Sport and Recreation

If you are an employee or a volunteer in the sport and recreation industry you might be responsible for fitness training, or coach a team, or organize sporting events, or be responsible for recording, analyzing and reporting sporting results.

Check that you understand the following sporting terms.

Terms

cricket over, strike rate, interchange of players, pitch, analogue stopwatch, draw, draft system, restraint of trade

Review the sections on Number in the "Overview - Mathematical Skills" at the back of this book.

Activity 65

Context

You are sorting a number of terms, which have been confused.

1. Choose the description from the first column to match the information in the second column.

Description	Item
Swimming pool capacity	270 m^2
Tennis court area	2 m or 200 cm
Tall athlete	100,000 L or 100 kL
Heavy wrestler	40 kg
Small gymnast	180 kg
Number of players in a soccer team	100 m
Length of time for a rugby league match	37°
Olympic swimming pool length	11
Normal body temperature	80 minutes

2. Work in small groups to share your knowledge of mathematical terms used in sport. Construct another activity like the one above, and challenge others in your group to match the descriptions and information.

Activity 66

Context

You work for a newspaper and have to understand how numerical data is listed for a number of sports.

Cricket

1. A team needs 261 to win. There are 27 overs to play. How many runs per over are needed?

2. A batter scores 66 runs off 39 balls. What is the strike rate?

3. The ball is travelling at 140 km/hr how long is the reaction time for the batsman to make a decision. The pitch is 22 yards long. To convert yards to metres, multiply by 0.9144.

Football

Rugby League

1. When New South Wales and Queensland play the State of Origin league series, many of the players for Queensland come from the one club. Complete the following table and discuss as a group the impact on the club, of playing for State of Origin before and after 2000. After 2000, the rules for interchange of players changed so that a maximum of 12 changes could occur.

	Before State of Origin					**After State of Origin**				
	Played	Won	Lost	Drew	Win%	Played	Won	Lost	Drew	Win%
2000	13	9	2	2	69.2%	11	10	1	0	90.9%
2001	11	8	3	0		14	4	10	0	
2002	9	8	0	1		13	7	6	0	
2003	12	9	3	0		9	1	8	0	
Totals										

2. Some sports use a draft system to redistribute players and sign contracts. At the end of a season, those players released by clubs are placed on a draft list. The team that finishes last has first choice of selecting players from the draft list. The team that finishes second last has second choice and so on. The aim is to have more even competition. Some sporting bodies do not use such a system because of concerns over restraint of trade and freedom to contract.

If there are 14 clubs and only 9 players on the draft list, and each club chooses one player, which clubs will not have a turn at choosing a player?

3. A football player is offered a contract of $125,000 per annum. He is expected to play 23 games in a season, plus semi finals, finals and representative games. It is estimated he will play 26 games in the year. How much, on average, does he earn per game?

4. The player has also been offered a sponsorship of $16,500 a year. He does not want to earn more than $140,000 because of salary caps. Should he accept the sponsorship?

Australian Rules

Complete the table to record the results for the weekend games. A goal earns 6 points and a behind is one point.

Team	Goals and Points		Behinds and Points		Total
Kangaroos	15		6		
W Bulldogs	12		8		
Essendon	13		9		
Sydney	20		5		
St Kilda	6		10		
Brisbane Lions	22		9		
West Coast	20		5		
Freemantle	6		9		
Geelong	11		11		
Adelaide	9		12		
Melbourne	9		13		
Carlton	8		8		
Port Adelaide	11		7		
Collingwood	10		11		

Soccer

Complete the following table to track the success of a local team. If 3 points are awarded for a win and 1 for a draw, calculate the totals. What pattern of performance do you note?

Game	Goals for	Goals against	Win/Loss/Draw	Total
1	3	2		
2	2	1		
3	1	0		
4	4	4		
5	3	5		
6	3	5		
7	5	4		
8	3	0		
9	2	1		
10	1	0		

Rugby Union

Five players are up for selection in the Wallaby's team. Analyse the following information and make a decision as to which player you would select. Provide reasons for your answer and use percentages or comparisons to illustrate your point. For example, Player 3 is the highest try scorer and has scored 3.5 times more tries than player 5.

Player	Games	Runs	Metres gained	Tackles broken	Missed tackles	Tries
1	9	79	905	35	30	6
2	8	76	650	29	8	4
3	9	65	817	20	11	7
4	9	144	1763	33	15	5
5	9	55	409	16	11	2

Athletics

1. Draw to scale an athletics track that has a 100 m straight section on both sides. The distance on the outside of the outside lane is 524 metres. There are 8 tracks, 1.2 metres wide.

2. Mark the track for start and finish of:

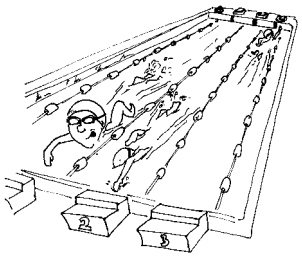
- the 50 metre sprint
- the 100 metre sprint
- the 200 metre sprint
- the 400 metre sprint
- the 1500 metre race

3. Draw an illustration of an analogue stopwatch. The face should show indicators of seconds in minutes (60 separate markings). A smaller circle on the face of the watch records minutes (30 separate markings). Use a black pen to indicate 55.5 seconds and another coloured pen to indicate 2 minutes 35 seconds.

4. The following results were recorded for the 50 metre sprint at an aged carnival. Which child ran the fastest time? Who came second and third?

- Emma ran 25 seconds
- Osam ran .48 of a minute
- Julie ran 3 seconds better than her best time of 29 seconds
- Ann was 2 seconds off her best time of 28 seconds

Swimming



1. Jodie swims in the 50 m and 200 m freestyle. Her best time for the 50 m is 22.1 seconds. To do her personal best in the 200 m she has to swim 1.5 seconds slower in the second and third legs, and 1.5 seconds faster in the last leg. Prepare a list of the times she should aim for when swimming the 200 m race.

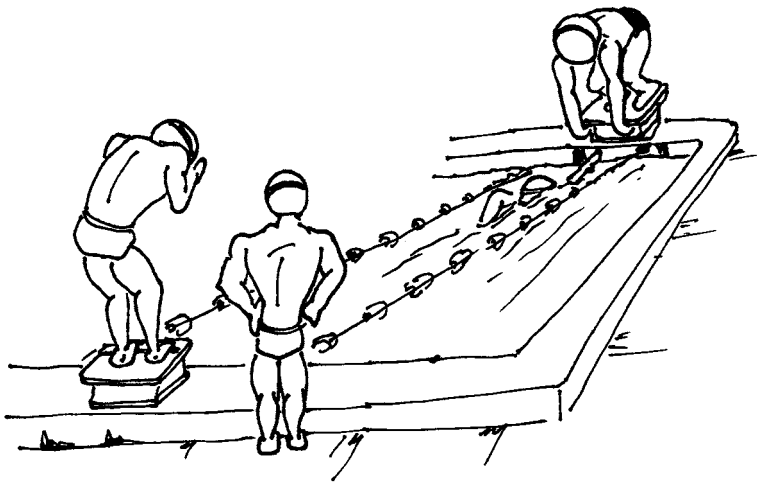
2. Ben has recorded the following times for the 50 metre freestyle sprint at each Saturday meet. Graph his progress over the ten weeks.

24.5 seconds; 32 seconds; 25 seconds; 25.3 seconds; 29 seconds; 28.5 seconds; 30.1 seconds; 32.6 seconds; 25.4 seconds; 22.9 seconds.

3. You are helping the coach decide the order of swimmers in the 4 x 50 metre relay. You want the fastest swimmer to swim last and the second fastest swimmer to start the race. The pool is 50 metres long. Where will the swimmers stand? Draw a diagram to illustrate your answer.

Jane has been swimming 50 metres in 25.68 seconds; Eve swims 26.62 seconds; Jenny's best time is 25.86 seconds and Tina swims 26.12 seconds.

4. Explain the error in the illustration below, assuming the first swimmer is in the water.



Golf

1. A golfer has to reach the tee by hitting around a sand trap. She hits 130 m and then 120 m forming an angle of 115^{o}. What is the direct distance between the tee and the hole?

2. It costs $678 to join a local golf club for full membership and 75% of this to join for Monday to Friday. How much is the lesser fee?

3. A golfer plays 18 holes on a nine hole golf course. He usually takes 2 hours 20 minutes to play the first 9 holes. The time increases by 12% when playing the second 9 holes. How long does it take to play the whole game?

4. Draw a map of a nine hole golf course. Mark all angles as a shot changes direction. Indicate whether the ball is travelling north, south, east or west.

Agriculture

Test your knowledge of the following terms before you complete the activities on working in the agriculture industry.

Terms

plant nursery, insecticide, nitrogen, phosphorus, potassium, sulphur, magnesium, boron, copper, iron, annual, perennial, fungus

Activity 67

Context

You manage a cattle property.

The cost of buying calves is $153.60. The average cost of raising a calf is $74.30 per year. You want to make 50% on the cost price of each calf when selling (the animal is two years older when sold). What is your selling price?

Activity 68

Context

You work in a plant nursery.

1. A 500 g container of the plant release food contains the following components:

Nitrogen (N)	7.9% nitrate nitrogen 7.1% ammonical nitrogen
4.4% Phosphorus (P)	3.3% water
10% Potassium (K)	
2.5% Sulphur (S)	
1.2% Magnessium (Mg)	
0.02% Boron (B)	
0.05% Copper (Cu)	
Iron (Fe)	0.20% presents as Iron Sulphate 0.20% presents as Iron EDTA

a. What is the total amount of Nitrogen in the 500 g container?

b. What is the total amount of Iron?

c. How much more Phosphorus than Boron is present – as a percentage?

d. List the components from highest to lowest using the relevant symbols.

2. You are comparing the costs of different types of mulch for gardens. If the following are of equal benefit, which would you choose? You need enough to cover 120 square metres. Two kilograms of mulch covers nine square metres.

a. A 6 kg bag of mushroom mulch which costs $32

b. An 8 kg bag of sugarcane mulch which costs $42

c. Fine grade mulch, which can only be purchased in 2 kg bags for $5.90 per kg.