

# Scales

## Model scale

*Republic to Empire* was written for playing with 28mm miniatures. This is my own preferred gaming scale. It is however completely adaptable with minor adjustment to 15mm and 20mm scale. Notes on how to do this can be found later in this section. There is also information on potential adaptation for smaller scales.

## Measurements

In typically schizophrenic British style I have given measurements for movement and ranges in the imperial inches with which I was educated and then gone on to give basing conventions in millimetres!

The metric measurements seem easier to work with for basing whilst for some curious reason the imperial measurements are hard wired into me for distance. This should confound in equal measure continental European and North American gamers alike and reinforce all of your preconceptions and prejudices about us Brits! For anyone in the UK, it makes perfect sense so what is the fuss all about!

## Model to man ratio

The tactical infantry unit is a battalion, for cavalry it is a regiment and for artillery a battery. 1:20 is the model to man ratio for unit organisation with the exception of artillery crews. With artillery I have chosen to make one gun model equal two actual guns and applied artistic licence in terms of the number of crew models manning each calibre of gun. More information on this is contained under the *Basing your models* section.

## Ground scale

In *Republic to Empire* the ground scale is 2.25mm to 1 yard (0.914 metres).

## Vertical scaling

The vertical dimension of higher ground should be based on the same scale already specified for horizontal distances; 2.25mm to 1 yard. If a relatively insignificant geographical feature in scale terms exerted a huge influence in real life then exaggerate it somewhat to produce the visual and psychological impact it may have had on the day.

## Time scale

Each game turn represents a period equating to approximately twenty minutes of real time.

## Background information and perspectives to scales

This section explores the tensions created by mixing different scales on the table top and the challenges these present when trying to balance realism with playability. It should also go some way toward highlighting my own discomfort with certain aspects of transferring real life to the gaming table and the reasons why I have made certain decisions on rule mechanisms. Scales require suspension of belief to a higher degree than every other aspect of gaming mechanics. Firstly imagine that a model soldier represents twenty actual men. These men may at any given time be standing in one rank of twenty, two ranks of ten or some other configuration such as a cloud of skirmishers or small knots spread across two floors of a building. Each configuration will occupy a different shape and square yardage of ground. The orientation of our models or what they represent creates the first challenge.

A 28mm miniature represents a six feet (1.82 metres) tall man meaning each millimetre equates to 2.6 inches or 6.6 cm of height. If ground scale was calculated in the same increments, muskets would have an effective range of 55 inches (140cm) and cannons around 331 inches (840cm). Clearly this is impossible to manage for reasons of available space alone therefore ground scale in gaming is always hugely compressed. The fact that the scale of the miniature and the scale of the model terrain on which it operates are different creates the second challenge.

The vertical scale of troop models is tacitly accepted by all and is the common descriptor of gaming: 6mm, 10mm, 15mm, 20mm and 28mm. We have established that ground distances must be measured on a different scale and there is yet a third complication. The vertical scaling of terrain is also compressed to an extreme extent causing many table top misunderstandings, arguments and mistakes in perspective largely because this is very rarely discussed and clarified. As a consequence of the compressed ground scale, terrain features must also be compressed in the vertical dimension otherwise every tree would appear to be a Californian redwood and every hillock a young alp, creating a bizarre looking cartoon landscape to fight upon. As a further complication not all vertical measurements are compressed by the same degree.

Vertical scaling of individual buildings and to a lesser degree trees, are somewhat in proportion to model figures but as already mentioned, ground scale and consequently area of settlements are not. Where one model building is placed then potentially dozens of real buildings may stand. This often causes confusion as players may say *"but I can see the target round the edge of the house"* completely missing the point that a house model could represent a settlement area of many houses, barns, walls and streets. Confusion is compounded when celebrated edifices such as La Haie Sainte (roughly scaled to the model figures and not the ground) are placed on the table top occupying a hugely exaggerated ground area and thus dominating a much larger proportion of the field than they should. Vertical scaling of hills also appears calibrated in vastly different increments but usually unconsciously. This is predominantly due to issues of terrain construction, cost and storage and not to the arithmetical compressions necessary to make things look vaguely realistic. In most table top games the tree models are much higher than the hill models which in reality is absurd. The eye or more accurately the brain assimilates most of these anomalous elements on the table top but clarification in several key areas is still necessary because non binding norms are not always observed by manufacturers and are open to artistic licence, interpretation and of course our natural gamers instincts to use whatever is at hand to populate our model landscapes. All of this means that within the rules unambiguous principles have been laid out in terms of battlefield visibility. These can be found in the section on *Line of sight convention* later in the book. I have attempted to make that section as comprehensive as possible but may inadvertently have missed some critical permutation. For this I do apologise in advance!

### Of Models and Men

Perhaps more than any other period Napoleonic gaming is about the spectacle on the table top. In order to achieve an acceptable visual look then a figure scale of one model representing twenty real men (1:20) is probably the optimum when weighing the important variables of visual impact, cost, painting time and space. These rules are designed to allow individual units to

maintain their identity amidst the hordes. Establishment strengths of Napoleonic units would transfer to the table top as 36 model French battalions 40 model Prussian and 40-50 model British battalions in the later war period but these paper strengths were rarely achieved. Working to this scale should not overburden the gamer too much.

I occasionally like to play games with larger units still. Sometimes the figure to man ratio is 1:15 and occasionally for brigade sized games it is 1:5. The first option would not significantly impact on any of the core mechanisms of the rules. As an example a French battalion at full paper strength in 1:15 ratio would require 48 models which I would organise in six companies of eight models per company. I would use *Republic to Empire* as written for such games.

The desire to play with very large units in 1:5 scale dropped out of my research into accurate representation of ground area occupied by units on the battlefield. Calculations brought me to the conclusion that using the frontages and depths I currently employ for 28mm models I could create the perfectly proportioned colonne d'attaque by working to a 1:5 ratio. This meant constructing units of 100 models plus. Of course such a project has limitations and so I began to build my French units on a Russian Babushka nesting doll principle. One unit of 12 x eight model stands in 1:5 scale breaks down into two units of 6 x eight model stands in 1:15 scale. Each of these permutations still has the pompon colours of each company proportionately represented. The same unit breaks down in to three units of 4 x eight model stands in 1:20 scale for *Republic to Empire* games 'as written'. As the basic operating infantry unit for *Republic to Empire* is a battalion I was not particularly fussed about having each company proportionately represented by pompons as it made no difference to game play. Many of the issues related to super numeraries have been solved by painting a few extra models and basing them up to balance each unit's visual perspective. Of course the real life equivalent strengths in each scale are different at 580 (116 models) for 1:5, 720 (48 models) for 1:15 and 640 (32 models) for 1:20. As all of these sizes fall within the spectrum of unit strengths seen during the war the differences for me are a non issue.

The big changes with gaming in 1:5 are in ground and time scale. I choose 6mm to represent 1 yard/metre which did not meet every deployment measurement with absolute precision but did meet my two main criteria; that battalion deployment in line should equal the equivalent of 125metres and the width and depth in colonne d'attaque should be proportionately right and within historical guidelines. My French battalions are based on 60mm square bases, eight models per base, two bases per company, twelve bases per battalion. There are some separate super numeraries and an Aigle Party base. When laid out as shown in the accompanying photographs the ground area covered and the visual shape of the units is as near accurate as I have been able to achieve when balancing all the variables involved with 28mm models. Games with units of this size by necessity focus on different things than a corps or army level action. In terms of movement distances and shooting ranges I keep the former the same as *Republic to Empire*, the counter weight being that the turn time is shortened but I have lengthened the latter because of ground scale differential. A multiplication factor of two is adequate meaning that as an example, effective musket range now begins at 6 inches and ends at 18 inches. Not arithmetically proportional but within a margin of magnitude which is not unrealistic. Games with this size of unit will not in my opinion carry huge popular appeal but I am happy to say that the management of a few battalions per side plus a gun battery can be done adequately using a combination of mechanics from *Republic to Empire* and the Brigade level rules I have written from *Victrix Miniatures The March of Eagles*.

## **Ground scale and its effect on troop formations**

The ground scale is 2.25mm to 1 yard. A base of six model soldiers in two ranks of three has a frontage of 45mm or 20 yards which is the distance a real life British company of 60 men in two ranks would occupy on the battlefield. With this logic however, there is an instant problem. A British company of 60 men would have deployed two or three ranks deep at most. That would require a single rank of models not the double rank depicted by a base of six figures which actually represents either a four or six deep line in real life. Although flawed from the outset it does mean that the distance occupied for figures in frontage terms is balanced with ground scale and real men. I have not chosen to distinguish between the longer thinner lines of the British and

shorter, deeper lines favoured by the French and others. That difference is catered for within the shooting mechanisms and modifiers as otherwise basing and ground scale will create a huge mathematical muddle the solving of which would achieve naught in terms of playability. That task if undertaken would have proved fruitless as reality goes completely out of the window once more when formation depth is taken into account. Returning to the British as an example: to accurately represent the depth of a two-rank British line the distance between the heels of the front rank man and the heels of the rear rank man (according to General Dundas) would need to be one pace (30 inches) or in our scale equivalent 1.88mm or about 0.074 inches! As a base of six models represents 120 actual men (6 x 20 men) or the effective strength of two British companies in the field we have to consider the depth that these two companies standing one behind the other would occupy in real life. The actual depth between them at quarter distance (a close order company column formation used on the battlefield) would be seven yards or 15.75mm (0.62 inches). Try getting two 28mm models one behind the other on a base which is 16mm deep! It is near impossible to get one model on this depth of base. What this proves is, table top troop formations are merely representative and in no way proportional with reality. With reference to *Republic to Empire* the most accurate 28mm gaming representation of a British battalion in two deep line formation on the table top would be 27 to 30 very thin toy soldiers based one rank deep on a frontage of 40.5cm (16inches) and to a depth of 1.8mm (<0.1 inches). Accurate yes, aesthetically attractive and practical, I will let you be the judge. Almost since the inception of wargaming as a hobby the attack column favoured by most armies but made famous by the French has been to a greater or lesser extent misrepresented by gamers and rule systems alike. Most tabletop columns are at best but rarely, square in shape and much more likely to be deeper than they are wide. The reasons for inaccuracy over the years have perhaps been a need to distinguish lines from columns in a visually unambiguous way on the table top, popular basing conventions and not least, the predilection of gamers to neatly create six element French battalions where each element represents a company. The colonne d'attaque is historically accurate from an organisational perspective if two companies wide and three companies deep. We therefore end up with a tabletop formation which is often 90-120mm wide (45-60mm being a typical basing element width) by 90-150mm deep (30-50mm being a typical basing element depth) purely as a consequence of figure size driving basing conventions to accommodate them. This often creates a geometric oblong where the depth is greater than the width which is not an accurate reflection of the Napoleonic column of attack (known sometimes as a column of divisions). I have striven to eliminate this anomaly but this may upset the purists who prefer the pompons aligned and all represented! Details of how this is achieved can be found in the section on *Formations & Movement*.

The same applies to cavalry formations on the table top. To accommodate the size of contemporary models they will also be far too deep and box like compared with reality. I have again attempted to move towards a more accurate gaming representation of cavalry deployment but inevitably compromise was the principle guideline combined with a desire to simulate tactics as far as could be managed on the table top.

The only arm of service which will be deployed on anything like accurate ground scale area is artillery. This in itself may create a few challenges when the rules are played. Usually model guns are mounted on bases of between 30-60mm frontage and between 40-100mm depth. What is often omitted are limbers, infantry handlers, caissons, horse teams, wagons and forges all of which would have accompanied a battery in action. At Waterloo when Napoleon deployed his eighty gun Grand Battery in front of Wellington's centre left, the depth to which its equipment extended behind the gun line was between 400 and 500 yards. In our ground scale that would be 35 to 40 inches! This area would effectively have been a no-go zone for any other troops. This is the reality of a Napoleonic battlefield. I have integrated this reality into the rules and for those of you poised to project your copy of *Republic to Empire* into the 'never use them' pile, fear not! If you don't want to paint up all that extra stuff just use some markers to delineate the battery area!

I have included this tortuous explanation for a couple of reasons. Firstly to demonstrate that I have considered the issues very carefully and on the basis of practicality have made some logical judgment calls on unit frontages and depths, formations, movement distances and weapon ranges. Secondly to complete the picture of why wargames have to look the way they do and to point out that the entire game is one large compromise as is every miniature battle in every

period. Your eyes and brain will fill in the numerous reality gaps and common sense should prevail through every new, animated debate you have with your gaming pals. One hard lesson I have learned with rule writing is that you can never offer enough detailed explanation. The creativity of gamers and the opportunities for imaginative interpretation by others of what appears fairly clear in one's own mind are limitless!

## **Vertical scaling**

Vertical scaling of buildings should follow the conventions of 28mm model manufacture as stated previously. Some manufacturers compress the scales increasingly in the upper storeys of multi storey buildings, alas, some don't! This means on the table that most buildings will appear taller than surrounding hills. Alas it is all back to the model scales we choose to use and the larger the model men the more unrealistic the scaling of everything else on the table.

The vertical dimension of higher ground should be based on the horizontal ground scale already specified; 2.25mm to 1 yard. As an example if we take two prominent features from the battlefield of Austerlitz it is easy to get a feel for vertical scale issues. Zuran Hill at 850 feet (282 yards/260metres) was one of the highest points on the field. Using the vertical scale suggested, a model of it would stand at 25 inches (63.5cm). Admittedly this is quite tall but all heights should be taken relative to the general altitude of a battlefield not from sea level. The hotly contested Pratzen Heights stood no higher than 12 metres equating to barely over an inch (25.4mm) from table top to summit. At Waterloo the lowest point in the dip between the French ridge at La Belle Alliance and the Allied ridge at Mont St Jean resulted in a height differential of barely 65 feet (21.7 yards/20 metres) over a horizontal distance of approximately 800 yards. These are almost imperceptible differentials yet played important roles in shaping tactics and behaviours during these enormously significant battles.

Again, common sense must be brought to bear in tabletop gaming. Extremes should be avoided but on balance represent features proportionately to the impact they had on the fighting. This is of course a more acute issue with re fights of actual battles and less so in hypothetical games.

Using the above examples players may wish to raise the heights at Pratzen somewhat or exaggerate the Allied defensive slope at Waterloo. Equally, if a feature such as Zuran Hill plays no significant part in the battle because it is unsuitable terrain to operate upon, represent it but don't be preoccupied with its accuracy. It would also be important to check the relative height above sea level of the general terrain at Austerlitz to determine whether Zuran Hill should be 25 inches or somewhat less in height.

## **Time scale**

Each game turn represents a period of time during which a lot can happen. It is restrictive to explicitly cite a precise time elapsed during a full move but for gaming convention and the need on occasion to be specific about daylight or arrival times of reinforcements each turn can be taken as approximately twenty minutes of real time. This would mean a battle such as Waterloo could be completed in 27 turns using these rules give or take a turn. Some of the movement, charging and rallying conventions could be challenged on the basis of this time increment I agree but the mechanic flows smoothly if players accept it. Clearly a unit could march or charge much further in a twenty minute period than the movement rates I have allocated to troops but one piece of reality and one gaming mechanism will manage this anomaly. In any given twenty minute period of real time a unit may not be performing the activity designated continuously. General officers may brief field officers who may then brief company officers, ranks may be redressed, temporary halts may be made to assess a developing situation or the men may hesitate and require encouragement. This firstly explains the proportion of ground covered in the twenty minutes. At the opposite end of the spectrum the *Exploitation* principle highlights what can happen if a commander or general officer acts with lightning speed and steely resolve to grasp a perceived window of opportunity. This covers both ends of the spectrum of twenty minute turns. More can be read about movement rates and the gap between the table top and real life in the section on *Movement and Formations*.

As *Republic to Empire* is designed for games between divisional and army level size another convention that can be followed is that for smaller games involving one or two divisions on table

of size 6 x 6 to 10 x 6 feet, the time period per turn can be assumed as ten minutes. In this case I would also suggest that all movement rates are halved. I have enjoyed 28mm scale divisional size games using the rules on tables of dimension 6 x 4 feet. With somewhere between 350 and 450 models per side the games were finished in about three to four and a half hours. An enjoyable evening of club gaming even with artillery that can shoot over seven feet! Feel free to adjust some of these variables if it assists your gaming experience.

### Notes on weapon ranges

In preparing effective weapon ranges reasonably detailed calculations have been made into the performance of black powder weapons during the Napoleonic Wars. I have concluded that although technically capable of projecting musket and cannon balls much further than the ranges chosen as the limits within the rules, the weapons available to all combatants performed within effective ranges significantly less than their theoretical maximum capabilities. As an example one primary source cites that 459 musket shots were fired at the Battle of Vittoria for every casualty sustained and that does not take into account the damage caused by 6,000 artillery rounds which would have pushed the shots per casualty ratio through the roof perhaps to as many as 1,000 – 2,000 shots per casualty. I have extended the long range bracket for muskets and rifles way beyond normal gaming conventions and players have the discretion to fire at these ranges if they so wish but the chances of hitting anything at distances greater than 100 yards with long arms are low. Artillery ranges particularly for Canister and for Extreme distance may at first seem rather shocking. Please read the accompanying qualification notes and explanations before dismissing my decisions as the ranting of a man who has lost the plot.

### Other figure scales

For those who prefer to game in 20mm, 15mm, 12mm or 10mm scales I recommend you simply convert all inch distances for movement and firing to centimetres. This is not a decision based on mathematics but neither is it poorly thought through. There is no reason for the mechanisms not to transfer well to these smaller scales and there is an argument that says they will be at their most accurate for 10mm - 15mm.

In terms of base sizes (which the rules specify in millimetres) simply divide these by two or use the closest approximation which fits the figure types you are using. If your collections are already based there is no need to re base because all shooting and close combat mechanisms can be applied to your collections as they currently exist. The logic will be clear when you read the relevant sections later in the rules.

### The 6mm perspective.

In 6mm model scaling 1mm roughly equates to 1 foot making a 6mm tall model represent a 6 feet tall man. This would marry well with the ground scale of 2.25mm equalling one yard if one model represented one man. In such a case the units would be extremely large but many aspects of the reality gap would disappear.

In such a situation some units may be 600-800 models strong but they could use the existing ranges and movement distances as written. Significant adjustment would have to be made to the combat and firing mechanisms to avoid container loads of dice being poured. There is not adequate space to go into this unfortunately.

The other alternative is to scale down units and employ ratios in keeping with those already mentioned. If so, the only adjustments required would be to movement distances and shooting ranges. These could be halved or quartered.

**Table of comparison measurements using the Republic to Empire ground scale of 2.25mm = 1 yard**

Table top measurement			Equivalent yards	Weapons data and comments (relative to Republic to Empire conventions)
mm	cm	inches		
2.25	0.225	0.08	1	

11.25	1.125	0.4	5	
22.5	2.25	0.8	10	
45	4.5	1.77	20	
67.5	6.75	2.66	30	Point blank range limit for Musket & Rifle (rounded to 3 inches)
90	9	3.54	40	
112.5	11.25	4.43	50	
225	22.5	8.86	100	Effective range limit for Musket. Point blank range limit for artillery (rounded to 9 inches)
450	45	17.72	200	
675	67.5	26.6	300	Extreme range limit for Musket (rounded to 27 inches)
900	90	35.4	400	Approx extreme range limit for Rifle (rounded to 36 inches). Approx canister range limit for 8pdr & 9pdr artillery
1125	112.5	44.3	500	
1350	135	53.1	600	
1575	157.5	62	700	
1800	180	71	800	
2250	225	80	1,000	
2700	270	96	1,200	Approx extreme range of 12pdr artillery