



## TECH TREE & SPECIFICATIONS CHARTS



Terrain	Food	Production	Commerce	Defensive Bonus	Movement Cost	Comments
Base Terrain						
Coast	1	0	2	10%	1	
Desert	0	0	0	0%	1	
Grassland	2	0	0	0%	1	
Snow	0	0	0	0%	1	
Ocean	1	0	1	0%	1	
Peak	0	0	0	0%	Impassable	
Plains	1	1	0	0%	1	
Tundra	1	0	0	0%	1	
Terrain Features						
Fallout	-3	-3	-3	0%	2	-0.5 health
Floodplains	+3	0	0	0%	1	-0.4 health
Forest	0	+1	0	50%	2	+0.4 health
Mills	-1	+1	0	25%	2	
lce lce	0	0	0	0%	Impassable	
Jungle	-1	0	0	50%	2	-0.25 health
Oasis	+3	0	+2	0%	2	Fresh water sour

	Icon Name	Meaning
和	Bread icon	Food
	Bread loaf	5 Food
P	Hammer icon	Production
¥	Anvil icon	5 production
	Gold coin	Gold
6	Money bag	5 gold
$oldsymbol{L}$	Beaker icon	Research
P	Culture note	Culture
2	Arm flexing	Combat strength
L	Foot symbol	Movement points
I	Castle	Defensive bonus
$\bigstar$	Gold Star	Capital
$\bigstar$	Silver Star	Government Center
	Sun Disc	Golden Age
$\bigcirc$	Happy Face	Happiness
	Unhappy Face	Unhappiness
<b>⊕</b>	Red Cross icon	Health
(8)	Mr. Yuck Face	Unhealthiness
420	Red Fist	Resistance
	Great Person face	Great person points

	Icon Name	Meaning
N.Z	Trade icon (3 arrows)	Trade
	Treaty with arrows	Open Borders
<b>4</b>	Treaty with peace symbol	Defensive Pact
•	Lightning Bolt	Power
1	Praying Hands	Religion
A	Buddhism symbol	Buddhism
<b>E</b>	Buddhism with star	Buddhist holy city
+	Christianity symbol	Christianity
7*	Christianity with star	Christian holy city
<b>a</b>	Confucianism symbol	Confucianism
<b>₹</b>	Confucianism with star	Confucian holy city
Ť	Hinduism symbol	Hinduism
30	Hinduism with star	Hindu holy city
Ċ	Islam symbol	Islam
C	Islam with star	Islamic holy city
<b>*</b>	Judaism symbol	Judaism
*	Judaism with star	Jewish holy city
吉	Taoism symbol	Taoism
<b>3</b>	Taoism with star	Taoist holy city

Name		Cost	Allows	Text Row 1	Text Row 2
	Agriculture	60	Farm		
AEZ HPE AVO	Alphabet	300	Beaker Symbol	Enables technology trading	Can build Research
	Animal Husbandry	100	Pasture		
	Archery	60	Archer		
No.	Artillery	2000	Artillery		
W.	Assembly Line	2600	Infantry, Factory, Coal Plant, Pentagon		
97	Astronomy	1600	Galleon, Observatory, Obsoletes Colossus	Centers World Map	Enables trade on Ocean
M	Banking	700	Bank	Enables Mercantilism	
	Biology	2200		Can build Farms without Irrigation	Farm: +1 Food
4	Bronze Working	120	Axeman, Copper	Can chop down a Forest	Enables Slavery
	Calendar	350 Obsoletes Obelisk, Obsoletes Stonehenge, Plantation			
	Chemistry	2000	Grenadier, Frigate, Obsoletes Parthenon	Workshop: +1 Hammer	
	Civil Service	800	Maceman	Farms spread Irrigation	Enables Bureaucracy
	Code of Laws	350	Courthouse, Chichen Itza, Confucianism	Enables Caste System	
	Combustion	2400	Transport, Destroyer, Obsoletes Whale, Well		
<u>A</u>	Communism	2000	Spy, Scotland Yard, Kremlin	Enables State Property	Enables Permanent Alliances
0	Compass	400	Explorer, Harbor		
***	Composites	5000	Modern Armor, Jet Fighter, Stealth Bomber		
	Computers	4500	Laboratory, Obsoletes Angkor Wat, Obsoletes The Spiral Minaret		
	Constitution	2000	Jail	Enables Representation	
	Construction	350	War Elephant, Catapult, Colosseum	Enables Bridge Building	
	Corporation	1400	Wall Street, Obsoletes The Great Lighthouse	+1 Trade Routes per city	
	Currency	400	Market, Gold Symbol	+1 Trade Routes per city	Enables Gold Trading via Diplomacy, Can build Wealth
M	Democracy	2200	Statue of Liberty	Enables Universal Suffrage	Enables Emancipation
28	Divine Right	1000	Versailles, Spiral Minaret, Islam		
	Drama	300	Theatre, Globe Theatre	Can Adjust Culture Rate	

	Name	Cost	Allows	Text Row 1	Text Row 2
**	Economics	1000		First to discover receives a Great Merchant	Enables Free Market
(*1:2)	Education	1400	University, Oxford University		
5	Electricity	2800	Bunker, Bomb Shelters, Broadway	Windmill: +1 Gold	Watermill: +2 Gold
	Engineering	900	Pikeman, Castle, Hagia Sophia	+1 Road Movement	
	Fascism	1800	Mount Rushmore	Enables Police State	Enables Permanent Alliances
	Feudalism	700	Longbowman	Enables Vassalage	Enables Serfdom
<b>//</b>	Fiber Optics	5500	The Internet, SS Cockpit, Obsoletes The Kremlin		
	Fishing	40	Work Boat	Can Work Water Tiles	
	Fission	3500	Nuclear Plant, The Manhattan Project		
A SE	Flight	3000	Carrier, Fighter, Airport		
	Fusion	6000	SS Engine	First to discover receives a Great Engineer	
	Future Tech	6000		+1 Health in All Cities	
Z	Genetics	5500	SS Stasis Chamber	+3 Health in All Cities	
	Guilds	900	Knight, Grocer	Workshop: +1 Hammer	
0	Gunpowder	1000	Musketman		
	Horseback Riding	250	Horse Archer		
	Hunting	40	Scout, Spearman, Camp		
	Industrialism	3000	Marine, Tank, Battleship, Obsoletes Ivory, Aluminum		
	Iron Working	200	Swordsman, Iron	Can Remove Jungle	
	Liberalism	1200		First to discover receives a Free Technology	Enables Free Speech, Free Religion
	Literature	200	Heroic Epic, National Epic, Great Library		
17	Machinery	700	Crossbowman, Windmill, Watermill		
	Masonry	80	Walls, The Pyramids, The Great Lighthouse, Quarry		
<b>10</b>	Mass Media	2800	Broadcast Tower, Hollywood, The United Nations		
	Mathematics	250	Aqueduct, Hanging Gardens, Fort		
	Medicine	2600	Hospital, Red Cross		
	Meditation	80	Monastery, Buddhism		
	Metal Casting	450	Forge, The Colossus, Workshop		
53	Military Tradition	1800	Cavalry, West Point	Enables Defensive Pacts	
K	Mining	50	Mine		

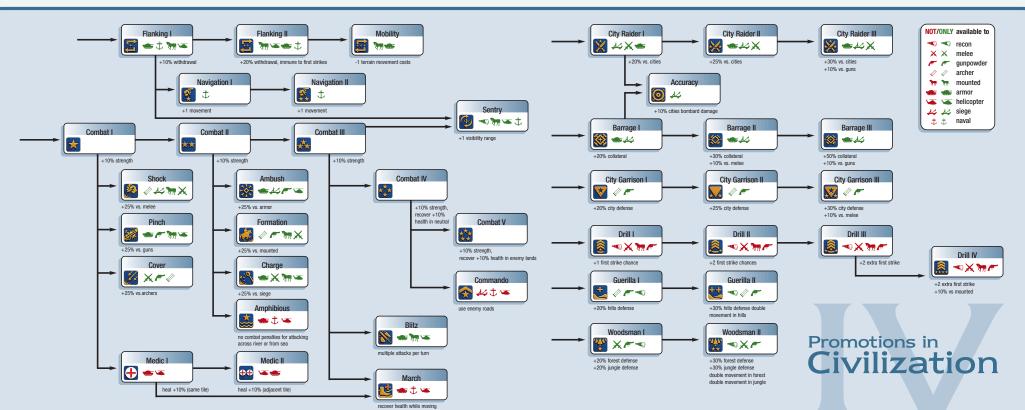
	Name Cost Allows		Text Row 1	Text Row 2	
<b>V</b>	Monarchy	300	Winery	Enables Hereditary Rule	
	Monotheism	120	Judaism	Enables Organized Religion	
	Music	600	Cathedral, Notre Dame, Culture Symbol	First to discover receives a Great Artist	Can build Culture
	Mysticism	50	Obelisk, Stonehenge		
N.	Nationalism	1600	Hermitage, The Taj Mahal	Enables Nationhood	
	Optics	600	Caravel, Whaling Boats	+1 Sight across Water	
R	Paper	600		Enables Map Trading	
	Philosophy	800	Angkor Wat, Taoism	Enables Pacifism	
	Physics	2400	Uranium	First to discover receives a Great Scientist	
	Plastics	4000	Hydro Plant, The Three Gorges Dam, Offshore Platform, Obsoletes Fur		
S. P.	Polytheism	100	Parthenon, Hinduism		
Jo	Pottery	80	Granary, Cottage		
	Priesthood	60	Oracle, Temple		
	Printing Press	1200		Village: +1 Gold	Town: +1 Gold
***	Radio	3000	Submarine, Bomber, Eiffel Tower, Rock N Roll		
	Railroad	2200	Machine Gun, Railroad		
7	Refrigeration	2800	Supermarket	+1 Extra Moves for Water Units	
	Replaceable Parts	1600	Lumbermill	Windmill: +1 Hammer	Watermill: +1 Hammer
	Rifling	1400	Rifleman, Obsoletes Chichen Itza		
	Robotics	5000	Mechanized Infantry, The Space Elevator, SS Docking Bay		
	Rocketry	4500	SAM Infantry, Gunship, ICBM, Apollo Program, SS Casing		
17	Sailing	100	Galley, Lighthouse	Enables Trade on Coast	
4	Satellites	3500	SDI, SS Thrusters	Reveals World Map	
	Scientific Method	1800	Obsoletes Monastery, Obsoletes The Great Lighthouse, Oil		
	Steam Power	1800	Obsoletes Hagia Sophia, Coal	Workers build improvements +50% faster	
	Steel	2400	Cannon, Ironclad, Drydock, Ironworks		
0	The Wheel	60	Chariot, Road		
	Theology	500	The Sistine Chapel, Christianity	Enables Theocracy	
1	Writing	120	Library	Enables Open Borders	

	Civic Name	Upkeep Cost	Required Technology	Effect One	Effect Two
	Government				
<b>(4)</b>	Despotism	Low	None	None	None
	Hereditary Rule	Medium	Monarchy	+1 happy per military unit stationed in city	None
<u> </u>	Representation	Low	Constitution	+3 beakers per specialist	+3 happy in 5 largest cities
<b>7</b>	Police State	High	Fascism	+25% military unit production	-50% war weariness
M	Universal Suffrage	Medium	Democracy	+1 hammer from town	Can spend gold to finish production in a city
	Legal				
	Barbarism	Low	None	None	None
<u></u>	Vassalage	High	Feudalism	New units receive +2 experience points	Lower unit support costs
	Bureaucracy	Medium	Civil Service	+50% hammers, +50% gold in capital	None
	Nationhood	Low	Nationalism	Can draft 3 units per turn	+2 happy per Barracks
	Free Speech	None	Liberalism	+2 gold from town	+100% culture in all cities
	Labor				
	Tribalism	Low	None	None	None
	Slavery	Low	Bronze Working	Can sacrifice population to finish production in a city	None
<b>3</b> 7	Serfdom	Low	Feudalism	Workers build improvements +50% faster	None
	Caste System	Medium	Code of Laws	Unlimited Artists, Scientist, Merchant	None

	Civic Name	Upkeep Cost	Required Technology	Effect One	Effect Two
	Labor				
	Emancipation	None	Democracy	+100% growth for cottage, hamlet, village	Unhappiness penalty for civs without Emancipation
	Economy				
4	Decentralization	Low	None	None	None
	Mercantilism	Medium	Banking	+1 free specialist per city	No foreign trade routes
12	Free Market	Low	Economics	+1 trade routes per city	None
¥	State Property	None	Communism	No maintenance costs from distance to palace	+1 food from workshop, watermill
	Environmentalism	High	Ecology	+5 health in all cities	+1 happy from jungle, forest
	Religion				
<b>7</b>	Paganism	Low	None	None	None
	Organized Religion	High	Monotheism	Can build missionaries without monastery	Cities with state religion construct buildings +25% faster
	Theocracy	Medium	Theology	+2 experience points in cities with state religion	No non-state religion spread
	Pacifism	None	Philosophy	+100% great person birth rate in cities with state religion	+1 gold support cost per military unit
	Free Religion	Low	Liberalism	No state religion, +1 happy per religion in a city	+10% research in all cities

Improvements/ Resources	Requires	Food	Production	Commerce	Comments
<b>Camp</b>	Hunting	+0	+0	+0	
Deer Deer		+1, +2 with Camp	0	0	+1 health
<b>A</b> Fur		0	0	+1, +3 with Camp	+1 happy
1vory		0	+1, +1 with Camp	+1 with Camp	+1 happy
Cottage	Pottery	0	0	+1g	Becomes a Hamlet in 10 turns
A Hamlet	Pottery	0	0	+2g	Becomes a Village in 20 turns
Village	Pottery	0	0	+3, +1 with Printing Press	Becomes a Town in 40 turns
Town	Pottery	0	+1 with Universal Suffrage	+4, +1 with Printing Press, +2 with Free Speech	
Farm	Agriculture	+1, +1 with Biology	0	0	Carries irrigation (with Civil Service
<b>y</b> Corn		+1, +2 with Farm	0	0	+1 health
W Rice		+1, +1 with Farm	0	0	+1 health
X Wheat		+1, +2 with Farm	0	0	+1 health
Fishing Boats	Fishing	0	0	0	
S Clam		+1, +2 with Fishing Boats	0	0	+1 health
Crab		+1, +2 with Fishing Boats	0	0	+1 health
Fish		+1, +3 with Fishing Boats	0	0	+1 health
Fort Fort	Mathematics	0	0	0	+25% defense
Hit Movies	Hollywood	0	0	0	+1 happy
Hit Musicals	Broadway	0	0	0	+1 happy
<b>Hit Singles</b>	Rock N Roll	0	0	0	+1 happy
Lumbermill	Replaceable Parts	0	+1	+1 next to river	
Mine	Mining	0	+2	0	Small chance to discover metals
Aluminum	Industrialism	0	+1, +3 with Mine	+1 with Mine	
<b>Coal</b>	Steam Power	0	+1, +3 with Mine	0	
Copper	Bronze Working	0	+1, +3 with Mine	0	
Iron	Iron Working	0	+1, +3 with Mine	0	
Uranium	Physics	0	0	+3 with Mine	
Gems		0	+1 with Mine	+1. +5 with Mine	+1 happy

Improvements/ Resources	Requires	Food	Production	Commerce	Comments
<b>⊚</b> Gold		0	+1 with mine	+1, +6 with mine	+1 happy
Silver		0	+1 with mine	+1, +4 with mine	+1 happy
Offshore Platform	Plastics	0	0	0	
Oil	Scientific Method	0	+1, +2 with offshore platform	+1 with offshore platform	
Pasture Pasture		Animal Husbandry	0	0	0
Morse		0	+1, +2 with pasture	+1 with pasture	
<b>Æ</b> Cow		+1, +1 with pasture	+2 with pasture	0	+1 health
<u></u> ₽ig		+1, +3 with pasture	0	0	+1 health
Sheep		+1, +2 with pasture	0	+1 with pasture	+1 health
Plantation	Calendar	0	0	0	
🌭 Banana		+1, +2 with plantation	0	0	+1 health
Dye		0	0	+1, +4 with plantation	+1 happy
Incense		0	0	+1, +5 with plantation	+1 happy
<b></b> Silk		0	0	+1, +3 with plantation	+1 happy
Spices		+1 with plantation	0	+1, +2 with plantation	+1 happy
Sugar		+1, +1 with plantation	0	+1 with plantation	+1 happy
Quarry		Masonry	0	0	0
Marble		0	+1, +1 with quarry	+2 with quarry	
Stone		0	+1, +2 with quarry	0	
Watermill	Machinery	+1 with State Property	+1, +1 with Replaceable Parts	+2 with Electricity	
Well		Combustion	0	0	0
Oil	Scientific Method	0	+1, +2 with well	+1 with well	
Whaling Boats	Optics	0	0	0	
Whale	+1	+1 with whaling boats	+2 with whaling boats	+1 happy	
Windmill	Machinery	+1	+1 with Replaceable Parts	+1, +1 with Electricity	
Winery		Monarchy	0	0	0
₫ Wines		+1 with winery	0	+1, +2 with winery	+1 happy
Workshop	Metal Casting	-1, +1 food with State Property	+1, +1 with Guilds, +1 with Replaceable Parts	0	



Promotion Name	Required Promotions	Available to	Effect
Accuracy	City Raider I or Barrage I	Siege	+10% city bombard damage
Ambush	Combat II	Siege, Gunpowder, Armored, Helicopter	+25% vs. armored units
Amphibious	Combat II	Recon, Mounted, Archery, Melee, Siege, Gunpowder	No combat penalty for attacking from sea or across river
Barrage I	None	Siege, Armored	+20% collateral damage
Barrage II	Barrage I	Siege, Armored	+30% collateral damage, +10% vs. melee units
Barrage III	Barrage II	Siege, Armored	+50% collateral damage, +10% vs. gunpowder units
<b>№</b> Blitz	Combat III	Mounted, Armored, Helicopter	Can attack multiple times per turn
Charge	Combat II	Mounted, Melee, Armored, Helicopter	+25% vs. siege weapons
City Garrison I	None	Archery, Gunpowder	+20% city defense
City Garrison II	City Garrison I	Archery, Gunpowder	+25% city defense
City Garrison III	City Garrison II	Archery, Gunpowder	+30% city defense, +10% vs. melee units
City Raider I	None	Melee, Siege, Armored	+20% city attack
City Raider II	City Raider I	Melee, Siege, Armored	+25% city attack
City Raider III	City Raider II	Melee, Siege, Armored	+30% city attack, +10% vs. gunpowder units
Combat I	None	All	+10% strength

Promotion Name	Required Promotions	Available to	Effect
Combat II	Combat I	All	+10% strength
Combat III	Combat II	All	+10% strength
Combat IV	Combat III	All	+10% strength, heals extra 10% damage per turn in neutral lands
Combat V	Combat IV	All	+10% strength, heals extra 10% damage per turn in enemy lands
Commando	Combat IV	Recon, Archery, Mounted, Melee, Gunpowder, Armored	Can use enemy roads
Cover	Combat I	Archery, Melee, Gunpowder	+25% vs. archery units
Drill I	None	Archery, Siege, Armored, Helicopter, Naval	1 extra first strike chance
Drill II	Drill I	Archery, Siege, Armored, Helicopter, Naval	1 extra first strike
Drill III	Drill II	Archery, Siege, Armored, Helicopter, Naval	+2 first strike chances
Drill IV	Drill III	Archery, Siege, Armored, Helicopter, Naval	+2 first strikes, +10% vs. mounted units
Flanking I	None	Mounted, Armored, Helicopter, Naval	+10% withdraw chance
Flanking II	Flanking I	Mounted, Armored, Helicopter, Naval	+20% withdraw chance; Immune to First Strike
Formation	Combat II	Archery, Mounted, Melee, Gunpowder	+25% vs. mounted units

Promotion Name	Required Promotions	Available to	Effect
Guerilla I	None	Recon, Archery, Gunpowder	+20% hills defense
Guerilla II	Guerilla I	Recon, Archery, Gunpowder	+30% hills defense, double movement in hills
March March	Combat III or Medic I	Recon, Archery, Mounted, Melee, Siege, Gunpowder	Can heal while moving
→ Medic I	Combat I	All except Armored and Helicopter	Heals units in the same tile extra 10% damage per turn
Medic II	Medic I	All except Armored and Helicopter	Heals units in adjacent tiles extra 10% damage per turn
Mobility Mobility	Flanking II	Mounted, Armored	-1 terrain movement cost
Navigation I	Flanking I	Naval	+1 movement range
Navigation II	Navigation I	Naval	+1 movement range
Pinch	Combat I	Mounted, Gunpowder, Armored, Helicopter	+25% vs. gunpowder units
Sentry	Combat III or Flanking I	Recon, Mounted, Helicopter, Naval	+1 visibility range
Shock	Combat I	Archery, Mounted, Melee, Siege	+25% vs. melee units
Woodsman I	None	Recon, Melee, Gunpowder	+20% jungle defense, +20% forest defense
Woodsman II	Woodsman I	Recon, Melee, Gunpowder	+30% jungle defense, +30% forest defense, double movement in jungle and forest