



Number crunch

Key Learning Area

Mathematics

English

Year levels

Years 5–8

Activity overview

Students engage in a series of activities designed to demonstrate the important role numbers play in communicating information. Students will investigate the scoring systems used in a variety of sports, complete premiership ladders from the 1904 and 2004 Australian football seasons and create bar graphs to depict the difference in team performance of clubs who had teams participating in both these seasons.

Time required

Approximately 150 minutes

Materials

- *Worksheet 1: The sport we play*
- *Worksheet 2: One hundred years on*
- Coloured pencils, ruler, graph paper
- Optional: Images in Resources on the AFL CD-ROM

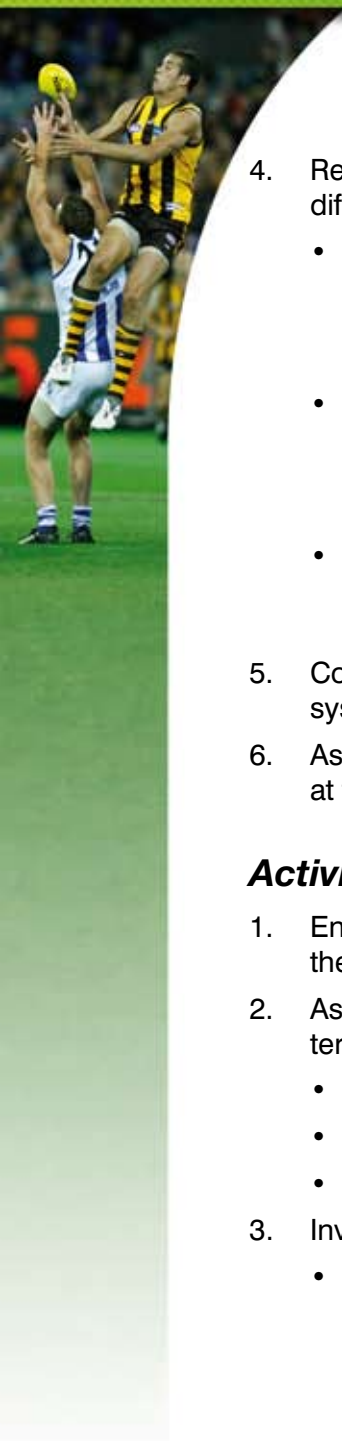
Preparation

Photocopy one copy of each worksheet per student.

Activity steps

Activity 1

1. Engage students in a discussion about the sports they play and watch.
2. Check whether any students play in a sport competition.
 - Ask for several examples, including summer, winter and all-year sports, played by people as individuals, in pairs or in teams.
3. Organise students into mixed gender workgroups of three or four and provide each student with a copy of *Worksheet 1: The sports we play*.
 - Ask students to work cooperatively in their groups to complete the worksheet.
 - Note: Students may be given an extended opportunity to research this topic using school library resources or information and communication technology (CD-ROM encyclopaedias, the Internet).



4. Regroup students and lead a discussion on how scoring is organised in different sports.
 - Ask for a few examples from students of the different names given to a score in a sport or event they are familiar with (for example, goals and points in Australian Football League, strokes in golf, seconds in a 100-metre sprint, goals in netball).
 - Challenge students to provide examples of scoring systems in sports that have been tried or changed over time (for example the AFL introduced a 9-point goal in the 2005 pre-season competition and this currently continues to apply).
 - Ask students to work in their groups to list the scoring systems and some scoring terms used in each of the sports listed by them on *Worksheet 1: The sports we play*.
5. Conclude the activity with a whole-class discussion of the types of scoring systems and terms used in sports identified by the various workgroups.
6. As an at-home activity, ask students to complete the homework challenge at the end of Worksheet 1 related to International Rules football.

Activity 2

1. Encourage students to think back to the lessons during which they considered the various scoring systems used in sports.
2. Ask students to recall a few examples of sports, scoring systems and scoring terms for sports:
 - played using an oval-shaped ball
 - played on a court
 - played using a bat.
3. Invite students to answer the homework challenge questions.
 - In International Rules football, the scoring system is ...? (points)
(In International Rules football:
 - an over adds 3 points to the score.
 - an under adds 6 points to the score.
 - a point or behind adds 1 point to the score.)
4. Engage students in a discussion about how teams are ranked during a sport season.
5. Ask students for common words or terms that are used to rank teams. (In Australian football, common terms are 'the ladder', 'the premiership table', 'the eight' or simply 'the table'.)



6. Ask students a series of questions to lead them to an understanding of how an Australian football premierships ladder is constructed.
 - What data (information) is included in an Australian football premierships ladder? (Teams; games played; games won, lost and drawn, points scored for and against the team; percentage; total premierships points.)
 - For each game won, how many points is a team awarded? (Four)
 - For each game lost, how many points is a team awarded? (Zero)
 - If a game is a draw (tie), how many points is each team awarded? (Two)
 - How is a team's percentage calculated in an Australian football premierships ladder? By dividing the total points scored by a team (called For) by the total points scored against the team (called Against) in all games up to that time. If after ten rounds (games), a team had scored 1,000 points and had 800 points scored against it, the percentage would be 125 per cent ($1000 \div 800$). Note: Students need to be alerted that the result of the division ($1000 \div 800$) needs to be multiplied by 100 to achieve a percentage.
7. Organise students in groups of three or four and provide each student with a copy of *Worksheet 2: One hundred years on*.
 - Ask students to work in their groups to complete the 1904 VFL premierships ladder and the 2004 AFL premierships ladder by calculating and inserting the missing values in the table.
8. When each workgroup has completed the 1904 VFL premierships ladder and 2004 AFL premierships ladder, direct students to work *individually* to:
 - use graph paper and create a bar graph comparing for one category the performance of the teams who competed in both the in 1904 and 2004 seasons (for example, premierships points, points scored for the team, points scored against the team, points for divided by points against percentage).
9. Conclude the activity with a whole-class discussion of:
 - the differences in performance of teams who played in the 1904 and 2004 seasons (for example, number of points scored for a team during a season)
 - the many ways numbers (data) are used to communicate information in sport (for example, for construction of premierships ladders, for scoring, for measuring player performance (such as Brownlow medal votes awarded to a player)).

Note: This activity can be modified to become a weekly activity whereby students regularly update their premierships ladder for the current AFL season using the results from the previous round of games.



Assessment ideas

- Provide students with an edited 'premiership ladder' for a local sport competition (similar to *Worksheet 2: One hundred years on*). Alternatively, have students devise their own virtual premiership ladder for a sport competition they are interested in.
- Assess student work for evidence of achievement of relevant learning outcomes related to multiplication and division.
- As an at-home activity with the help of family members, or as a task using the resources available in the library, ask students to:
 - find three other sports in which players use skills similar to the skills used by Australian football players of the past or present (for example, a place kick in American football)
 - using the Internet, research how important these skills are compared with their importance for Australian Football.
- Provide a report of their findings in an appropriate presentation format (oral, poster, PowerPoint™ or written).

Optional extension

- Direct students to create their own 'number crunches' using the various information sources (data) available at the AFL website <http://afl.com.au>. For example, students could:
 - create a bar graph of game attendance at 10-year intervals for Australian football from 1897 to 2004
 - create a bar graph of game attendance during the 10-year spans 1912–1921 and 1936–1945 and explain why attendance declined during these periods of Australian history
 - use a current AFL premiership ladder and create a number puzzle like that included in *Worksheet 2* for other students to solve.



Worksheet 1: The sports we play

Name: _____

Categories of sports	Scoring system used in sport	Terms used in scoring system
Example American football (Gridiron)	Points	Touch-down – 6 points; Conversion – 1 point; Field goal – 3 points
Sports played using an oval-shaped ball 1 2 3 4		
Sports played in water 1 2 3 4		
Sports played using a round ball 1 2 3 4		
Sports played using a bat 1 2 3 4		

Number crunch



Categories of sports	Scoring system used in sport	Terms used in scoring system
Sports played on a court 1 2 3 4		
Sports played (choose a category) 1 2 3 4		
*In International Rules football , the scoring system is:	Fill in the missing information for the scoring system used in International Rules football . An over adds _____ points to the score. An _____ adds 6 points to the score. A _____ adds 1 point to the score.	

Visit <http://afl.com.au> to search for information about **International Rules football**.



Worksheet 2: One hundred years on

Name: _____

The 2004 AFL premiership ladder at the end of Round 22

	Team	P	W	D	L	F	A	%	Total
1	Port Adelaide	22	17	0	5	2413	1823	132.36	
2	Brisbane Lions	22		0	6	2447	1783	137.24	64
3	St Kilda		16	0	6	2443	1909	127.97	64
4	Geelong		15	0	7	2088	1741	119.93	
5	Melbourne	22	14	0	8	2127	1900		56
6	Sydney Swans	22	13		9	1938	1804	107.43	
7	West Coast Eagles	22		0	9	2042	1968	103.76	
8	Essendon		12	0		2282	2228	102.42	
9	Fremantle	22	11			1882	1870	100.64	44
10	Kangaroos	22		0	12	2142	2135	100.33	
11	Carlton	22	10	0	12	1825	2235		40
12	Adelaide				14	1950	2039	95.64	32
13	Collingwood	22	8	0		1899	2082	91.21	32
14	Western Bulldogs	22	5	0	17	1957	2459		
15	Hawthorn	22	4	0		1668	2375	70.23	16
16	Richmond	22		0	18	1693	2445	69.24	

P = played | W = wins | D = draws | L = losses | F = for | A = against

The 1904 VFL premiership ladder

	Team	P	W	L	D	F	A	%	Total
1	Fitzroy	17	12		0	954		128.23	48
2	Carlton	17	10			804	762	105.51	42
3	Collingwood	17		7	0	867	741	117.00	
4	Essendon	17	10		0	835		113.14	40
5	South Melbourne	17		7	0	831	766		
6	Melbourne	17	8	9	0	947	840		32
7	Geelong	17	4	12		726	940	77.23	18
8	St Kilda	17	3	14	0	708		62.05	

Number crunch



Number crunch