GUNFIRE TABLES

Mount Values

Gun mount fire values are shown on each ship data form. Roll 1D10 for each ship to determine if hit process continues. If the number rolled is equal to or less than the "Initial Roll" for the gun size, use the value for the mount to begin the hit calculation process. Roll one die for all batteries on a ship. "A" means "automatic".

Optional.
*If the firing ship has a spotter plane present, **+2** to the initial roll number. The firing ship must have functioning radio and fire control director. If a spotter ship is present (a CL or larger with undamaged radio and fire control spotting for a CL or larger with undamaged radio and fire control) use the initial roll number for the range and main battery of the spotter ship, **-1**.*

Target Size Table — Gunnery

Target Type:	DE TB	DD	CL	CA CVL	BC	BB CV	AS	AM	AL CVE
Modifier:	**-4**	**-3**	**-1**	**0**	**1**	**2**	**-2**	**-1**	**0**

Basic Hit Number Modifiers — Gunnery

Target turning, speed <3.00" (a)	**-1**/90º	Early fire control radar	**+1**
Target turning, speed >2.75" (a)	**-1**/60º	Later fire control radar	**+2**
Target speed <1.25"	**+3**	Local control (per 5 inches range)	**-1**
Firer turning, speed <3.00" — double for DD or smaller	**-1**/60º	Plot or transmitting room out — never applies with local control	**-2**
Firer turning, speed >2.75" — double for DD or smaller	**-1**/30º	Per additional battery on target	**-1**

Visibility Modifier — Given in scenario rules or generated by the random scenario generation rules.

(a) Except for second and later ships in a division making a column turn. Must turn full number of degrees for modifier to apply.

Optional Hit Number Modifiers — Gunnery

Battery interference — shielded secondaries — doubled at night	***-1***	*Battery interference — open secondaries — doubled at night*	***-2***
Target not visually spotted by firer — no visibility modifier	***-8***	*Firer speed >3.50 — doubled for DD and smaller*	***-1***
Firing at gun flashes only	***-2***	*Secondary guns on CA or larger, 5 inch guns on CL*	***+1***
Night: target not firing or illuminated	***-3***	*Not engaged by at least 4 guns*	***+2***
More than 10 guns in battery	***+1***	*Heavy seas — doubled for DD or smaller*	***-1***
Less than 4 guns in battery	***-1***	*Firing into sun or spray*	***-1***
Target hit last turn and did not alter course	***+3***		

TORPEDO TABLES

Target Size Table — Torpedoes

Target Type:	DE TB	DD	CL	CA CVL	BC	BB CV	AL CVE	AM	AS
Modifier:	**-1**	**0**	**1**	**2**	**3**	**4**	**3**	**2**	**1**

Range Modifiers

Range:	0-2.5"	5"	7.5"	10"	15"	++
Modifier:	**+2**	**0**	**-2**	**-4**	**-6**	**-8**

Target Aspect Modifiers

Target Aspect:	0-15º	16-45º	45-75º	76-90º
Modifier:	**-10**	**-3**	**-1**	**0**

Other Basic Modifiers

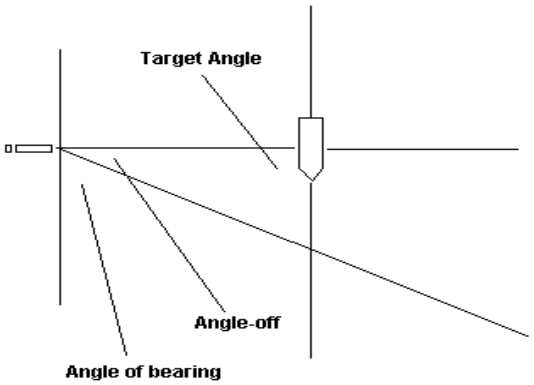
Japanese	**+2**	At ship other than listed target	**-6**	Target not moving	**+2**
U.S. before July 1943	**-3**	Torpedo director out	**-3**	Directed by short or medium band radar	**+1**
German before 1942 versus DDs, DEs, TBs	**-6**	German before 1942 versus larger targets	**-3**	Target does not alter course or speed from launch until interception	**+3**

Torpedo Combat Calculations

When launching torpedoes, note number in spread, turn of launch, speed, target and arc. Arc refers to the 30° arcs into which a spread is launched. As most torpedo mounts can launch anywhere within a 120° arc, they can launch into 1 of 4 30° arcs. These are numbered 1 through 4 starting from the direction in whuch the ID letter on the spread counter is placed.

If a spead intercepts a ship (taking into account proportionate movement of the target and the torpedoes), roll for the spead based on the target size and appropriate modifiers. Values of less than **-19** are treated as **-19**. Maximum values for different torpedo types are shown on the torpedo characteristics chart.

On a to hit roll of **00** (or, if chits are used, a valid "Mount Out – Fire or Explosion" is pulled), one of the torpedoes in the spread has circled back and hit the firing ship.



Torpedo Lead Estimator

Target	Target Speed				Torpedo Speed				
Angle:	0-1.75	3.00	4.25	++	0-3.00	4.25	5.50	++	Lead:
0-30º	3	5	8	11	5	8	11	13	+1
30-60º	4	14	21	29	14	21	29	35	+2
60-90º	10	20	29	39	20	29	39	—	+3

Determine target angle (angle of target to line drawn from the firing ship to the target ship) and target speed. Cross-index these on chart to get chart value. Cross-index chart value with speed of torpedo to get an estimate of the number of 30º arc segments by which target must be led.

Surface Torpedo Characteristics

Type:	Range 1	Range 2	Range 3	Max Value	Wake
USN 21" Mk8	6" @ 5.75"	10" @ 4.25"	15" @ 3.25"	8	Y
USN 21" Mk17	6" @ 5.50"	10" @ 4.25"	15" @ 3.25"	7/9	Y
IJN 21" T6	8" @ 4.25"	16" @ 3.25"	—	9	Y
IJN 24" T90	8" @ 5.50"	16" @ 4.50"	—	9	Y
IJN 24" T93	22" @ 6.00"	35" @ 5.50"	44" @ 4.50"	9	N
RN 21" MkV	8" @ 4.75"	10" @ 3.50"	13" @ 3.00"	9	Y
RN 21" MkIX	11" @ 5.00"	15" @ 4.25"	—	9	Y
RM 21" SI270	5" @ 6.00"	9" @ 4.75"	14" @ 3.75"	8	Y
RM 17.7" A110	2" @ 4.75"	6" @ 3.75"	—	8	Y
KM 21" G7a	6" @ 5.50"	8" @ 5.00"	15" @ 3.75"	6/9	Y
KM 21" G7e	5" @ 3.75"	—	—	6/9	N

USN Mk17 uses 7 maximum value before July 1943
KM G7a and G7e use 6 maximum value before January 1943

Optional Torpedo Modifiers

The Japanese. *The modifier for Japanese torpedoes reflect both superior Japanese techniques and fire control and Allied ignorance of the speed and range of the Japanese torpedoes. The best defense against torpedoes was to get out of their way, but the Allies obviously did not try to get out of the way of torpedoes that they did not think could reach them. Another more complicated way to simulate this is as follows.*

1. *The Japanese get no basic modifier.*
2. *For attacks with 24" T93 torpedoes, use the better of the target aspect presented at the time of firing or that the time of the attack and treat the target as not altering course or speed if:*
   - *The scenario is set before October 1943 and*
   - *The range to the target at the time of launch is more than 6 but less than 15 inches.*

Note that this requires the Japanese player to record the range to target and initial target aspect when firing torpedoes.

Torpedo Wakes. *Most torpedoes emitted a gas stream while running that left a fairly visible wake, but electric and oxygen-fueled torpedoes did not. Wakeless torpedoes were harder to avoid. This can be simulated by the following rule.*

1. *During daylight scenarios or night scenarios set in tropical waters, individual ships that are the target of torpedoes may attempt to maneuver individually to evade the torpedoes in the turn that the torpedoes attack.*
2. *Individual evasion is permitted only if the attacking torpedoes leave wakes and the launching ship has been spotted by the target.*
3. *Roll 1D6. On a roll of **3** or less, the target may turn towards or away from the torpedoes to comb their wakes – target aspect of 0º.*
4. *An evading ship cannot turn in a way that would cause it to move further than its speed that the beginning of the game-turn would permit.*
5. *An evading ship has left its formation.*
6. *An evading ship may only turn evasively once in a game turn. If it is being attacked by torpedoes from 2 different directions, it must pick which attack it will turn to comb.*

HIT RESOLUTION TABLES (D100)

Hit Numbers 10 to 18

10	11	12	13	14	15	16	17	18
1	1 + 4	1 + 8	2	2 + 7	3 + 2	4	5	6 + 5

Top number is hit number. Left bottom number is number of hits per mount automatically scored. Right bottom number (if any) is hit number for 1 additional hit per mount.

Hit Numbers -7 to 9

		-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9
1	1	02	03	03	04	05	06	08	10	13	15	20	25	30	40	50	65	80
2	1	04	05	06	08	10	12	15	19	24	28	36	44	51	64	75	88	96
	2							01	01	02	02	04	06	09	16	25	42	64
3	1	06	08	09	12	14	17	22	27	34	39	49	58	66	78	88	95	99
	2					01	01	02	03	05	06	10	16	22	35	50	71	96
	3											01	02	03	06	12	27	64
4	1	08	10	11	15	19	22	28	34	43	48	59	68	76	87	94	98	**
	2			01	01	01	02	03	05	08	11	18	26	35	52	69	87	97
	3									01	01	03	05	08	18	31	56	82
	4													01	03	06	18	41
5	1	10	11	14	18	23	27	34	41	50	56	67	76	83	92	97	**	**
	2		01	01	01	02	03	05	08	13	16	26	37	47	66	81	95	99
	3								01	02	03	06	10	16	32	50	77	94
	4											01	02	03	09	19	43	74
	5														01	03	12	33
6	1	11	13	17	22	26	31	39	47	57	62	74	82	88	95	98	**	**
	2	01	01	01	02	03	05	08	11	18	22	34	47	58	77	89	98	**
	3							01	02	03	05	10	17	26	46	66	88	98
	4										01	02	04	07	18	34	65	90
	5													01	04	11	32	66
	6															02	08	26
7	1	13	16	19	25	30	35	44	52	62	68	79	87	92	97	99	**	**
	2	01	01	02	03	04	06	10	15	23	28	42	56	67	84	94	99	**
	3						01	01	03	05	07	15	24	35	58	77	94	**
	4									01	01	03	07	13	29	50	80	97
	5												01	03	10	23	53	85
	6														02	06	23	58
	7															01	05	21

Compute and roll for hits based on numbers of gun mounts firing (or torpedoes launched). Row is percentage chance of hitting, left-most column is number of mounts firing, second left column is number of rounds hitting. Roll indicated number or less on D100 to score indicated number of hits based on number of mounts firing and percentage chance of each mount hitting. For ships with different numbers of guns per mount, make one roll for each type of mount. For torpedoes, roll mount by mount, based on the number of torpedoes fired from the mount

Hit Numbers of -20 to -8

	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8
1								01	01	01	01	01	02
2					01	01	01	01	01	02	02	03	03
3				01	01	01	01	02	02	02	03	04	05
4		01	01	01	01	01	02	02	02	03	04	05	06
5	01	01	01	01	01	02	02	03	03	04	05	06	08
6	01	01	01	01	02	02	02	03	04	05	06	08	09
7	01	01	01	01	02	02	03	04	04	06	07	09	11

Only one hit is possible. Left-most column is number of mounts firing (or torpedoes launched).

HIT RESOLUTION
(CHIT PULL METHOD)

Hits are determined by pulling chits from a cup. One chit is pulled for each torpedo attacking or mount firing. A hit is scored if the number on the chit is equal to or less than the number needed to hit. For ships with mount having different numbers of guns, the first chits pulled are always for the larger mounts.

Chits accommodate hits numbers of from **–10** to **9**. For hit numbers greater than 10, score hits as follows:

- Hit numbers of **10** to **12** – score 1 hit per mount
- Hit numbers of **13** to **14** – score 2 hits per mount
- Hit number of **15** – score 3 hits per mount
- Hit number of **16** – score 4 hits per mount

For hit numbers of less than **–10**, add 10 to the number but roll a **1** on 1D10 before pulling any chits. Always pull 1 chit to check for damage to the firing ship.

Optional: Some chits call for damage to be inflicted on the firing ship. Such a chit is effective only if it is the first chit pulled when a ship fires or torpedoes attack. Reliability for gun mounts and is rated on a a scale of A (best) through D (worst). If the first chit pulled has a letter rating better than or equal to the or mounts on the ship, one such mount or item of electronics (selected randomly), goes out of commission. It may be repaired using the damage control rules. Randomly select the affected mount or radar from all that could be affected.

If the X chit is pulled first, the result is different. If the chit is pulled for gun fire, roll 1D6: on a 1, the ship explodes, on a 2-6, one firing mount is on fire. If the chit is pulled for a torpedo attack, the ship is struck by one of its own torpedoes. Resolve damage for the torpedo in the damage phase.

BASIC DAMAGE TABLES

To determine damage caused by gun or torpedo hits, perform the following steps:

1. Roll 1D6 YELLOW to find whether a gun hit is a high hit, a low hit, or both, depending on the range.
2. Roll D36 BLACK and WHITE to find the location of the hit on 11-66 Hits table on target ship's data sheet. Consult the Excess Damage Table (for gun hits) or the ship's data sheet (for torpedo hits) to see if additional locations are affected by the hit. For some torpedo hits, roll D100 to see if the hit is effective.
3. For gun hits, roll 1D6 GREEN against a gun hit's gun power to see if the hit is effective. Modify the gun's power by any armor at the hit location.
4. For effective gun hits on ships' hulls, roll 1D6 BLUE for each space hit to see if the space floods. Torpedo hits automatically flood any spaces that they affect.
5. For hits on some locations, roll 1D10 RED and consult the Fire and Explosion Table to see if a fire or explosion results.
6. Consult the tables for bridge or steering hits to determine their special effects.
7. For torpedo hits, consult the Shock Effects Table to see any additional effects caused by the hit.
8. If spaces have been flooded, calculated the effect on the ship's speed using the Compartment Speed Loss Table and the Propulsion Hit Table.

Hit Location Table (1D6 YELLOW)

Range	Hull Hit	Superstructure Hit
0-5"	**1**	**2-6**
5-15"	**1-3**	**4-6**
15"+	**1-6**	**3-6**

A hit at a range beyond 15" always results in a hull hit and may also result in a superstructure hit at the same location.

Excess Damage Table

Gun Size:	DD and smaller	CL	CA
7.9-9.2"	+1		
11-14"	+1	+1	
15-18.1"	±1	±1	+1

Larger shells striking smaller ships create damage in more than just the single location rolled on D36. This table shows how additional locations are also affected by a hit.

Gun Power and Flooding Table (1D6 GREEN, 1D6 BLUE)

Gun Size	Power	Flooding
3" - 3.5"	**2**	**6**
3.9" - 4.5"	**3**	**6**
4.7" - 5.25"	**4**	**5-6**
5.4" - 6.1"	**5**	**4-6**
7.5" - 9.2"	**6**	**3-6**
11" - 14"	**7**	**2-6**
15" - 18.1"	**8**	**2-6**

Power roll must equal to or less than Power factor of gun for hit to be effective. See armor factor modifiers below. Add **1** to the flooding die roll if the range was more than 15 inches. Add **1** to the target's armor modifier (but no greater than **0**) at ranges of 5" or less. Subtract **1** for guns of less than 7.9 inches at ranges of more than 20". A natural **1** on the power roll is always effective.

Armor Factor Modifiers (Morifies 1D6 GREEN)

Armor:	None	Very Light	Light	Medium	Heavy	Very Heavy
Factor:	**0**	**-1**	**-2**	**-3**	**-4**	**-5**

Subtract factor shown from the 1D6 GREEN Gun Power Roll. Border between Armor row and Factor row corresponds to vertical borders on Hits tables in the ship data sheets. For example, a hit location protected by Heavy armor will be shaded and bordered with a triple line.

Optional: Use deck/turret top armor (inner armor ratings on the ship charts) for hits at ranges of 15"+ or bomb hits.

Fire and Explosion Table (1D10 RED)

Hit Type:	Fire	Explosion
Magazines	**3**	Yes
Main Gun Mounts	**2**	Yes
Other Gun Mounts	**2**	No
Fuel Oil	**3**	No
AAMGs	**2**	No
Torpedo Mounts	**2**	Yes
Torpedo Reloads	**2**	Yes
Aviation Gas	**5**	No
Aircraft	**4**	No

Roll 1D10 for each listed location struck. A fire results if the number rolled is equal to or less that the number shown. For locations at which explosions are possible, roll 1D10 if a fire starts there. On a roll of 1, an explosion results, sinking the ship. Gun mount hits never result in explosions if their corresponding magazines are flooded. A hit that floods a magazine cannot result in a continuing fire, but check for an explosion as if the hit were non-flooding. A hit that floods a fuel tank can result in a continuing fire.

Engine and Boiler Speed Loss Table

Number lost:	12	10	8	6	4	3	2
1	5%	5%	5%	5%	10%	15%	25%
2	5%	10%	10%	15%	25%	35%	
3	10%	15%	15%	35%	50%		
4	15%	20%	25%	50%			
5	20%	30%	35%	75%			
6	35%	40%	50%				
8	50%	65%					
10	75%						

Shows percentage of speed lost, based on top speed less flooding speed loss. While any boiler room is assumed to serve any engine room, each engine room can serve only the propeller(s) corresponding to the engine(s) it contains.

General Damage Effects

One hit damages a piece of equipment or a space, taking it out of action. Damaged equipment and damaged, unflooded spaces may be repaired by damage control. Funnel hits are a special case. If a funnel at a particular D36 location is hit, the ship's speed is reduced by 0.25". Subsequent hits on the funnel at that location have no effect.

General Flooding Effects

In addition to speed loss due to power plant damage, flooded compartments will reduce speed. Flooding speed loss is based on a ship's flotation points: divide the FPs lost by half the ship's total FPs, then multiply by the ship's top speed to determine flooding speed loss. Round to the nearest .25 inch. Compute speed loss due to flooding before figuring speed loss due to engine or boiler damage.

SPECIAL DAMAGE TABLES

Steering Hit Table (1D6)

1	Rudder warped -- decrease speed by 25% -- no left turn (1-3), no right turn (4-6)
2	Ship's turn radius increases by one class -- auxiliary steering in use
3	Rudder jammed -- ship circles left (1-2), ship circles right (3-4), ship steams straight (5-6)
4	Ship may not turn for 2 turns -- switching to auxiliary motor
5	Ship must plot turns 1 turn in advance -- using hand steering
6	Steering engine wild -- each turn, roll 1D6 for course -- right 90° (1), right 180° (2), straight (3-4), left 90° (5), left 180° (6)

Bridge Hit Tables

IJN, RM,KM, KKM Ships (1D6)

1	Plot turns 1 turn in advance -- conning from aft helm
2	Plot speed changes 1 turn in advance -- telegraph out
3	1 turn delay to open or shift main battery fire -- flag plot hit -- must shift flag
4	Ship may not launch torpedoes or fire guns for 2 turns -- flag plot hit -- must shift flag
5	Ship must use random movement -- radios and signal bridge hit -- must shift flag
6	1 turn delay to open or shift fire of secondary battery or to launch torpedoes -- fire control station hit

USN Heavy Cruisers and Battleships (1D10)

1	Plot turns 1 turn in advance -- conning from aft helm
2	Plot speed changes 1 turn in advance -- telegraph out
3	1 turn delay to open or shift main battery fire -- flag plot hit -- must shift flag
4	Ship may not fire guns for 2 turns -- flag plot hit -- must shift flag
5	Ship must use random movement -- radios and signal bridge hit -- must shift flag
6	1 turn delay to open or shift fire of secondary battery or to launch torpedoes -- fire control station hit
7-8	Fire control radars out
9	Trunking hit -- forward main fire control out
10	Trunking hit -- forward secondary fire control out

USN Destroyers and Light Cruisers; all RN Ships (1D10)

1	Plot turns 1 turn in advance -- conning from aft helm
2	Plot speed changes 1 turn in advance -- telegraph out
3	1 turn delay to open or shift main battery fire -- flag plot hit -- must shift flag
4	Ship may not launch torpedoes or fire guns for 2 turns -- flag plot hit -- must shift flag
5	Ship must use random movement -- radios and signal bridge hit -- must shift flag
6	1 turn delay to open or shift fire of secondary battery or to launch torpedoes -- fire control station hit
7-8	Fire control radars out
9	Port torpedo director out
10	Starboard torpedo director out

Propulsion Hit Table (Optional) (1D10)

Weapon Type:	*DD DE TB*	*CL*	*CA CVL*	*BB BC CV*	*AK AT CVE*
3" - 4.1"	***4***	***3***	***2***	***1***	***4***
4.5" - 5.25"	***5***	***4***	***3***	***2***	***5***
5.4" - 6.1"	***6***	***5***	***4***	***3***	***6***
7.5" - 9.2" or torpedo	***7***	***6***	***5***	***4***	***7***
11" - 14"	***8***	***7***	***6***	***5***	***8***
15" - 18.1"	***9***	***8***	***7***	***6***	***9***

(Propulsion Hit Table) Roll 1D10 for an effective gun or torpedo hit in any propulsion space. If the number rolled is equal to or less than the number shown, the ship coasts to a halt in the next turn (moving at 1/2 of its speed for the current turn), remains stationary for 1 turn, and resumes moving (subject to normal acceleration limits) in the turn after that.

Torpedo Shock Effects Table

Torpedo Size:	TB DE	DD	CL	CA CVL	BC	BB CV	AS	AM CVE	AL
17.7-18"	**1**	**1**	50%	50%	25%	25%	**1**	**1**	50%
20.5-21"	**2**	**2**	**1**	**1**	50%	50%	**2**	**2**	**1**
24"	**3**	**3**	**2**	**2**	**1**	**1**	**3**	**3**	**2**

Consult this table to determine the number of die rolls on the Shock Effects Table caused by a torpedo hit. Cross-index the size of the torpedo with the type of target. A number indicates the number of rolls. A percentage indicates the percentage chance of making 1 roll.

Shock Effects Table (D36)

11	Rudder warped -- ship can only turn left (1D6: 1-3) or right (1D6: 4-6)
12	Steering by hand -- write maneuvers 1 turn in advance
13	Steering engine wild -- each turn, roll 1D6 for course -- right 90° (1), right 180° (2), straight (3-4), left 90° (5), left 180° (6)
14	Steering engine gone -- ship will repeat maneuver plotted in turn in which this hit was received
15	Rudder jammed hard left
16	Rudder jammed hard right
21	Shaft bearing thrown -- lose 1 propshaft
22	Turbine loses lube oil -- 1 engine room damaged
23	Turbine thows casing -- 1 engine room flooded
24	Boiler breached -- 1 boiler room destroyed
25	Boiler bricks ripped up -- reduce speed by 25%
26	Condensers gone -- reduce speed 0.50" per turn until DIW
31	Steam line ruptured -- reduce speed 0.25"
32	Forced draught fans damaged -- 1 boiler room damaged
33	Fuel feed loss -- reduce speed 25%
34	Steam line ruptures -- reduce speed 0.25"
35	Engine room communications out -- no speed changes permitted
36	Ring main blown -- no radio or radar, no guns over 6" may fire -- 2 turn delay to switch to auxiliary power
41	Auxilary generator or batteries damaged -- no auxilary power available
42	Switchboard smashed -- heading and speed changes on a 1 turn delay,
43	Closest main mount jammed in train
44	Closest secondary mount jammed in train
45	Closest torpedo mount jammed in train
46	Director comm lines cut -- 1 turn delay for secondary battery to open fire or shift targets
51	Director comm lines cut -- 1 turn delay for main battery to open fire or shift targets
52	Power outage -- main battery cease fire
53	Power outage -- main battery to local control
54	Power outage -- secondary battery to local control
55	Main director out -- forward (1-3), or aft (4-6) if present
56	Radio out -- must shift flag if flagship
61	Fire control radars out
62	Fire control radars out
63	Search radars out
64	Search radars out
65	All radars and radios destroyed -- must shift flag if flagship
66	All radars and radios destroyed -- must shift flag if flagship

Gunfire Mishap Table (D100)

Roll:	Result:
00	Mount out, roll for 1D6 for explosion (1) or fire (2-6)
98-99	Mount out, fire
95-97	Mount out
90-94	Radar sets and radios out
85-89	Radar set outs -- Axis ships only

Whenever a gunfire to hit die roll falls within the specified range, apply the indicated result. Roll to randomly select mount put out action. The equipment can be repaired. Radio out means must shift flag if a flagship.

Fire Continuation Table (D100)

	Damage Control Number			
Fires?	2	3	4	5
1	09	03	02	01
2	46	15	07	02
3	76	50	28	12
4	93	77	56	31
5	99	91	76	58

Top number on table is damage control number for the ship. Side number is number of fires burning. The table shows the percentage chance that fires burn out of control after the end of a scenario. Remember to increase damage control numbers for reduced speed and firefighting assistance, as applicable.

Damage Examples

The *Furutaka* takes an 8 inch shell hit at a range of 12". Wincing, the Japanese player rolls to see if the hit strikes superstructure or hull. On a 3, the shell hits the hull. He then rolls D36 to determine the location of the hit. A 55 — the shell slams into *Furutaka's* aft primary magazine. Next, the Japanese player rolls 1D6 to see if the hit is effective. The player rolls a 6, adjusted to a 4 due to the light armor in that location. It just sneaks through. An 8 inch shell will flood the compartment on a 1D6 roll of 3 or more — a 5 indicates that flooding results. While the flooding precludes a fire, the player must still check for a magazine explosion. A 7 result on D10 means no fire, and so no explosion. The Japanese player now assesses the result of the hit — Y magazine is flooded and Y turret is out of action. The flooding results in a speed loss of 1/4 inch — 2 divided by 32, times 4.25, rounded to the nearest 1/4 inch.

The *Arethusa* takes a 21 inch torpedo from a German destroyer. The British player rolls D36 to determine that the fish strikes in location 52 — the after engine room. A 21 inch torpedo damages *Arethusa* for 3 spaces on either side of the hit location. This extends the hit effects to all locations from 46 through 55. This means that her aft boiler boiler room and aft main magazine are also flooding. Because of the magazine hit, the British player must check for a magazine explosion. None results. The British player now consults the Torpedo Shock Effect Table to confirm that the torpedo causes 1 special hit. D36 are rolled for a result of 45 — the closest torpedo mount is jammed. The British player records the effect of the hits: 1 torpedo mount jammed, Y turret out of commission due to a flooded magazine, and half of the power plant waterlogged. The speed loss is calculated as followed: a loss of 3.5 inches due to flooding, plus a loss of .25 inches due to the power plant outage. *Arethusa* will be limping along with a speed of 1/4 inch per turn.

SPOTTING TABLES

Visual Spotting

Each turn, roll 1D6 for each side, add it to the visibility base and apply the modifiers to determine that side's spotting range. Spotting is determined for each spotter and each target; it is possible that a spotted ship will not be spotted by all enemy ships.

Visual Spotting Modifiers

Alert Japanese spotting at night	**+3**
Already spotted by radar	**+1**
Spotting formation of 4+ ships	**+1**
Enemy ship moving 3" or more a turn at night	**+1**
Enemy ship between shore and spotter	**-2**
Italians spotting at night	**-6**
Italians spotting during day	**-2**
Spotting firing ship	**+5**
Spotting illuminated, illuminating or burning ship	**+10**
Spotter in bow or stern 30 degree arc of target	**-2**
Spotter firing guns at another target	**-3**

Fire Control Radar Types

USN Mk 3 and Mk 4	early FC radar out to 7.5" for DDs and smaller targets, 10" for CLs and larger targets
USN Mk 8 and Mk 12	late FC radar out to 10" for DDs and smaller targets, 20" for CLs and larger targets
RN Type 284	late FC radar out to 10" for DDs and smaller targets, 20" for CLs and larger targets
RN Type 285	late FC radar out to 7.5" for DDs and smaller targets, 15" for CLs and larger targets
KM FuMo	early FC out to 7.5" for DDs and smaller targets, 15" for CLs and larger targets

Radar Spotting

Only medium (M) and short (S) band radars may spot independently. They reveal only ship numbers and sizes (destroyer, light cruiser or small merchantman, heavy cruiser or large merchantman, battlecruiser or battleship). Long (L) band radars may not spot independently, but may increase the chances of visual spotting for targets within their range.

Search Radar Type Table

Radar	Band	Range
SC	L	5
SG	S	15
281	M	10
286	M	5
290	M	5
279	L	5
271	S	10
273Q	S	20
FuMo	M	5

Radar Range Modifiers

Spotter has no operating CIC	**-5**
Enemy ship between shore and spotter	**-5**
Enemy ship is a DD, DE, TB or AS	**+5**
Enemy ship is a CVE, CVL, CA, CL, AM or AL	**+10**
Enemy ship is a CV, BB or BC	**+15**

Friendly Fire Table (2D6)

2-9	Fire on intended target	10+	Fire on friendly ship

Roll 2D6 in night scenarios for any ship firing at an enemy ship where another friendly ship meets all of the following criteria:

- It is not part of the firing ship's formation.
- It is between the firing ship and its target.
- It is within 2" of the line between the center of the firing ship counter and the center of the target ship counter.
- It is in the arc of the 90° angle centered on the firing ship and bisected by the line between the firing ship and its intended target.

If more than 1 friendly ship fits these criteria, the ship with the most applicable DRMs is the potential target. If DRMs are equal, the ship closest to the target is the potential target.

Die Roll Modifiers: **+1** for a ship closer to the target than to the firing ship,
+1 if the ship's counter or base is on the line between the firing ship and the target.

Independent Movement Table (2D6)

2	Turn left 180 deg.			10	Move straight
3	Turn left 90 deg.	5-9	Move as plotted	11	Turn right 90 deg.
4	Move straight			12	Turn right 180 deg.

Roll 2D6 for each ship not moving in a formation with a flagship and not a flagship itself. Apply the results to the following table.