Australian Curriculum Year 6 Mathematics Sample assessment | Student booklet

Goal difference – the importance of zero

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| Yr-6-Math_Goal-difference_cover |
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| Numbers above and below zero can be used to compare the progress of sporting teams in competitions. |
| You will:   * analyse data in league tables * use data to judge how teams are performing and to predict future results. |

Section 1. League tables

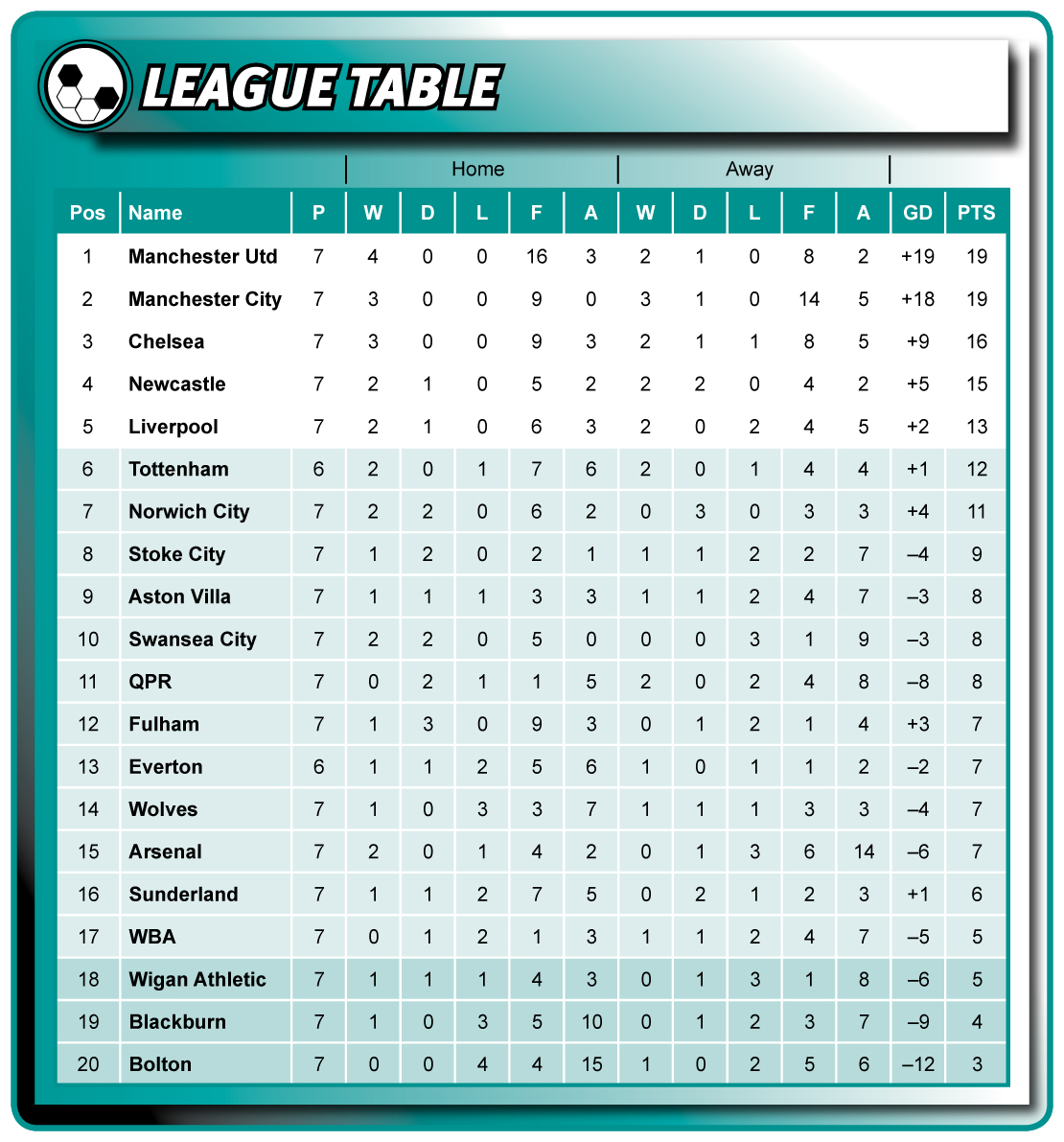
Focus question: How are the teams performing so far?

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| Description: Icons_classroom_task | As a class, explore how a table is used to show how teams progress in a competition. |

Look at a results table for a team sport. An example can be found on the English Premier League website, [*www.premierleague.com/page/LeagueTables*](http://www.premierleague.com/page/LeagueTables).

The table will look something like this.

Table 1: League table example



|  |  |
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| Description: Icons_classroom_task | Discuss these questions with your classmates. |

* What is the table showing?
* What do the letters stand for at the top of each column?
* What do the terms ‘Home’ and ‘Away’ mean?

Look at the **goal difference** (GD) column.

* What is ‘goal difference’?
* How is goal difference calculated?
* Use your calculator to test different ideas about how goal difference is calculated.
* Why are there negative numbers in the goal difference column?

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| Description: Icons_group_task | Work in a group to check the goal difference results for a number of teams. |

Think about a method you could use to check that a team’s goal difference has been calculated correctly. Use calculators to check your method.

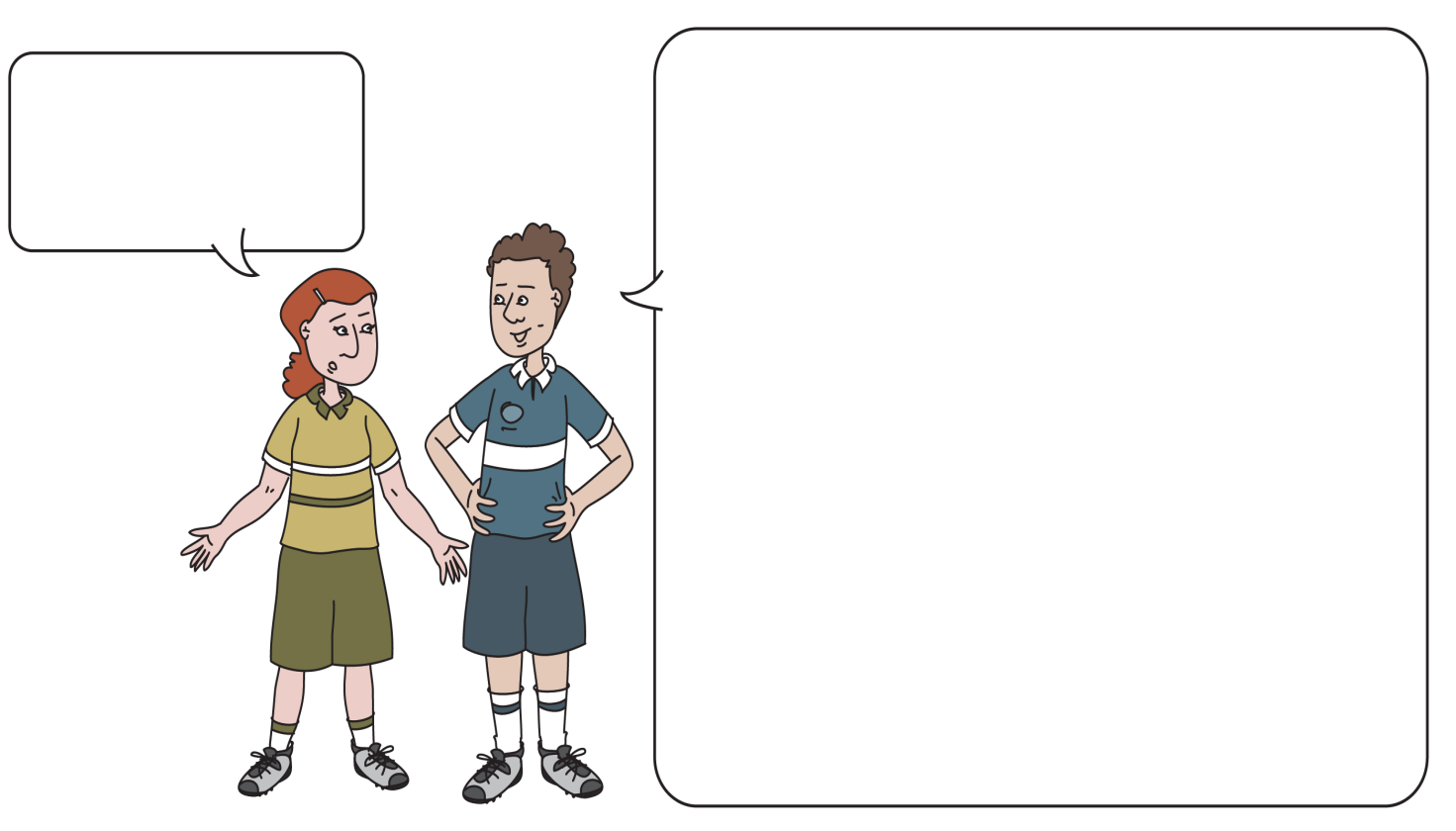
Report back to the class on:

* the method you used to check your team’s goal difference
* the accuracy of the results with the method that you used.

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| Icons_individual_task | Work individually to answer Question 1. |

Think about the uses we have for ‘zero’.

1. Complete the speech bubble below, giving reasons why you disagree with the person on the left.



**‘Zero’ represents nothing, so I think you can ignore it.**

**I don’t agree! There are *lots* of reasons that zero is important. First of all, …**

Section 2. Investigating a competition

Focus question: How are the teams performing so far?

Table 2 shows the draw and results for the first four games of an interschool soccer competition.

The Home team is listed first and in **bold**.

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| Description: Icons_classroom_task | As a class, discuss what the table is showing about how the teams have performed. |

Table 2: Interschool soccer competition results

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Week 1 | | Week 2 | | | Week 3 | | Week 4 | |
| **All Saints** vs Byfield | **4  1** | **All Saints** vs Cresthill | **5  3** | **Dalby** vs All Saints | | **0  5** | **Dalby** vs Highfields | **1  2** |
| **Cresthill** vs Dalby | **3  0** | **Byfield** vs Dalby | **2  0** | **Byfield** vs Eastside | | **1  4** | **Eastside** vs All Saints | **3  4** |
| **Eastside** vs Forestvale | **3  1** | **Green Valley** vs Eastside | **0  2** | **Cresthill** vs Highfields | | **2  2** | **Green Valley** vs Byfield | **0  3** |
| **Highfields** vs Green Valley | **0  6** | **Highfields** vs Forestvale | **0  1** | **Forestvale** vs Green Valley | | **2  3** | **Forestvale** vs Cresthill | **1  1** |

The data in Table 2 can be used to calculate each team’s points **for** and points **against** for their **home** games and their **away** games.

The calculations for one team have been completed for you below.

Sample calculation: Home and away results for All Saints

|  |
| --- |
| All Saints *home* game points *for:* 4 + 5 = 9  All Saints *home* game points *against*: 1 + 3 = 4  All Saints *away* game points *for*: 5 + 4 = 9  All Saints *away* game points *against*: 0 + 3 = 3 |

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| Icons_individual_task | Work individually to complete Questions 2 and 3. |

Table 3 analyses goals scored in the game. Some calculations have been done for you.  
You may need notepaper and a number line to work out the missing data.

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1. Complete Table 3. For each team:
   1. calculate **for** and **against** points for **home** and **away** games   
      (look at the sample calculation on the previous page to help you)
   2. calculate the **total goal difference** at the end of Week 4 by:

* adding the total number of goals scored *for*
* then subtracting the total number of goals scored *against*.

**Hint:** Some teams will have a goal difference that is a negative number.

Table 3: Interschool soccer competition goal analysis

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| School | Home games | | Away games | | Total goal difference |
| for | against | for | against |
| All Saints | 9 | 4 | 9 | 3 | 11 |
| Byfield |  |  | 4 | 4 |  |
| Cresthill | 5 | 2 |  |  |  |
| Dalby |  |  | 0 | 5 |  |
| Eastside | 6 | 5 |  |  |  |
| Forestvale |  |  | 2 | 3 |  |
| Green Valley | 0 | 5 |  |  |  |
| Highfields |  |  | 4 | 3 |  |

On the number line at the right, each line represents 1.

1. Complete the number line by following the steps below.
   1. Decide on the best place to put zero, and write it on the left side of the number line.
   2. Write numerals to show where each school’s goal difference fits on the line.
   3. Add a letter (**A** to **H**) next to the number that represents each school’s goal difference  
      on the right side of the number line.

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Section 3. Interpreting data

Focus question: How does the table help us to compare teams?

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| Icons_individual_task | Work individually to complete Section 3. |

You can use the data in Table 3 to make judgments about how the teams are performing.

Analyse the data to see which teams have the best **attack** and **defence**, considering:

* a good **attacking** team usually scores a lot of goals
* a good **defending** team has very few goals scored against them.

1. Who is the strongest **attacking** team?

Explain the evidence that supports your opinion. Show any calculations you used.

1. Who is the strongest **defending** team?

Explain the evidence that supports your opinion. Show any calculations you used.

1. Think about whether there is an advantage in playing games at **home** in this competition.
   1. CompleteTable 4 below to analyse the data.

Table 4: Home and away results

|  |  |  |  |
| --- | --- | --- | --- |
| School | Wins at home | Wins away | Difference  ( + or – ) |
| All Saints |  |  |  |
| Byfield |  |  |  |
| Cresthill |  |  |  |
| Dalby |  |  |  |
| Eastside |  |  |  |
| Forestvale |  |  |  |
| Green Valley |  |  |  |
| Highfields |  |  |  |
| Total |  |  |  |

* 1. Use your data to explain whether it was an **advantage** to play at home.

Another way to analyse the data is to find out which teams are improving as the season progresses.

Think about how the data could help you to judge whether a team is performing better now than at the beginning of the season.

1. Which team has **improved** the most throughout the competition?
   1. Use Table 5 to help analyse the data. Decide what headings and columns you will use.

Table 5: Most improved teams

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| School |  |  |  |  |  |  |
| All Saints |  |  |  |  |  |  |
| Byfield |  |  |  |  |  |  |
| Cresthill |  |  |  |  |  |  |
| Dalby |  |  |  |  |  |  |
| Eastside |  |  |  |  |  |  |
| Forestvale |  |  |  |  |  |  |
| Green Valley |  |  |  |  |  |  |
| Highfields |  |  |  |  |  |  |

* 1. Use your data to explain which team has **improved** the most.

Data can’t predict the future, but it can help us to judge the most likely outcome.

1. Analyse the data to **predict** who is most likely to win the games in Week 5.

For each prediction, use your data to explain why you have chosen that team.

Table 6: Predictions

|  |  |  |
| --- | --- | --- |
| Week 5 | Prediction  *Who is most likely to win?* | Evidence  *How does your data support your prediction?  Explain why.* |
| All Saints vs Forestvale |  |  |
| Byfield vs Highfields |  |  |
| Cresthill vs Green Valley |  |  |
| Dalby vs Eastside |  |  |