12	yes	14	10	34	2cm KwK, Machine gun
Pz.III J	GER	62	32	32	14	yes	14	11	52	5cm Pak 38, Machine gun
Pz.IV D	GER	46	30	26	12	yes	13	11	50	7.5cm L/24, Machine gun
Pz.IV H	GER	92	34	26	16	yes	13	12	78	7.5cm L/48, Machine gun
StuG III G	GER	96	34	32	16	fixed	12	12	72	7.5cm L/48, Machine gun

Vehicle	Force	Front	Side	Rear	Deck	Turret	Points/ min	Sight	Cost	Arms
Panther A	GER	152	46	42	18	yes	16	14	148	7.5cm L/70, Machine gun
Tiger I	GER	116	84	84	26	yes	11	14	176	8.8cm L/56, Machine gun
Marder III	GER	24	14	10	0	fixed	13	12	58	7.5cm L/48
Sd.Kfz.251	GER	18	10	10	0	fixed	16	10	22	Machine gun
T-26	SOV	24	20	20	10	yes	12	9	28	45mm M-42, Machine gun
BT-7	SOV	26	18	16	10	yes	18	9	30	45mm M-42, Machine gun
T-34/76	SOV	88	48	42	16	yes	16	9	84	76mm F-34, Machine gun
T-34/85	SOV	90	48	44	18	yes	15	11	122	85mm D-5T, Machine gun
KV-1	SOV	108	90	74	22	yes	10	9	118	76mm F-34, Machine gun
SU-76	SOV	30	14	14	0	fixed	14	10	50	76mm ZiS-3
SU-85	SOV	84	44	42	16	fixed	14	11	96	85mm D-5T
M3 Stuart	USA	44	26	24	12	yes	18	12	36	2-pounder, Machine gun
M4A1 Sherman	USA	88	44	40	18	yes	15	13	86	75mm M3, Machine gun
M4A3E8	USA	96	46	42	18	yes	16	13	118	76mm M1, Machine gun
M10	USA	62	26	26	0	yes	15	13	90	76mm M1
M3 half-track	USA	16	10	10	0	fixed	17	11	22	Heavy MG
Crusader II	GBR	52	30	28	12	yes	18	12	40	2-pounder, Machine gun
Matilda II	GBR	100	84	66	20	yes	8	12	74	2-pounder, Machine gun
Grant	GBR	64	46	40	16	fixed	13	12	78	75mm M3, 2-pounder, Machine gun
Sherman Firefly	GBR	88	44	40	18	yes	15	13	132	17-pounder, Machine gun
Universal carrier	GBR	14	10	10	0	fixed	16	11	16	Machine gun

Towed guns

Gun	Force	Crew	Arc	Sight	Cost	Arm
5cm Pak 38	GER	5	2 steps	12	38	5cm Pak 38
7.5cm Pak 40	GER	6	2 steps	12	60	7.5cm L/48
8.8cm Flak 36	GER	8	2 steps	14	96	8.8cm L/56
7.5cm le.IG 18	GER	5	3 steps	10	34	7.5cm le.IG
76mm ZiS-3	SOV	6	2 steps	11	54	76mm ZiS-3
45mm M-42	SOV	5	2 steps	11	30	45mm M-42
6-pounder	GBR	6	2 steps	12	52	6-pounder
17-pounder	GBR	7	2 steps	13	92	17-pounder
57mm M1	USA	6	2 steps	12	52	6-pounder
81mm mortar	ANY	5	6 steps	8	40	81mm mortar

A towed gun does not shift once emplaced. That is intended: siting it is the decision, and a gun that has fired and been located is usually lost.

Men

Section	Force	Men	Points/min	Morale	Sight	Cost	Arms
Grenadier section	GER	10	8	7	10	26	Rifles, Machine gun, Hollow charge
Pioneer section	GER	9	8	8	10	32	Automatic arms, Machine gun, Hollow charge
MG team	GER	4	6	7	11	20	Heavy MG
Mortar team	GER	4	6	7	8	18	5cm mortar
Rifle section	SOV	11	8	6	8	22	Rifles, Anti-tank rifle
SMG section	SOV	10	9	7	8	24	Automatic arms
Maxim team	SOV	5	5	6	10	20	Heavy MG
Rifle squad	USA	12	8	7	11	28	Rifles, Machine gun, Rocket launcher
MG squad	USA	5	6	7	11	20	Heavy MG
Rifle section	GBR	10	8	7	11	24	Rifles, Machine gun
Vickers team	GBR	5	5	7	11	20	Heavy MG
Bailed crew	ANY	4	7	4	8	0	Automatic arms

Crews and the light

Crew	Gunnery	Morale	Spotting	Price
Conscript	0.8	-2	0.85	0.8
Trained	1	+0	1	1
Veteran	1.15	+2	1.15	1.3
Elite	1.26	+3	1.25	1.55

Light	Spotting	Reach of arms
Clear	1	1
Heat haze	0.78	0.85
Rain	0.72	0.8
Last light	0.55	0.62

Light	Spotting	Reach of arms
Night	0.32	0.4

The light scales the whole picture, concealment included. In the dark a hedgerow is worth much less than it is at noon, because the dark is already doing the hiding — scaling only the reach turned a night action into a one-way street in which the defender saw everything and the attacker saw nothing.

Spotting, and what you actually know

Nothing is seen that has not been spotted. What you hold of the enemy is a set of reports, each with the minute it was made: a fresh one is drawn as a counter, a stale one as a dashed ring that widens as it ages. Spotting is the only thing that writes a report — with one honest exception, which is that being shot at tells you where the shot came from. Resting on an enemy counter gives you the report and its age and nothing else; the card never knows more than you do.

Scoring, and par

Score is normalised to a thousand a side: five hundred for ground held as a share of the minutes actually fought, and five hundred for the share of the enemy's starting value destroyed. Ground pays per minute to whoever has the weight of presence on it, so an action that ends early does not leave most of the ground pool unpaid, and kills pay as a share of the enemy's starting value, so an even trade does not punish the side with the expensive tanks.

Your result is read against par for the side you held, not against the other command's score. In an assault the defender out-scores the attacker by design, and a ladder scored on raw points measures the seat rather than the officer.

Action	Theatre	Light	Shape	Minutes	Par, first	Par, second
Steppe Crossing	Eastern Front	Clear	meeting engagement	14	502	406
The Sunken Road	North-West Europe	Clear	assault on a position	16	393	473
Ridge 104	Western Desert	Heat haze	assault on a position	14	429	451
Night on the Rail Halt	Eastern Front	Night	assault on a position	15	317	364

Bands are set at +120, +55, −25 and −95 against par: a signal success, a clear success, a fair showing, a poor showing, a disaster.

The builder

A scenario in this game is a plain object — the ground, the light, the length and both orders of battle — and the builder edits exactly that object. The four prepared actions are written in the same format and run through the same code, so there is no sense in which a battle of your own is a lesser thing. Set a purse if you want the two commands held to a budget; leave it on "as written" and buy what you like.

Purse	Points	Minutes	Sheet
Patrol	320	10	21 by 15
Company action	620	14	25 by 19
Battlegroup	980	18	29 by 21

The sheet is generated from a seed, and you then lay whatever you like over it: pick a terrain tool, or raise and lower the contours, or lay a road, and drag across the preview. The preview and the game apply those edits through the SAME function, so what you paint is what you play, and the lanes are reopened afterwards so a wall of marsh cannot leave armour with no way out of its own deployment band. On a meeting engagement every stroke is mirrored through the half turn, because that symmetry is the whole of what makes a meeting engagement fair.

Sound

The guns are told apart by calibre, and what happens after a hit sounds like what it is: a shot that bounces rings off the plate, a shot that goes through does not, and a vehicle that brews up is unmistakable. All of it is synthesized from noise and envelopes — nothing is sampled — and it is rate limited per kind, because a general engagement fires dozens of rounds a minute and a faithful mix of that is just noise. Sound can be turned off from the bar above the sheet, and the pace of the enemy's minute set to brisk, steady or slow; both are remembered between sessions.

The machine commander

Everything the machine weighs is converted into points of score, so ground and gunnery are compared in one currency. It values the hex a body is standing in alongside every hex it could reach, which is how a move is charged against the gunnery it gives up: deciding to stop and fight has to be a decision the value function can make.

Commander	Reports that reach him	Error in choosing the mark	Orders that arrive	Siting
Green	0.62	0.34	0.92	1
Regular	0.82	0.17	0.92	1
Veteran	0.97	0.05	0.92	1

Two of those columns are the same for every commander, and that is deliberate. Measured in paired probes — each seed played twice, once with each commander on each seat, and the margins differenced — the rate at which orders arrive measured NEGATIVE in the meeting engagement, at -127 ± 45 : a commander who gets more of his orders out sends more bodies forward into contact, and in a meeting engagement that is a bad trade. Siting measured at even. Both are therefore held at one value across all three tempers and are doctrine rather than talent. Skill lives in seeing and in choosing the mark.

Measured on the same design, the ladder runs Veteran over Green +317 / +255 / +106 / +362 across the four actions, Veteran over Regular +174 / +136 / +36 / +318, and Regular over Green +86 / +195 / +46 / +151, all scored against par for the side held.

Notes for anyone reading the source

The package ships its javascript unminified in `js/`. `game.js` is the boot module and the entry the specification asks for; `rules.js` is the rules engine; `ai.js` is the machine commander; `scenarios.js` holds the four prepared actions in builder format. Every table in this manual, in the README and in the tutorial is generated at build time from a dump of the shipped modules, so the documents cannot drift from the code.

The sheet is a pointy-top, odd-r offset grid. A meeting engagement is laid out on a ragged rectangle — one hex shorter on every odd row — which is the shape that is actually symmetric under a half turn, and the objectives and both deployment bands are derived from that rotation rather than from column indices. That last point cost a rebuild: cutting the bands by column looked symmetric, was not, and handed the first command the action before a shot was fired.

The game writes two keys into local storage, `tronsoft_panzer_strike_save` and `tronsoft_panzer_strike_prefs`, and nothing else. It makes no network request of any kind. Add `#seed=1987` to the address to pin the sheet, or `#fast=1`

to skip the pause before the machine's minute.