



Year 7 Maths Investigation

Super Teams – Group Project

Background Knowledge:

Sport and the way our favourite players join our favourite clubs has changed forever. Statistics and data now play a major part in recruiting elite players into teams within the NRL. Sport no longer relies on the word of a recruiter to make a judgement call on what they think of a player's ability and talent. The NRL's player recruitment process now includes vast amounts of data analysis where coaching staff and sports scientists review player statistics collected to an astonishing level. The game has changed!



In this investigation, you are required to select at least three top performing players from a positional area to help build a 'Super' Rugby League team based on player analysis and statistical data. You will need to research and compare players from NRL clubs and select the best players from the data

available. Throughout this investigation you will be investigating real world data that the NRL and their clubs have collected.

You are to focus on the statistics and data. Don't fall into the trap of selecting your favourite player or team. Statistically they may not be the best choice for building a 'Super' Rugby League team.



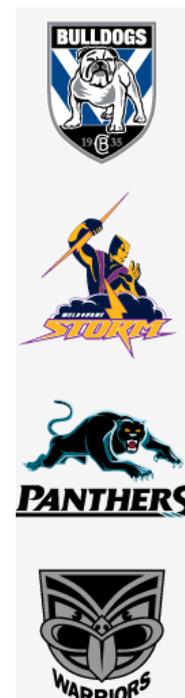
Super Teams – Group Project

Investigation Question:

Can you identify the top performing players in specific positional areas to help build a rugby league side by using only data and statistics as the decision making tool?

Task:

- Your major task in this investigation is to compare four top performing rugby league players from each position that could be selected as part of a positional area within a ‘Super’ Rugby League team. You can select players from any existing NRL clubs using only data and statistics as the decision-making tool in player selection.
- Players must be selected based on data that is important to the specific position they play in.
- You must select at least four top performing players in each position of a specific positional area of the Playmakers, Forwards or Backline.



Playmakers	Forwards	Backline
<ul style="list-style-type: none"> • Half back • Five-eighth • Dummy half/Hooker 	<ul style="list-style-type: none"> • Front Row/Prop • Front Row/Prop • Second Row • Second Row • Lock 	<ul style="list-style-type: none"> • Winger 1 • Winger 2 • Centre • Centre • Fullback

- Presentation of the investigation may be delivered via a short video, report, or a PowerPoint. You need to include **comparative graphs from excel, images and text** in your presentation.



Student Tasks:

- Task 1: Player Comparison Task
- Task 2: Player Selection and Justification task
- Task 3: Presenting Data
- Task 4: Mean, Median, Mode and Range task
- Game explanation Task - Optional
- Positional Explanation Task - Optional
- Student evaluation task

Task 1:



Player Comparison

Task 1:

Compare and rank the top 4 statistically highest athletes for each player position within a positional area to be selected for a 'Super Team'.

- Choose a positional area within a Rugby League Team – Playmakers, Forwards or Blackline
- Collect statistical data based on three '**Important Statistics**' found using websites such as Fox Sports, totalfootystats.com.au as well as NRL's own NRL.com.au. *For a complete list of all 'Important position specific statistics' see appendix 2.*
- Using that data, tables that show comparison between the four statistically highest players for at least three positions within a positional area. Include physical data as well as player statistical data.



The statistics that you measure 'as important' will change based on the position you are comparing. Some websites will allow you to select specific statistics. It will then automatically place the players in order. Look for common names between the three important statistics.

Examples:

When comparing statistics, a **winger's important statistics** would include tries, line breaks, tackle breaks and possibly errors. Scoring tries is a winger's major role in a team so that is a very important statistic.

A **half back's important statistics** would include try assists, line break assists, kick metres and even 40/20 kicks. They're role is to help the team score tries so they need high assisting data.



It is very important to understand that every team and player selection depends on what statistic is placed as the most important for each specific position, there is always more than one important measurable statistic.

Does a front rower's total metres statistic rate higher than the tackles made statistic? This is the choice a selector must make!

This variation in statistical choice is why every team created is likely to be unique.

Task 1: Player Comparison Exemplar



Utilise the NRL's website and all the data collected on three 'important statistics' to compare the top 4 players in each position within a positional area.

The example below compares Dummy halves (Playmakers) and Wingers (Backline). Important statistics to a Dummy Half are not the same as those classed as important for a winger.

Dummy Half	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1: Tackles	870 – 2nd	834 – 3rd	728 – 4th	952 - 1st
Statistic 2: All Run Metres	1281m – 2nd	963m - 4th	1559m - 1st	1337m – 2nd
Statistic 3: Total kicks	129 - 1st	72 – 2nd	55 – 3rd	20 – 4th
Winger x 2	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1: Tries	6 – 4th	22 - 2nd	23 - 1st	22 - 2nd
Statistic 2: Line Breaks	10 - 4th	24 - 2nd	20 - 3rd	26 - 1st
Statistic 2: All Runs	348 - 2nd	357 - 1st	334 – 3rd	324 - 4th

Player 1 has the strongest statistics amongst all the dummy halves.

Player two for the wingers stands out as the statistically strongest player, but only just!

Each of the highest rated statistics have been circled in this exemplar. By rating each statistic, the top players become a little easier to spot!

Task 1:



Player Comparison: Playmakers

Half Back	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1:				
Statistic 2:				
Statistic 3:				
5/8	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1:				
Statistic 2:				
Statistic 3:				
Dummy Half/Hooker	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1:				
Statistic 2:				
Statistic 3:				

Task 1:



Player Comparison: Forwards

Lock Forward	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1:				
Statistic 2:				
Statistic 3:				
Front Row Forwards <i>Select two</i>	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1:				
Statistic 2:				
Statistic 3:				
Second Row Forwards <i>Select Two</i>	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1:				
Statistic 2:				
Statistic 3:				



Task 1:

Player Comparison: Backline

Wingers <i>Select two</i>	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1:				
Statistic 2:				
Statistic 3:				
Centres <i>Select two</i>	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1:				
Statistic 2:				
Statistic 3:				
Fullback	Player 1:	Player 2:	Player 3:	Player 4:
Statistic 1:				
Statistic 2:				
Statistic 3:				



Task 2:

Player Selection: Playmakers

Task:

Using the statistics from Task 1, select the player that statistically is the best in each position. Ensure your 'Statistical justification' discusses the strengths in data and any possible weaknesses.

Position	Player	Statistical Justification
Half Back		
5/8		
Dummy Half		

Task 2:



Player Selection: Forwards

Using the statistics from Task 1, select the player that statistically is the best in each position. Ensure your 'Statistical justification' discusses the strengths in data and any possible weaknesses.

Position	Player	Statistical Justification
Front Row/Prop		
Front Row/Prop		
Second Row		
Second Row		
Lock		

Task 2:



Player Selection: Backline

Using the statistics from Task 1, select the player that statistically is the best in each position. Ensure your 'Statistical justification' discusses the strengths in data and any possible weaknesses.

Position	Player	Statistical Justification
Winger 1		
Winger 2		
Centre 1		
Centre 1		
Fullback		

Task 3:



Presenting Data

Student Task:

Part A: Bar Graph:

Create a bar graph using the data collated from 'Task 1'. Use the first 'important statistic' for each position and graph the data to compare the results of the four athletes. Each individual position in your positional area will need a graph resulting in 3 separate graphs.

Example: Dummy Half – Tackles graph comparing player 1, 2, 3 and 4.

Part B: Line Graph:

Create a line graph using the data collated from 'Task 1'. Use the second 'important statistic' for each position and graph the data to compare the results of the four athletes. Each individual position in your positional area will need a graph resulting in 3 separate graphs.

Part C: Dot Plot:

Create a Dot Plot using the data available on one of the important statistics area eg. tackles performed, for one of your selected players from rounds 1 – 15 in last year's NRL season. Utilise data on websites such as Fox Sports, FootyStats.com. as well as the NRL's own website. Present the statistics in a digital form using a graph maker program or excel.

Part D: Stem and Leaf Plot:

Create a Stem and Leaf Plot using the data available on run metres for one of your selected players from rounds 1 – 15 in last year's NRL season. Utilise data on websites such as Fox Sports, FootyStats.com. as well as the NRL's own website. Present the statistics in a digital form using a graph maker program or excel.



Task 4:



Player Mean, Median and Mode

Task:

Using statistical data provided or suggested websites, select a single statistical data field to calculate mean, median, mode and range for 3 of your selected players using data from rounds 1 - 18 of last year's season.

Background Information:

The NRL and its teams rely on the collection of accurate player data for their training, performance indicators and recruitment decisions. Data is collated by all NRL teams over entire seasons of playing and training.

There are many choices when it comes to selecting the statistical field that can be measured. If tackles were chosen, there is a wide range of numbers and plenty of scope for calculations. If total kicks were chosen, many players would likely have very few kicks in each game, which may lead to insignificant data. In selecting players for your 'Super' team, mean, median and mode can provide invaluable insights into differences in player performance.

The list below provides some appropriate **statistical data fields** that can be selected from:

- Tackles
- All run metres
- All runs
- Missed Tackles

The screenshot shows the FOX SPORTS LAB NRL Premiership website. It features a navigation bar with 'NRL Premiership' and a dropdown menu. Below the navigation bar, there are tabs for 'Players' and 'Teams'. A 'Filter by:' section includes dropdown menus for 'Team', 'Summary', and 'Hooker', along with radio buttons for 'Total' and 'Average'. A table of statistics is visible, with columns for T, TA, GLS, GK%, FG, PTS, R, RM, LB, and TB. The table contains five rows of data.

T	TA	GLS	GK%	FG	PTS	R	RM	LB	TB
0.1	0.3	0	-	0	0.5	1.7	11	0.1	0.6
0.1	0.3	0	-	0	0.4	4.2	43	0.3	0.8
0.2	0.3	0	-	0	0.7	3.1	24	0.1	0.8
0	0.3	0	-	0	0	2.7	30	0	0.3
0.2	0.1	0	-	0	1	6.6	51	0.1	0.6

The screenshot shows the TOTALFOOTY STATS website. It features a navigation bar with 'Home', 'Player Stats', 'Team Stats', 'NRL Ladder', and 'NRL Scores'. The main content area is titled 'NRL Player Stats' and includes a search bar with 'Browse by' and dropdown menus for 'Player Name', 'Team', and 'Prop'. A table of player statistics is displayed with columns for 'First Name', 'Last Name', 'Team', and 'Position'. The table contains five rows of data.

First Name	Last Name	Team	Position
Bunty	Afoa	Warriors	Prop
Daniel	Alvaro	Eels	Prop
Tinirau	Arona	Sharks	Prop
Luke	Bateman	Raiders	Prop
Adam	Blair	Broncos	Back Row, Prop

Appendix 1: Rugby League

Game Description

Rugby League is an international game played by women and men in more than 70 nations.

It is a full contact sport played by two teams of thirteen players on a rectangular grass field. The objective in rugby league is to carry or kick the ball towards the opposing team's goal line where 4 points are scored by grounding the ball; this is called a try. After scoring a try, the team is allowed the chance to try at goal with a conversion – a kick for a further 2 points. The opposing team will attempt to stop the attacking side gaining points by preventing their progress up the field by tackling the player carrying the ball.

Each team will attempt to score more points through tries, goals and field goals (also known as drop goals) than the opposition within the 80 minutes of play.

Tackling is a key component of rugby league play. Only the player holding the football may be tackled. A tackle is completed when that player's progress is halted, or he or she is put to ground. An attacking team gets a maximum of six tackles to progress up the field before possession is changed over.

Ball control is also important in rugby league, as a fumble of the ball on the ground forces a handover, unless the ball is fumbled backwards. The ball can also be turned over by going over the sideline.

Field position is crucial in rugby league, achieved by running with or kicking the ball. Passing in rugby league may only be in a backward or sideways direction.



Appendix 2:



Positional Explanations

The positions and characteristics below are only a guide and the game of rugby league is filled with exceptions to these generalised statements. The information below is the widely accepted general physical characteristics and role in a professional Rugby League side.

Position	Positional Numbers	Physical characteristics	Role in Rugby League side	Important Statistics
Fullback	1	These players are usually among the tallest on the field. Most players are under 95kg as they do a lot of running	Defensively they are the last line of defence. Utilised for returning oppositions kicks in general play. In attack, displays a good passing ability and speed. Covers all areas of the field as support player.	<ul style="list-style-type: none">• Tries• Tackle Breaks• Kick Return Metres
Wingers	2,5	These players are usually among the tallest on the field. Weights vary in this position.	On the field, the wingers are the players closest to either sideline. They assist the fullback with kick return, possess speed and an ability to finish attacking plays with speed and agility.	<ul style="list-style-type: none">• Tries• Tackle Breaks• Errors
Centres	3,4	These players are very strong and are solid in build. Players in this position are tall or average in height.	Centres have good footwork, are relatively quick and as they are positioned inside the wingers can offload passes to finish off attacking plays.	<ul style="list-style-type: none">• Tries• Dummy Half Runs• All Run Metres
Half back	7	These players are a solid in build. Players in this position are amongst the shortest on the field.	Half backs are responsible for the overall organisation and creativity element of the team. They have good ball skills, passing ability and footwork.	<ul style="list-style-type: none">• Try Assists• Line break Assists• Kick Metres
5/8	6	These players are athletic in build. Players in this position are varied in height but are usually taller than the half back.	They complement the half backs organisation and creativity but offer another option with a slightly higher expectation to run the ball as opposed to passing.	<ul style="list-style-type: none">• Try Assists• Line Break Assists• Line Breaks

Appendix 2:



Positional Explanations

Position	Positional Numbers	Physical characteristics	Role in Rugby League side	Important Statistics
Dummy Half	9	These players are strong and solid in build. Players in this position are amongst the shortest on the field.	Another organiser in the team, predominantly instructs the forward pack. Plays large minutes. Defensively required to make many tackles within the middle of the field.	<ul style="list-style-type: none"> Tackles Missed Tackles Dummy Half Runs
Lock Forward	13	These players are mobile and solid. They are varied in height. Most athletic forward.	Locks are solid defenders and partner the hooker and props in defending the middle third of the field. They usually possess the skill to offload, bust tackles and make metres for the team. Usually more mobile than most forwards.	<ul style="list-style-type: none"> Tackles Offloads All Run Metres
2 nd Row Forward	11,12	These players are tall. Heavier than most players.	Second rows are positioned four in from either sideline. They are good at running lines and isolating the smaller edge defenders. They get through many tackles in a game. Play many minutes each game.	<ul style="list-style-type: none"> Tackles Tackle Breaks All Run Metres
Front Row Forward (Prop)	8,10	Heights can vary but generally tall. Are the heaviest on field.	Situated in the middle third of the field, props are required to carry the ball on several occasions with a lot of them being from their own end of the field. Defending in the middle, they need to make many tackles throughout the match.	<ul style="list-style-type: none"> Hit Ups All Run Metres Tackles

Optional Task 5:



Rugby League Description

Task:

- Write a brief explanation and summary of how the game is played under the headings below:
- When writing this, consider that your audience may have no experience with the game of Rugby League

Who plays Rugby League?

What is the objective of teams when playing Rugby League?

How does point scoring work?

Why is tackling a key component of the game?

Why is ball control important?

How does field position benefit teams?

Optional Task 6:



Positional Explanation

Task:

Create an explanation of each player's responsibilities when playing in their specific position as part of the Rugby League team.

Example: Rugby League – Front row forward:

Forwards are generally chosen for their size and strength. They are expected to run with the ball and attack, and to make many tackles. Forwards are often required to do a lot of hard work such as making space in defensive lines for the backs and gaining meters in field position. There are two prop forwards, numbered 8 and 10 who pack in to the front row of the scrum on either side of the dummy half. The props are often the two heaviest players on a team.

- Positions required:
 - *Wingers – two required*
 - *Centres – two required*
 - *Halfback*
 - *5/8 – one of each required*
 - *Dummy Half – one required*
 - *Full back – one required*
 - *Lock Forward – one required*
 - *Second Row Forward – forward – two required*
 - *Front Row Forward – two required*
 - *Reserves bench should include 3 extra forwards and one player who can play in many positions including the backs – four required in total*



Optional Task 6:

Positional Explanation

The positions and characteristics below are only a guide and the game of rugby league is filled with exceptions to these generalised statements. The information below is the widely accepted general physical characteristics and role in a professional Rugby League side.

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Fullback	1	These players are usually among the tallest on the field. Most players are under 95kg as they do a lot of running		
Wingers	2,5	These players are usually among the tallest on the field. Weights vary in this position.		
Centres	3,4	These players are very strong and are solid in build. Players in this position are tall or average in height.		
Half back	7	These players are a solid in build. Players in this position are amongst the shortest on the field.		

Optional Task 6:



Positional Explanation

Position	Positional Numbers	Physical characteristics	Role in Rugby League side	Important Statistics
5/8	6	These players are athletic in build. Players in this position are varied in height but are usually taller than the half back.		
Dummy Half	9	These players are strong and solid in build. Players in this position are amongst the shortest on the field.		
Lock Forward	13	These players are mobile and solid. They are varied in height. Most athletic forward.		
2 nd Row Forward	11,12	These players are tall. Heavier than most players.		
Prop Forward	8,10	Heights can vary but generally tall. Are the heaviest on field?		



Student Evaluation Form

Name _____

My successes during this investigation were ...

Things that I need to improve on next time include....

The most important things that I learned during the project were...

I feel that investigating data using sport **was/was not** beneficial to my learning because...

Using real world data and statistics helped my learning by....
