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Initiative Bonus		
Doctrine Type		
	Size	Bonus
AoW	platoon	+3
AoW	company	+2
AoW	regiment	+2
SoW	platoon	-1
SoW	company	0
SoW	regiment	+1
Sow	brigade	+2
Other	platoon	-3
Other	company	-2
Other	regiment	-1
Other	brigade	-1
Add Initiative Bonus to initiative die roll. Elite troops add an additional +1 to die roll. A tie results in a straight 'roll off' with the highest die roll winning (no modifiers).  Winner of the initiative moves second in each movement segment. It does not determine who fires first nor does it allow an element moving full move after an element moving half. Regardless of who wins or loses initiative tactical orders must be followed.		

RADIO CONTACT TABLE			
Type Contacting Element	New Contact	Links	Maintain Contact
US Command before 1975	3	1	1
US Command 1975-1995	2	2	1
US Command after 1995	1	2	0
US FO before 1975	3	1	1
US FO 1975-1992	2	2	0
US FO after 1992	1	2	0
UK, FRG, Fr. Command before 1975	3	1	1
UK, FRG, Fr. Command 1975-1992	2	1	1
UK, Ger., Fr. Command after 1992	1	2	0
UK, FRG, Fr. FO before 1975	3	1	1
UK, FRG, Fr. FO 1975-1992	2	2	1
UK, Ger., Fr. FO after 1992	1	2	0
Other NATO Command before 1980	3	1	1
Other NATO Command after 1980	2	2	1
Other NATO FO before 1980	2	1	1
Other NATO FO after 1980	1	2	1
Warsaw Command before 1960	6	1	1
Warsaw Command 1960-1970	4	1	1
Warsaw Command after 1975	3	1	1
Warsaw FO before 1960	5	1	1
Warsaw FO 1960-1970	4	1	1
Warsaw FO after 1975	3	1	1
Russia after 1998	2	2	1
Israeli Command before 1960	4	1	1
Israeli Command 1960-1970	3	1	1
Israeli Command 1970-1987	2	2	1
Israeli Command after 1987	1	1	0
Israeli FO before 1960	3	1	1
Israeli FO 1960-1987	2	2	0
Israeli FO 1987	1	2	0
Jordanian before 1970	5	1	2
Jordanian after 1970	3	1	1
Egyptian, Syrian before 1970	6	1	2
Egyptian, Syrian before 1970	5	1	1
Chinese before 1990	6	1	2
Chinese after 1990	3	2	1
Indian before 1980	5	1	2
Indian after 1980	4	1	1
Pakistani before 1980	5	1	2
Pakistani after 1980	4	1	1
Iraq before 1980	5	1	2
Iraq after 1980	4	1	2
N. Korean 1950-1960	7	1	2
N. Vietnam Command	5	1	2
N. Vietnam FO	5	2	1
S. Vietnam Command	5	1	1
S. Vietnam FO	4	2	1

Sighting Calculator		
Factors	Distance	Start here when:
less than 0	10	
0	15	
1-5	25	
6-11	50	
12-15	75	
16-17	100	
18-19	125	
20-21	150	
22	175	
23-24	200	
25	225	Moving buttoned up
26	250	
27	275	
28	300	
29	325	
30	350	
31	400	Thermals - moving
32	450	
33	475	
34	500	Moving unbuttoned
35	550	
36	600	Thermals - stationary
37	650	Stationary unbuttoned
38	700	
39	750	
40	800	
41	875	
42	950	
43	1025	
44	1100	
45	1200	
46	1300	
47	1400	
48	1500	
49	1600	
50	1700	
51	1800	
52	1900	
52	2000	
54	2100	
55	2200	
56	2300	
57	2400	
58+	2500	

Variable Sighting	
D10 roll	Percent of Distance
1 or less	25%
2 - 5	50%
6 - 9	100%
10 - 11	150%
12 or more	200%

AFV Trying to Sight Modifiers	
Factors	Adjustments
Buttoned up with cupola. (Visual)	+2
Firing main weapon	-2
Stationary but shifted	-2
Vehicle Commander killed	-8

Infantry Trying to Sight Modifiers	
Factors	Adjustments
Firing weapons or fired weapons last turn	-2
Driven to ground	-10
Broken, suppressed or hiding	-15
Under HE fire this turn or last	-15

Target is Vehicle Modifiers	
Factors	Adjustments
Stationary vehicle rotating turret 45° or more.	+2
Vehicle shifting	+5
Vehicle moving more than a shift move	+15
Vehicle hull down	-8
Vehicle in or among buildings or rubble	-10
In prepared camouflaged position	-7
Target in or behind covering foliage of at least twice its height.*	-5
LOS through 1-25 of light woods.*	-10
LOS through 26-50 of light woods.*	-15
LOS through 51-75 of light woods.*	-25
LOS through 76-100 of light woods.*	-35
LOS through each 25 of heavy woods*.	-20
LOS through each 25 of sketchy smoke.*	-10
LOS through each 25 of thick smoke.*	-25
Vehicle fired machineguns (with tracers)**	+5 (+8)
Vehicle fired cannons 20-41mm	+10
Vehicle fired cannons up to 82mm.	+15
Vehicle fired cannons up to 164mm.	+20
Vehicle fired cannons over 164mm.	+25
Adjust be vehicle target size factor.	-?/+?
LOS using Thermals through each 25 of HE fire, dust, sandstorm, WP, IR smoke.	-5

\* When using Thermals - if the adjustment is negative add 5.

\*\*Thermals cannot see tracers.

Target is non-vehicle Sight Modifiers	
Factors	Adjustments
Infantry squad (team)	-20 (-24)
Firing small arms or machineguns (tracers)	+5 (+8)
Moving	+10
LOS through each 25 of light woods	-5
LOS through each 25 of heavy woods	-20
Concealed in woods or buildings	-5

Direct Fire To-Hit Modifiers	
Factors	Adjustment
Target acquired	-1
Target is side of stationary AFV	-1
Target size factor	+?
First shot at target over 300.*	+1
Target moved at any range.	+1
Target moved at range over 600.	+1
Target moves 500 or more in the turn.	+1
Firing HEAT, HE, HESH - Target moved 100-199.	+1
Firing HEAT, HE, HESH - Target moved 200+.	+2
Target among buildings of greater height.	+1
Target through up to 26-50 of woods.	+2
Target through up to 51-75 of woods.	+4
Target through up to 76-100 of woods.	+7
Target through each 50 of sketchy smoke.	+2
Target through each 25 of thick smoke.	+2
Firer's turret turning penalty.	+?
Another gun on firing vehicle is also firing.	+1
Firer moved a shift move this turn.	+2**
Firer moved up to half move this turn.	+3
Firer moved more than half move this turn.	+4
Firer ROF 4 or less second shot factor	+ ?
The <b>final</b> adjusted to-hit number can never be lower than 1. ATGMs ignore when it states 'firing', 'firer' penalties. * First shot is defined as: First shot from the firer's current position and.. 1. The target is not within 75 of previous shot from turreted gun. 2. The target is not within 50 of previous shot from non-turreted gun. 3. The target is not withing 100 o previous shot for fast turret rotation tanks.	
** For s1 stabilized vehicles this is only +1.	

Target size factor is the negative of the size factor. Thus a target with a size of 1 would have a -1 target size factor.

Fire Segment Regulation Table				
	Amount of movement the vehicle performs			
Stabilizer	none	shift	half	full
x0	1 & 3	2 & 4	3	4
x1	1 & 3	2 & 4	3	4
x2	1 & 3	1 & 3	3	4
x3	1 & 3	1 & 3	2 & 3	2 & 4

Additional Hit Table								
Rate of Fire	Number above for this amount of hits							
	2	3	4	5	6	7	8	
cg	+1	+2	+3	+4	+5	+6	+7..	Second Shot Pluses
ac	+2	+4	+6	+8	+10	+12	+14	
10	+3	+5	+8	+10	+13			
9	+3	+6	+9	+12				
8	+4	+7	+11					
7	+4	+8	+12					
6	+5	+10						
5	+6	+12						
4	+7	+14						
3	+8							
2.5	+9							+1
2	+10							+2
1.5	-							+3
1	-							+4
1/2	-							+6
1/4	-							n/a
To see if any additional hits are scored the D10 roll must equal or exceed the final adjusted to-hit number plus the additional hit number. ac- auto-cannon cg- chaingun G- Gatling gun = 2xcg Fires like cg but each hit counts as 2 hits.								

Ranging Machineguns/Rifles						
Ranging MG Spotting rifle	To-Hit at Range					
	1	3	6	9	10	ROF
.50 cal	50	125	275	450	600	ac

Number of times a vehicle may fire per turn				
Rate of Fire	Amount of movement the vehicle performs			
	none	shift	half	full
ac, cg, G	2 x	2 x	1 x	1 x
5 - 10	2 x	2 x	1 x	1
2.5 - 4	2 x	1 x	1 x	1
1.5 - 2	1 x	1 x	1	1
1	1	1	none	none
less than 1	1	none	none	none
x - Firer may use its Rate of Fire to try to score additional hits. 1 - Only one firing permitted per turn and no additional hits may be scored no matter how high the die roll.				

APDSFS, AP, APHE- Variable Penetration Table			
Armor Type		Adjust the base penetration by this:	
Normal, <u>Underlined</u> (D6)	Rounded, Deflection (D6)	AP, APHE	APDSFS
5,6	6	maximum	maximum
4	5	max. -1*	max. -2 *
3	4	max. -3 *	max. -6 *,
2	3	max. -5 *	$\frac{3}{4}$ max.
1	2	$\frac{1}{2}$ max.	$\frac{1}{2}$ max.
0 or less	1 or less	$\frac{1}{4}$ max.	$\frac{1}{4}$ max.

\* - But never **less** than  $\frac{1}{2}$  maximum penetration.  
 - But never **more** than  $\frac{3}{4}$  maximum penetration.

APBC - Variable Penetration Table			
Armor Type			Adjust the base penetration by this:
Normal	Rounded	<u>Underlined</u>	
		6	maximum +1 ***
5-6	5-6	5	maximum
4	4	4	max. -1 *
3	3	3	max. -3*
2	2	2	max. -5 *
1 or less	1 or less	1 or less	$\frac{1}{2}$ max.

HE - Variable Penetration Table		
Armor Type		Adjust the base penetration by this:
Normal, Rounded, Deflection (D6)	<u>Underlined</u> (D6)	HE
6	5+	2 x maximum
5	4	1.5 x maximum
2 - 4	2-3	maximum
1	1	$\frac{1}{2}$ max.

Vehicle Location Damage Table				
Hull Front	Hull Rear	Turret, SuperS	Cupola	Track
Fire [D]	Fire [D +1]	Fire [D]	TC [all]	Track [D-2]
Mob.[D]	Mob.[D-1]	Gun [D]		
(Pass [D])		TC [D]		
Damage that shows a 'D+1' the D-number is increased by one not the die roll. Damage that shows a 'D-1' the D-number is lowered by one not the die roll.  For Rear Engine vehicles swap front and rear results. For mid-engine use rear hull as center hull and SuperS as rear hull. Pass - passengers only apply to front and mid engine armored personal carriers and where front and rear effects are swapped.				

APCR, APDS, HVAP,HEAT - Variable Penetration Table			
Armor Type		Adjust the base penetration by this:	
Normal (D6)	Rounded, Deflection, <u>Underlined</u> (D6)	APCR, APDS, HVAP	HEAT
6	-	maximum	maximum
5	6	max. -2 *	max. -2 *
4	5	max. -6 *,	max. -6 *,
3	4	$\frac{3}{4}$ max.	$\frac{1}{2}$ max.
2	3	$\frac{1}{2}$ max.	$\frac{1}{4}$ max
1 or less	2 or less	$\frac{1}{4}$ max.	$\frac{1}{10}$ max

\* - But never **less** than  $\frac{1}{2}$  maximum penetration.  
 - But never **more** than  $\frac{3}{4}$  maximum penetration.

Use this table for ATR vs. spaced armor.

British APCNR and German squeeze-bore treat as APDS.

Critical Hit Penetration	
D6	Adjust the penetration by the ratio below
9	2 x maximum
8	1.5 x maximum
7	maximum + 1 ***
*** But no more than 1.5 x maximum. Note - There is no Critical penetration for HE shells.	

Artillery Piece Location Damage Table		
D 10	Location	Damage
5-10	Gun Shield	Gun [D], Crew [D]
1-4	near miss	HE effect on Crew
Gun Shield - Must penetrate the gun shield to do damage.		
Near miss - Roll per HE killpower effects on the crew taking into account protection of gun shield and defensive cover.		

Vehicle Crew Morale Bailout Factors	
Factors	Adjustment
One track broken	+1
Mobility loss or two tracks broken.	+2
Track or mobility loss while moving.	+1
Main weapon destroyed.	+1
Vehicle commander killed.	+1
Green crew	+1
Elite Crew	-1
Stunned and vehicle penetrated.	+1
Vehicle on Fire	+5

Artillery Area Fire Sizes								
Size Shells	Closed Sheaf		Killpower			HE		
	mortars	guns	HE	HEAT	HESH	Pen	D	S
Up to 32mm		19dia	-1			.5	8	13
32-39mm		20x25	0			.5	7	12
40-59mm	25x25	25x50	1	0	0	1	6	11
60-79mm	50x50	50x75	2*	1	1	1.5	5	10
80-99mm	75x75	75x100	3	1	1	2	4	9
100-119mm	75x75	75x125	3	2	2	2.5	3	8
120-139mm	100x100	100x125	4	3	3	3	2	7
140-159mm	100x100	100x150	5	4	4	4	2	6
160-179mm	125x125	125x150	6	4	5	5	1	5
180-199mm	125x125	125x175	6	5	5	6	0	4
200-239mm	125x125	125x200	7	6	6	8	-1	3
240-299mm	125x125	125x200	8			10	-2	2
Mortars under 120mm are -.5 to penetrate but have +1 to HE killpower.								

Indirect Artillery Call for Fire Allocation						
Type Target	Turns of fire					
	NATO	UK	USA	USSR	Othr	
Infantry - battalion	6	5	6	8	6	
Armor - battalion	6	5	6	7	7	
Infantry - Coy in the open	5	4	6	6	4	
Infantry - Coy dug in	4	3	5	3	2	
Armor - Coy	5	4	6	6	5	
Infantry - Platoon in open	2	3	3	0	0	
Armor - Platoon	4	3	4	2	2	
Armored Infantry platoon	3	2	4	2	2	
AT guns, ATGMs	4	3	4	4	3	
FO or command positions	2	2	2	1	1	
Counter Battery Fire	4	4	4	4	4	
Suspected enemy position	1	1	2	0	0	
Targets of priority 1 or less are not worthy of attention unless FO is in sight of it and it is a mission objective. Only pre-designated counter battery may fire counter fire and no other fire. For guns under 85mm the turn length may increase 2 turns. For guns 85-110mm the turn length may increase 1 turn.						

Armor Basis Penetration of Direct Fire HE									
Size Shells	Penetration at Range							Effect	
	3.5	3	2.5	2	1.5	1	.5	D	S
32-39mm					300	600	900	7	12
40-59mm			225	450	675	900		6	11
60-79mm	200	350	550	725	900			5	10

Armor Basis Penetration of Direct Fire HE									
Size Shells	Penetration at Range							Effect	
	6	5	4	3.5	3	2.5	2	D	S
80-99mm			200	350	550	725	900	4	9
100-119mm		200	350	550	725	900		3	8
120-139mm	200	350	550	725	900			2	7

Armor Basis Penetration of Direct Fire HE									
Size Shells	Penetration at Range							Effect	
	10	9	8	7	6	5	4	D	S
140-159mm			200	350	550	725	900	2	6
160-179mm		200	350	550	725	900		1	5
180-199mm	200	350	550	725	900			0	4

Armor Basis Penetration of Direct Fire HE									
Size Shells	Penetration at Range							Effect	
	14	13	12	11	10	9	8	D	S
200-239mm			200	350	550	725	900	-1	3
240-299mm	200	350	550	725	900			-2	2

Artillery To-Hit for Direct Fire of HE, HEAT, HESH								
Size Shells	To-Hit for Range							
	1	3	5	7	9	10	11	
40mm-69mm	100	275	350	450	550	700	900	
70mm-149mm	50	200	350	450	600	750	900	
150mm+	25	150	350	450	600	750	900	
This represents a generalization of all guns firing HE and HEAT. Specific guns may be better or worse depending on various factors.								

Kill Power on Infantry Adjustment Factors	
Situation	Adjustment
Target moving 20 or more in the open.	+1
Target charging 20 or more in the open.	+2
Target riding on outside of AFV.	+2
Team sized not in contact with friendly squad.	+1
Target in woods and under HE attack without overhead cover.	+1
Target gun crew protected by gunshield.	-1
Target gun crew protected by emplacements.	-1
Target firing from trenches or foxholes.	-2
Target firing from open AFV	-1
Target stationary or ½ moving in woods.	-1
Target stationary or ½ moving in wooden or terra cotta buildings or ruins.	-1
Target stationary or ½ moving in stone or concrete buildings or rubble.	-2
Target stationary or ½ moving in heavy woods.	-2
Target stationary hiding in hard cover.	-3

**Notes:**

Emplacements may include sandbags, gun pits, spider holes, stone walls. Various things that are bullet proof.

The protection of various buildings and walls, etc. is negated to 0 if the weapon can penetrate it.

Wood can be penetrated if the weapon penetrates .5cm.

Terra cotta or masonry is negated by 1cm penetration.

Stone or concrete is negated by 2cm penetration.

Casualty team sized elements in contact with can be rebuilt from the squad if in contact (touching) with the squad. The squad and team becomes suppressed for one turn.

**Factors are additive.**

Vehicle Movement Costs Table			
Movement Situation	Speed	Max. Move	
		CC	Road
Moving in clear terrain.	Full	Full	-
Moving along roads	Full	-	Full
Climbing hills	½	½	
Through light woods.	½	100	-
Through heavy woods.	¼	50	-
Through soft sand.	½	100	
Through rocky ground	½	100	
Through high vegetation	¾	150	
Through bog or marsh	¼	50	
Through deep snow	½	100	200
In reverse (un-buttoned)	½	50	50
In reverse (buttoned)	¼	30	
Crossing linear obstacle	-50		
Turning over 22½° to 60°	-25		
Turning over 60°	-50		

Set up and Take Down	Required Time	
	Up	Down
Man Portable ATGM	2	½
ATGM with detached controller	3	2
Man Portable AA missiles	1	½
Anti-tank gun up to 60mm	1	½
Anti-tank gun 60 - 80mm	2	1
Anti-tank gun 80 - 110mm	3	2
Anti-Aircraft gun up to 60mm	1	½
Anti-Aircraft gun up to 110mm	3	2
Mortars up to 66mm	½	½
MMG, HMG	½	½
Mortars 66 - 88mm	1	1
Mortars 88mm - 130mm	2	1
Self-propelled Artillery up to 95mm	1	1
Artillery up to 95mm	2	2
Artillery 95 - 165mm	3	2
Artillery 165- 210mm	4	3
Radar Controlled AA missile systems	5	4

General Moral Test				
Type Unit	Level of Loss			
	15%	30%	60%	80%
US Army to 1966	14	37	73	97
US Army 1966-1980	17	44	75	97
US Army 1981+	15	40	74	97
Army Airborne	10	30	70	90
US Marines	12	30	70	90
UK	12	33	69	91
UK elite	9	30	60	85
Gurka	7	26	55	77
W German Army	12	33	68	93
FRG Airborne	8	25	55	86
French Army	15	33	88	98
French Foreign Legion	6	15	55	85
Canada	13	32	65	94
other NATO	20	35	70	98
Soviet Army	15	35	70	97
Spetsnaz	12	30	65	80
VDV	6	20	60	70
DDR Army	15	30	66	85
other Warsaw	20	40	80	97
Israeli IDF	10	29	65	82
IDF Airborne	6	20	55	75
IDF Reserve	16	38	78	90
Jordan	17	40	75	85
Egyptian to 1970	25	55	86	99
Egyptian 1970+	20	50	80	98
Syria	30	50	85	99
Iraq	22	45	80	90
Iran	24	50	85	95
India	23	46	82	98
Pakistan	25	47	85	99
Libya	16	36	83	96
China	19	40	69	89
North Vietnam	12	29	68	86
South Vietnam	25	55	80	97
Viet Cong	22	45	7	87
Korea to 1970	19	37	80	99
Korea 1970+	13	30	70	86
Afghan muj	11	26	70	88

#### General Morale Test Modifiers:

Add +5 to the D100 if under charge orders.

Add +10 to the D100 if defending in homeland city.

Add +10 to the D100 if no fighting enemy within 600.

Subtract 10 if the enemy is on three sides.

Subtract 15 if surrounded by enemy.

Moral Test Failure	
D100	Results
0 or less  <b>F</b>	<b>Surrender and Rout</b> - All elements (troops, vehicles and gun crews) in this unit within 500 of the enemy surrender. All other elements within this unit retreat off the game table. All immobilized vehicles and stationary artillery pieces within 800 of the enemy are abandoned.
01-11  <b>F</b>	<b>General Retreat</b> - Crews abandon immobilized vehicles and towed guns within 500 of the enemy. Crews abandon all vehicles within 200 of the enemy and all troops within 100 of the enemy surrender. All other units withdraw at half movement or better speed to a position 2500 or more away from current know enemy locations.
12-33  <b>F</b>	<b>Disengage</b> - Advancing elements forward progress must halt. Defending elements must fall back some distance. Motorized elements must withdraw back 800 away from enemy positions. Infantry elements must withdraw 300 away from enemy positions. Immobilized vehicles within 250 of the enemy are abandoned. Routing troops within 150 of the enemy surrender. Troops not within 800 of the enemy must establish a communication link to the next higher command element and halt from 1-4 turns. Troops that have suffered casualties must regroup after reaching a position 800 or more from the enemy.
34-66	<b>Forward Progress Ends</b> - Units not engaged within 200 of the enemy must halt their progress. They may not continue to advance until a communications link with the next higher level of command can be made. Units that have suffered more than 50% casualties may not advance until they are reinforced with elements of an equal quantity. Elements currently engaged may continue with their orders.
67-88	<b>Regroup</b> - Units must temporarily halt progress. Units must halt and regroup for D6 number of turn. Units may regroup while under fire, but may not regroup while engaged. Units may not issue any other orders except cover or withdraw until they regroup. Once regrouped the unit may advance again provided it passes a test of rolling a D100 greater than its actual percentage loss.
89-100	<b>Halt for Contact</b> - Unit must halt until it can establish contact with battalion command. Units may change orders at this time.
101+	<b>Uncontrolled Advance</b> - Elements move forward the enemy for at least 200 or until they reach the enemy's position.

#### Failure Results Modifiers:

Add +10 to D100 if 25% or less losses.

Subtract 10 from D100 if more than 75% losses.

**F** - Treat this morale failure as the loss of the unit when computing the number of lost elements of the next higher level unit in the organization.



Helicopter Data Table											
Aircraft	Maneuver	Attack	Defense	Guns Grenade Launchers	Rockets Missiles	Avionics	Cargo	Segment Movement			Date
								Low	Very Low	NOE	
UH-1 Huey	3	1	3	7.62mm door guns		A2		790	440		
OH-6 Cayuse	4	3	3	7.62mm mini-gun		A2		1090	600	300	
OH-58 Kiowa	5	3	3	7.62mm mini-gun		A3		550	310	150	
AH-1S Cobra	5		4			A2		870	480	240	
AH-1Z Super Cobra	6		4			A4		1240	690	350	
AH-64 Apache	5		6			A4		1350	750	380	
RAH-66 Comanche	7		5			A4		1450	810	400	
EH-60A Black Hawk	5		3			A2		1310	730		
H-76 Eagle	4		4			A2		1210	670	340	
CH-46E	2		3			A2		1200	670		
CH-47C Chinook	2	1	4	7.62mm door guns		A2		1200	670		
CH-53 Sea Stallion	2		4			A2		1480	820		
CH-64D	2		4			A2		1260	700		
U-5 Wessex	2		3			A3		550	365		
HAS.1 Wasp	2		3			A3		500	330		
HAS.3 Lynx	4		3			A4		650	435	325	
BK 117	3		4			A3		645	430	235	
Bo-105 PAH-1	7		4			A4		1140	630	320	
EC-635	3		2			A4	7	1140	630		
HAC-3G	2		5			A4		650	435	265	
SA 330 Puma	2		4			A3		680	450		
SA 332 Super Puma	4		4			A3		730	480		
SA 341 Gazelle	8		2			A3		1450	810	400	
SA 350 Ecureuil	4		3			A4		600	390	240	
AS- 585 Panther	5		3			A4		1290	720	360	
Tiger HAP	7		4			A4		1310	730	360	
A109A	4		3			A4		700	465	290	
AS-550 Fennec	2		3			A2		870	480		
A129 Mangusta	6		4			A4		1240	690	350	
IAR-317 Airfox	2	3	4	2x7.62mm, 4x7.62mm		A4		1050	590	290	
Mi-2 Hoplite	1	3	3	23mm, 12.7mm	4xAT-3, 2x16x57mm, 4xSA-7	A2		910	510		
Mi-4 Harbin	1		3			A2		700	390		
Mi-6 Hook	3		3			A2		1170	650		
Mi-8 Hip	2		3			A2		1050	590		
Mi-17 Hip H	2		3			A2		1130	630		
Mi-24A Hind	4		5			A2		1390	770		
Mi-24B Hind	4		5			A2		1390	770		
Mi-24D Hind	4		6			A2		1390	770		
Mi-26	3		3			A2		1200	660		
Mi-28 Havoc	7	4	6	30mm,	4x20x80mm/16xATGM	A3		1410	780	390	
Ka-50 Hokum	6	4	7	30mm,		A4		1450	810	400	

Aircraft Data Table											
Aircraft	Maneuver	Attack	Defense	Guns	Rockets	Avionics	Segment Movement				Date
							Low		Medium		
							Min	Max	Min	Max	
A-10A	20	9	11	30mm GAU-8		A3	1000	2000	1000	2000	
F-4G	25		7	varies		A3	2250	3500	2500	6500	
Toronado	25	7	8	2 x 30mm Aden		A4	2000	3400	2250	5000	
Harrier	27	7	7	2 x 30mm Aden		A3	0	2400	1500	3000	
Mig-27	28	5	7	23mm Gsh-23		A2	1150	2500	1500	3500	
SU-7	24	7	8	2 x 30mm		A2	1000	2300	1200	4800	
SU-17/20/22	24	7	8	2 x 30mm		A2	1200	2500	1750	3650	
SU-25K	20	9	10	30mm NNPU-8M		A2	1150	2500	1250	2500	1979

Anti-Aircraft Table						
AA Weapon	Attack	very low (short)	very low (long)	low	medium	high
100-130mm flak	12			2% (3000)	4% (3500)	2% (4000)
85-99mm flak	10	2% (1000)	4% (1500)	9% (2500)	5% (2400)	
75-84mm flak	8	2% (800)	4% (1000)	8% (2500)	1% (2000)	
50-74mm flak	7	2% (600)	4% (800)	6% (2000)		
37-49mm flak	6	10% (300)	8% (700)	4% (1800)		
30-36mm flak	5	10% (300)	7% (600)	3% (1500)		
20-29mm AA	4	10% (300)	6% (500)	3% (1200)		
14-15mm AA	2	10% (250)	6% (400)	3% (800)		
12.7-13mm, .50cal AA	2	10% (200)	6% (350)	3% (700)		
.6-10mm, .30-.303 cal AA	1	10% (150)	5% (300)	1% (500)		
Assault rifle squad	1	5% (75)	2%(125)			
Rifle squad	1	2% (75)				
Half% 5000 or over. Double % for Slow moving helicopter (under 500 speed), Triple % for hovering/shifting helicopter.						

Aircraft Attack Variable	
D6	Modify the Attack Damage by the Amount Below:
6	maximum + 1
4-5	maximum
3	maximum -1 (but not less than ½)
2	maximum -2 (but not less than ½ maximum)
1	maximum -3 (but not less than ½ maximum)

Aircraft Critical Hit Damage	
D10	Effect
10	Pilot killed - aircraft destroyed
9	Fuel/weapons explode - aircraft destroyed.
8	Plane catches fire - Pilot bails out/helo hard lands
6-7	Trailing smoke - Maneuver factors halved./Helo half speed
4-5	Weapons disabled
2-3	Avionics out/night vision out
1	Maneuver factor reduced by 2/helo speed loss 25%.

# Helicopter Hover Gunnery

20mm	D	S	Pen.	4	3	2.5	2	1.5	1					
	8	14	Range	100	300	400	500	700	900					
When RoF is ac			To Hit	1 <sup>3.5.7</sup>	2 <sup>4.6.</sup>	3 <sup>5.7.</sup>	4 <sup>6.8.</sup>	5 <sup>7.9.</sup>	6 <sup>8.10</sup>	7 <sup>9.11</sup>	8 <sup>10.12</sup>	9 <sup>11.13</sup>	10 <sup>12.</sup>	11 <sup>13.</sup>
			Range	200	250	300	350	400	450	500	600	700	800	900

20mm M61A1	D	S	Pen.	4	3	2.5	2	1.5	1					
	6	13	Range	100	300	400	500	700	900					
When RoF is G			To Hit	1 <sup>2.3.4</sup>	2 <sup>3.4.5</sup>	3 <sup>4.5.6</sup>	4 <sup>5.6.7</sup>	5 <sup>6.7.8</sup>	6 <sup>7.8.9</sup>	7 <sup>8.9.</sup>	8 <sup>9.10.</sup>	9 <sup>10.11.</sup>	10 <sup>11.</sup>	
			Range	200	250	300	350	400	450	500	600	700	800	900

23mm	D	S	Pen.	4	3	2.5	2	1.5	1					
AP	8	14	Range	125	250	350	500	700	900					
When RoF is ac			To Hit	1 <sup>3.5.7</sup>	2 <sup>4.6.</sup>	3 <sup>5.7.</sup>	4 <sup>6.8.</sup>	5 <sup>7.9.</sup>	6 <sup>8.10</sup>	7 <sup>9.11</sup>	8 <sup>10.12</sup>	9 <sup>11.13</sup>	10 <sup>12.</sup>	11 <sup>13.</sup>
			Range	200	250	300	350	400	450	500	600	700	800	900
23mm GSh-23	D	S	Pen.	2										
HE	6	13	Range	all										
When RoF is cg			To Hit	1 <sup>2.3.4</sup>	2 <sup>3.4.5</sup>	3 <sup>4.5.6</sup>	4 <sup>5.6.7</sup>	5 <sup>6.7.8</sup>	6 <sup>7.8.9</sup>	7 <sup>8.9.</sup>	8 <sup>9.10.</sup>	9 <sup>10.11.</sup>	10 <sup>11.</sup>	
			Range	200	250	300	400	500	600	700	800	900	1000	

30mm 2A42	D	S	Pen.	5	4	3	2.5	2	1.5	1	.5			
API	8	14	Range	75	225	350	475	600	750	950	1200			
when RoF=ac			To Hit	1 <sup>3.5</sup>	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9.11</sup>	8 <sup>10.12</sup>	9 <sup>11.13</sup>	10 <sup>12.</sup>	11 <sup>13.</sup>
			Range	100	200	300	400	450	500	550	650	750	900	1200
30mm 2A42	D	S	Pen.	8	7	6	5	4	3	2.5				
APDS	8	14	Range	50	150	250	500	750	1000	1200				
when RoF=ac			To Hit	1 <sup>3.5</sup>	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9.11</sup>	8 <sup>10.12</sup>	9 <sup>11.13</sup>	10 <sup>12.</sup>	11 <sup>13.</sup>
			Range	100	200	300	400	450	500	550	650	750	900	1200
30mm 2A42	D	S	Pen.	10	9	8	7	6	5	4				
APDSFS	8	14	Range	50	150	250	375	650	1000	1200				
when RoF=ac			To Hit	1 <sup>3.5</sup>	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9.11</sup>	8 <sup>10.12</sup>	9 <sup>11.13</sup>	10 <sup>12.</sup>	11 <sup>13.</sup>
			Range	100	200	300	400	450	500	550	650	750	900	1200

30mm NPPU-8	D	S	Pen.	5	4	3	2.5	2	1.5	1	.5			
API	8	14	Range	75	225	350	475	600	750	950	1200			
When RoF is ac			To Hit	1 <sup>3.5.7</sup>	2 <sup>4.6.</sup>	3 <sup>5.7.</sup>	4 <sup>6.8.</sup>	5 <sup>7.9.</sup>	6 <sup>8.10</sup>	7 <sup>9.11</sup>	8 <sup>10.12</sup>	9 <sup>11.13</sup>	10 <sup>12.</sup>	11 <sup>13.</sup>
			Range	250	300	350	400	450	500	550	625	700	850	1200
30mm GAU-8	D	S	Pen.	11	10	9	8	7	6	5				
APDSFS DU	7	13	Range	50	150	250	375	650	1000	1200				
When RoF is cg			To Hit	1 <sup>2.3.4</sup>	2 <sup>3.4.5</sup>	3 <sup>4.5.6</sup>	4 <sup>5.6.7</sup>	5 <sup>6.7.8</sup>	6 <sup>7.8.9</sup>	7 <sup>8.9.</sup>	8 <sup>9.10.</sup>	9 <sup>10.11.</sup>	10 <sup>11.</sup>	11 <sup>13.</sup>
			Range	275	325	375	400	450	500	550	650	750	900	1200

30mm Aden	D	S	Pen.	5										
HEAT (M789)	7	13	Range	all										
When RoF is ac			To Hit	1 <sup>3.5.7</sup>	2 <sup>4.6.</sup>	3 <sup>5.7.</sup>	4 <sup>6.8.</sup>	5 <sup>7.9.</sup>	6 <sup>8.10</sup>	7 <sup>9.11</sup>	8 <sup>10.12</sup>	9 <sup>11.13</sup>	10 <sup>12.</sup>	11 <sup>13.</sup>
			Range	250	300	350	400	450	500	550	625	700	850	1200
30mm DEFA-30	D	S	Pen.	10	9	8	7	6	5	4				
APDS	8	14	Range	50	150	250	375	650	1000	1200				
When RoF is ac			To Hit	1 <sup>3.5.7</sup>	2 <sup>4.6.</sup>	3 <sup>5.7.</sup>	4 <sup>6.8.</sup>	5 <sup>7.9.</sup>	6 <sup>8.10</sup>	7 <sup>9.11</sup>	8 <sup>10.12</sup>	9 <sup>11.13</sup>	10 <sup>12.</sup>	11 <sup>13.</sup>
			Range	275	325	375	400	450	500	550	650	750	900	1200

40mm AGL	D	S	Pen.	1											
HE	6	11	Range	all											
When RoF is ac			To Hit	1 <sup>3.5.7</sup>	2 <sup>4.6.</sup>	3 <sup>5.7.</sup>	4 <sup>6.8.</sup>	5 <sup>7.9.</sup>	6 <sup>8.10</sup>	7 <sup>9.11</sup>	8 <sup>10.12</sup>	9 <sup>11.13</sup>	10 <sup>12</sup>	11 <sup>13</sup>	
			Range	75	125	175	225	275	300	325	350	400	450	500	

Air to Ground Machineguns and Cannons (Strafe)																				
.30 cal, 7.62 - 8.0mm	D	S	Pen.							1	.5	To Hit	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9</sup>	8 <sup>10</sup>	9 <sup>11</sup>
	8	-	Range							100	300	Range	75	100	150	200	250	300	350	400
7.62mm mini gun	D	S	Pen.							1	.5	To Hit	2 <sup>3.4</sup>	3 <sup>4.5</sup>	4 <sup>5.6</sup>	5 <sup>6.7</sup>	6 <sup>7.8</sup>	7 <sup>8.9</sup>	8 <sup>9</sup>	9 <sup>10</sup>
When RoF is G	8	-	Range							100	300	Range	100	125	175	225	275	325	350	400
.50 cal, 12.7 - 13.2mm			Pen.					2	1.5	1	.5	To Hit	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9</sup>	8 <sup>10</sup>	9 <sup>11</sup>
	8	15	Range					100	300	550		Range	75	100	150	200	250	300		
14.5mm - 15mm			Pen.		4	3	2.5	2	1.5	1		To Hit	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9</sup>	8 <sup>10</sup>	9 <sup>11</sup>
	8	15	Range		25	100	200	300	550			Range	75	100	150	200	250	300		
20mm			Pen.		4	3	2.5	2	1.5	1		To Hit	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9</sup>	8 <sup>10</sup>	9 <sup>11</sup>
	8	14	Range		100	300	400	500	700	900		Range	100	125	175	225	275	325		
23mm Gsh-23 (HE)			Pen.					2				To Hit	2 <sup>3.4</sup>	3 <sup>4.5</sup>	4 <sup>5.6</sup>	5 <sup>6.7</sup>	6 <sup>7.8</sup>	7 <sup>8.9</sup>	8 <sup>9</sup>	9 <sup>10</sup>
When RoF is G	6	13	Range					200				Range	250	300	400	500	600	700	800	900

Air to Ground Machineguns and Cannons (Strafe)																				
30mm DEFA-30	D	S	Pen.			5	4	3	2.5	2	1.5	To Hit	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9</sup>	8 <sup>10</sup>	9 <sup>11</sup>
API	8	14	Range			75	225	350	475	600	750	Range	300	350	400	450	500	550	625	700
30mm Aden	D	S	Pen.			5						To Hit	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9</sup>	8 <sup>10</sup>	9 <sup>11</sup>
HEAT	8	14	Range			all						Range	300	350	400	450	500	550	625	700
30mm NPPU-8	D	S	Pen.	7	6	5	4	3				To Hit	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9</sup>	8 <sup>10</sup>	9 <sup>11</sup>
APDS	8	14	Range	150	250	500	750	1000				Range	300	350	400	450	500	550	625	700
30mm A242	D	S	Pen.			5	4	3	2.5	2	1.5	To Hit	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9</sup>	8 <sup>10</sup>	9 <sup>11</sup>
	8	14	Range			75	225	350	475	600	750	Range	300	350	400	450	500	550	625	700
30mm Rarden	D	S	Pen.			5	4	3	2.5	2	1.5	To Hit	2 <sup>4.6</sup>	3 <sup>5.7</sup>	4 <sup>6.8</sup>	5 <sup>7.9</sup>	6 <sup>8.10</sup>	7 <sup>9</sup>	8 <sup>10</sup>	9 <sup>11</sup>
	8	14	Range			75	225	350	475	600	750	Range	300	350	400	450	500	550	625	700

Air to Ground Machineguns and Cannons (Strafe)																				
30mm NNPU-8M	D	S	Pen.	7	6	5	4	3				To Hit	2 <sup>3.4</sup>	3 <sup>4.5</sup>	4 <sup>5.6</sup>	5 <sup>6.7</sup>	6 <sup>7.8</sup>	7 <sup>8.9</sup>	8 <sup>9.10</sup>	9 <sup>10</sup>
When RoF is G	7	13	Range	150	250	500	750	1000				Range	325	375	400	450	500	550	650	750
30mm GAU-8	D	S	Pen.	10	9	8	7	6				To Hit	2 <sup>3.4</sup>	3 <sup>4.5</sup>	4 <sup>5.6</sup>	5 <sup>6.7</sup>	6 <sup>7.8</sup>	7 <sup>8.9</sup>	8 <sup>9.10</sup>	9 <sup>10</sup>
When RoF is G	7	13	Range	150	250	375	650	1000				Range	325	375	400	450	500	550	650	750