

This topic is of great interest to many (but not all) pupils.

The main themes running through these sheets are the interrogation of databases, and the presentation and interpretation of results. The topics cover a wide variety of sports.

In terms of the National Curriculum, the work is based on the Attainment Target, **Handling Data**, with particular emphasis on the second strand, "*Collecting, representing and interpreting data*". The relevant *Yearly Teaching Programmes* in the National Numeracy Framework are given in the chart below

Topic	Sheet number	National Numeracy Framework reference
<b>Introduction</b>	<b>0</b>	
<b>Olympic data search</b>	<b>1</b>	6/E1 and 5/D1
<b>Netball</b>	<b>2</b>	5/E1
<b>Football</b>	<b>3</b>	6/E1
<b>Table-tennis</b>	<b>4</b>	5/C1 and 5/E1
<b>Exercise and fitness</b>	<b>5</b>	6/C1 and 6/B3
<b>Olympic long jump</b>	<b>6</b>	6/E1
<b>World records</b>	<b>7</b>	6/E1 and 5/D1
<b>Swimming</b>	<b>8</b>	6/E1
<b>Resource sheets:</b>		
<b>Olympic data</b>	<b>9</b>	
<b>Data recording sheet</b>	<b>10</b>	
<b>Solutions</b>		

You will need sheet *Sports 9 : Olympic Data*, which gives some results from the 2000 Olympic Games.

The countries are shown only by a few letters. They can be identified from the table on the right.

## Problems

1. Which country won the most gold medals?
2. How many silver medals did South Africa win?
3. How many medals (gold + silver) did Kenya win?
4. List all the events in which Great Britain won any medals (gold or silver).
5. In the Women's 100 metres and 200 metres the same runner (Jones) won both gold medals. Give the name and country of another runner who won two medals.
6. By how many seconds did the winner of the men's Marathon beat the runner who was second?
7. How much faster (in time) was the winner of the men's events than the winner of the women's events for
  - (i) the 1500 metres
  - (ii) the 10 000 metres
  - (iii) the marathon?
8. In the men's Javelin event, how much further did the winner throw than the one who was second?
9. How much further did the winner of the men's Shot Put competition throw than the winner of the women's competition?
10. Why does it appear that the same results were obtained by gold and silver medalists in some sports?

Country	Identification
ALG	Algeria
AUS	Australia
AUT	Austria
BAH	Bahamas
BUL	Bulgaria
BLR	Belarus
CUB	Cuba
CZE	Czechoslovakia
DEN	Denmark
ETH	Ethiopia
GBR	Great Britain
GER	Germany
GRE	Greece
IRE	Ireland
ITA	Italy
JAM	Jamaica
JPN	Japan
KEN	Kenya
KSA	Saudi Arabia
KSK	Kazakstan
LTU	Lithuania
MOR	Morocco
MOZ	Mozambique
NGR	Nigeria
NOR	Norway
ROM	Romania
RSA	South Africa
RUS	Russia
TRI	Trinidad
USA	United States

In the town of Wellend there are four netball teams.

The teams are

*Dodgers   Rangers   Tigers   Vipers*

and all play in the same league; that is, each team plays all of the other teams twice. One game is played on their own ground, this is known as a **home** game. The other is played on the other team's ground, this is known as an **away** game.

The table on the right shows all the results of one season's games and the points scored by each team.

The first named team is the **home** team and the other is the **away** team.

Dodgers 2	Rangers 6
Dodgers 7	Tigers 4
Dodgers 3	Vipers 3
Rangers 8	Dodgers 3
Rangers 5	Tigers 3
Rangers 6	Vipers 4
Tigers 7	Dodgers 3
Tigers 4	Rangers 3
Tigers 3	Vipers 6
Vipers 2	Dodgers 2
Vipers 7	Rangers 2
Vipers 8	Tigers 0

## Problems

1. How many games did the Dodgers play at home?
2. How many games did the Dodgers play away?
3. How many goals in total did the Tigers score in *all* their games?
4. How many games did the Rangers win?
5. How many games did the Vipers lose?
6. How many games were drawn?



### Activity 1

*Make a copy of the table on the right and fill it in to show how many games each team played and then how many games each team won, drew or lost. Your figures should add up to the totals at the bottom. In this league, 3 points are given for a win and 1 point for a draw. Work out how many points each team got and write that in the last column of your table.*

	Played	Won	Drawn	Lost	Points
Dodgers	6				
Rangers					
Tigers					
Vipers					
Totals	24	10	4	10	

### Activity 2

*Write out the teams in order of their points score (highest at the top).*

The table shows the results of the games played over the weekend of 17/18 March 2001 by teams in the Premier Football League.

The first-named team is the **home** team and the second-named team is the **away** team.

The numbers in the middle show how many goals each team scored.

Aston Villa	0	0	Arsenal
Liverpool	1	1	Derby
Bradford Cty	2	2	Man City
Charlton Ath	1	2	Leeds Utd
Chelsea	2	4	Sunderland
Man United	2	0	Leicester
Newcastle	1	2	Middlesbro'
Southampton	1	0	Everton
Tottenham	3	0	Coventry
WestHam	0	1	Ipswich

**Problems**

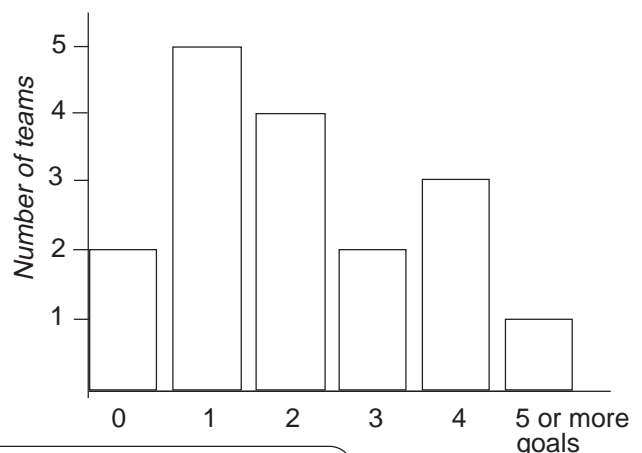
1. How many games finished as a win for the home team?
2. How many finished as a win for the away team?
3. How many games finished as a draw?
4. What was the total number of goals scored by the home teams?
5. How many goals were scored by the away teams?
6. How many teams scored  
0 goals, 1 goal,  
2 goals, 3 goals,  
4 goals,  
5 or more goals?

**Activity 1**

*Draw a bar chart like the one below, to show the number of teams that scored the various numbers of goals. How many goals were scored most often?*

**Activity 2**

*To find the mean (average) number of goals scored by all teams, you must divide the total number of goals scored by how many teams there were. Work out the mean number of goals scored by all the teams.*



**Activity 3**

*Using results from one weekend's matches in a league, enter the scores (not the team names) on the Data Recording Sheet Sports : 10. Now work out the mean number of goals scored. Do the same for another league and compare the results.*

Corrinne and Jasmine have a table-tennis match with Kelvin and Mark. Each of the girls has to play against each of the boys.

### Problems

1. How many games will they have to play?
2. The first two games are Corrinne against Kelvin and Jasmine against Mark.  
Write out the players for the other games.
3. Milltown and Kelstone Youth Clubs are playing each other at table-tennis. Each player has to play 1 game against each of the players in the other team.  
How many games will be needed?
4. How many games would be needed if there were 4 players in each team?

<b>Milldown Youth Club Table-tennis team</b>
--

Rachel
Ahmet
Ollie

<b>Kelstone Youth Club Table-tennis team</b>
--

John
Karen
Tim

Rachel	v	John
Ahmet	v	Karen
Ollie	v	Tim

### Activity

*The players for the first three games are taken in order from the team lists. Write out a possible playing order for the other games.*

*There are several ways of doing this; try to find a way so that no player has to play two games with one immediately after the other.*

### Problems

5. In the Tolbridge Youth Club there are 4 players (Robert, Kim, Benny and Eldred) who are all good enough to be in the table-tennis team but only 3 are needed.

It is decided that each one should play 1 game against each of the others, with the winner of each game scoring 1 point. Those with the most points will be in the team.

- (i) How many games will be needed?
- (ii) What is the largest total of points anyone can get?

<b>Games</b>
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Robert	v	Kim
Benny	v	Eldred
Kim	v	Benny

Everyone knows that exercise helps to keep you fit, but how can you measure how fit you are?

Here is one simple method which needs only a firm platform (stool or bench) of the correct height and a stop-watch, or a watch that shows seconds. It is best done by working in pairs.

You need to be able to count a pulse rate for 30 seconds.

Practise this **before** doing the test.

Find a suitable platform.

It must be very firm so that it will not fall over or move, and it must be roughly the height shown in the table.

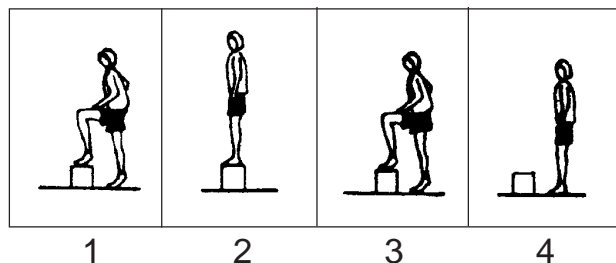
To do the test, one person acts as the 'controller', the other as the 'exerciser'.

Height of platform and time test is to be kept up according to age and sex		
Age	Height in cm	Time in seconds
Girls 12 to 18	40	240
Boys 12 to 18	45	240
All 8 to 12	35	180
All under 8	35	120

The controller's job is to call out "1-2-3-4" repeatedly in a regular way so that "1" comes every 2 seconds.

Starting with both feet on the floor, the exerciser has to move in this way:

- on 1 – put one foot on the platform
- 2 – the other foot on the platform
- 3 – put one foot on the floor
- 4 – put the other foot on the floor and keep it going!



When the correct time (from the chart above) is up, the controller stops the test and the exerciser sits down and rests for one minute.

Then a 30-second pulse count is taken – rest for 30 seconds

do another 30-second pulse count – rest for 30 seconds

do another 30-second pulse count.

Add the three pulse counts together for a **total** pulse count.

Multiply the time of the test (in seconds) by 50 and divide by the total pulse count, to find the fitness index.

Work out the grade from the table opposite.

How well did the 'exerciser' do?

Fitness index	Grade
Less than 50	Very poor
50 to 60	Poor
60 to 70	Fair
70 to 80	Good
80 to 90	Excellent
Over 90	Well!!!

One of the main jumping events in the Olympic Games is the **long jump**. There are separate events for men and women.

The table below shows how far the winners jumped in those events in the years 1948 to 2000.

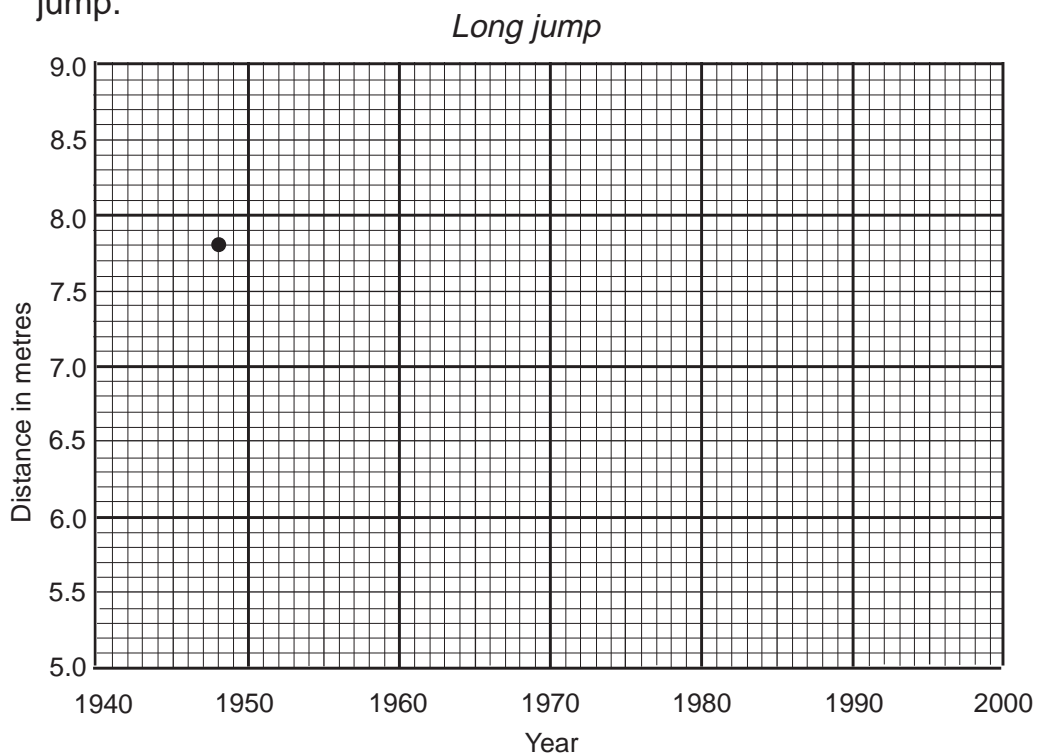
Year	Long Jump	
	Men	Women
1948	7.8	5.7
1952	7.6	6.2
1956	7.8	6.4
1960	8.1	6.8
1964	8.1	6.8
1968	8.9	6.8
1972	8.2	6.8
1976	8.4	6.7
1980	8.5	7.1
1984	8.5	7.0
1988	8.7	7.4
1992	8.7	7.1
1996	8.5	7.1
2000	8.6	7.0

### Problem

The first result (for the men's long jump) is plotted on the graph below. It is 7.8 metres in 1948.

Plot the rest of the results for the men's long jump.

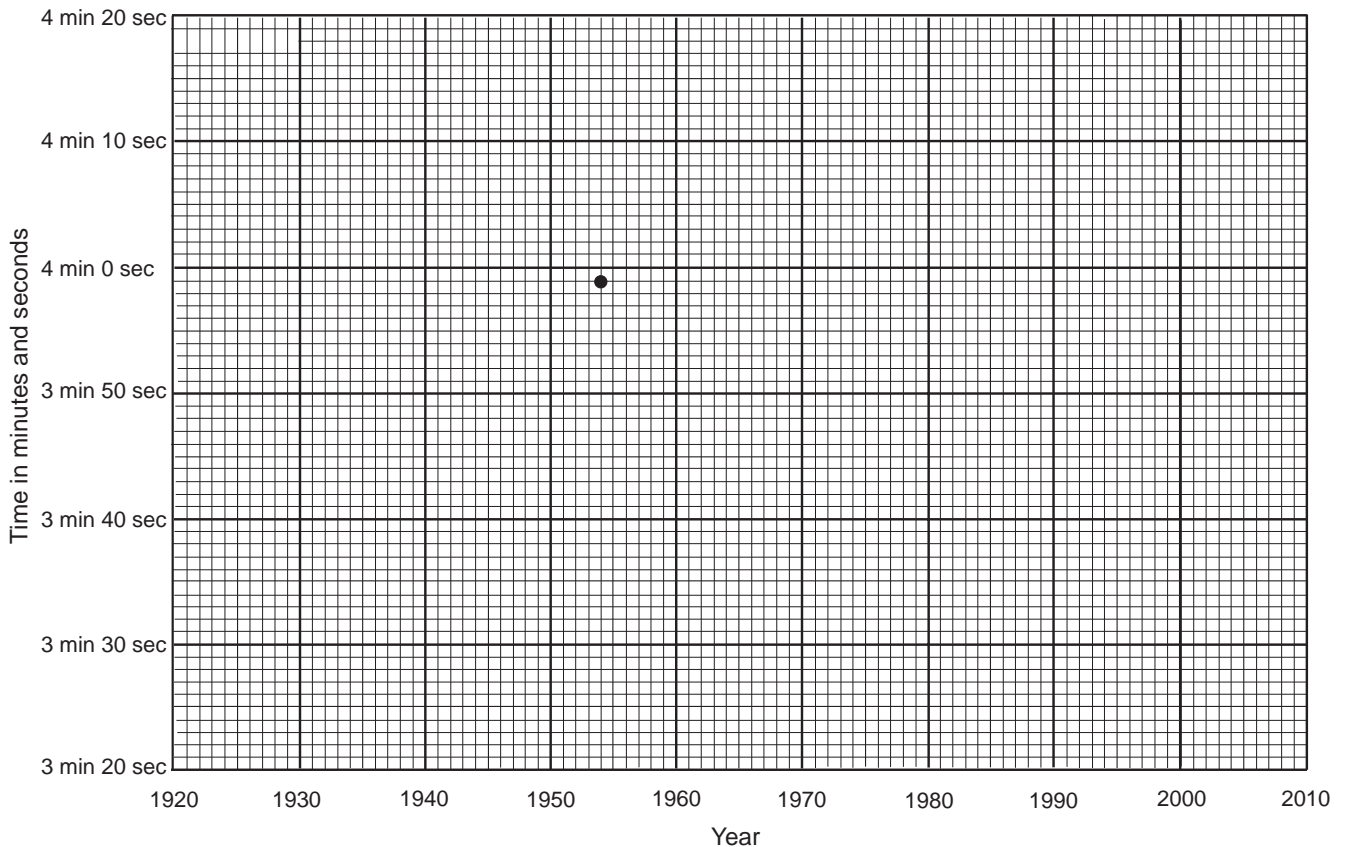
Using a different colour, plot the results for the women's long jump.



One of the most well-known of world records is that for running the mile. The record was first set in 1913 when **John Paul Jones** of the USA ran the mile in 4 minutes 14 seconds. The record has been broken 30 times since then.

Perhaps the most famous mile record of all was set in 1954 when the mile was first run in less than 4 minutes by **Roger Bannister** of Great Britain.

That particular record is plotted on the graph below.



### Activity

Here are some other record breaking times, all given to the nearest second:

Paavo Nurmi	1923	4 min 10 sec
Glen Cunningham	1934	4 min 7 sec
Arne Andersson	1944	4 min 2 sec
Michel Jazy	1965	3 min 54 sec
John Walker	1975	3 min 50 sec
Steve Cram	1985	3 min 46 sec
Noureddine Morceli	1993	3 min 44 sec
Hicham El-Guerrouj	1999	3 min 43 sec

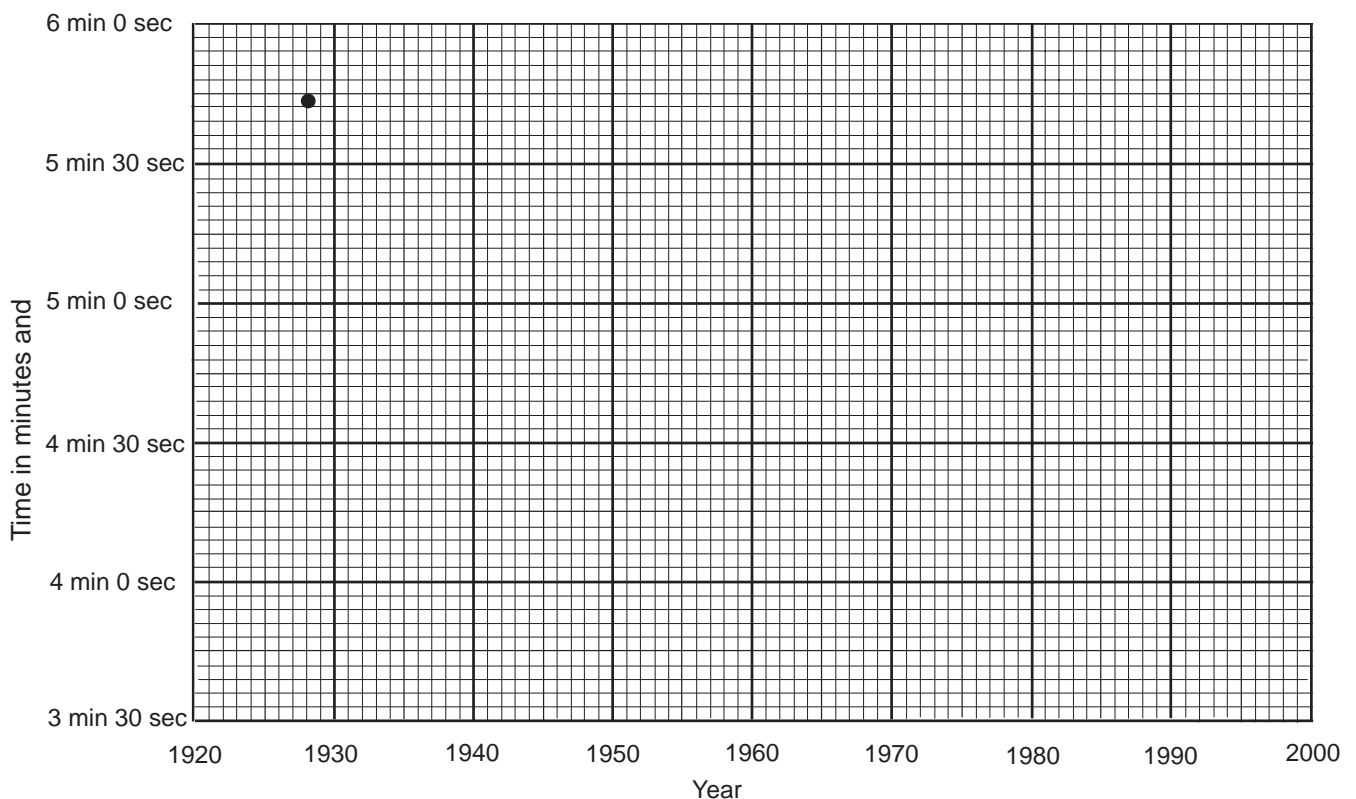
*Plot these records on the graph above. Make a prediction as to what the world record for the mile might be in the year 2010.*



One of the events in the Olympic Games is the 400 metres, Freestyle Swimming. The tables below give the names of the winners for the years 1928 to 2000 and the time they took (to the nearest second).

Women			Men		
Year	Name	Time	Year	Name	Time
1928	Martha Norelius	5 min 43 sec	1928	Alberto Zorilla	5 min 1 sec
1932	Helene Madison	5 min 29 sec	1932	Buster Crabbe	4 min 48 sec
1936	Henrika Mastenbroek	5 min 28 sec	1936	Jack Medica	4 min 45 sec
1948	Ann Curtis	5 min 18 sec	1948	William Smith	4 min 41 sec
1952	Valerie Gyenge	5 min 12 sec	1952	Jean Boiteux	4 min 31 sec
1956	Lorraine Crapp	4 min 55 sec	1956	Murray Rose	4 min 27 sec
1960	Chris Von Saltza	4 min 51 sec	1960	Murray Rose	4 min 18 sec
1964	Virginia Deunkel	4 min 43 sec	1964	Don Schollander	4 min 12 sec
1968	Debbie Meyer	4 min 32 sec	1968	Mike Burton	4 min 9 sec
1972	Shane Gould	4 min 19 sec	1972	Brad Cooper	4 min 0 sec
1976	Petra Thuemer	4 min 10 sec	1976	Brian Goodell	3 min 52 sec
1980	Ines Diers	4 min 9 sec	1980	Vladimir Salnikov	3 min 51 sec
1984	Tiffany Cohen	4 min 7 sec	1984	George De Carlo	3 min 51 sec
1988	Janet Evans	4 min 4 sec	1988	Uwe Dassier	3 min 47 sec
1992	D. Hase	4 min 7 sec	1992	E. Sadevyi	3 min 45 sec
1996	Michelle Smith	4 min 7 sec	1996	D. Loader	3 min 48 sec
2000	B. Bennett	4 min 6 sec	2000	I. Thorpe	3 min 41 sec

The first women's time (5 min 43 sec in 1928) is plotted on the graph below. Plot the rest of the times for the women and then, in a different colour, plot all the times for the men.



Here are some results from the 2000 Olympic Games in Sydney.

<i>Men's Events</i>						
Event	<i>First (gold medal)</i>			<i>Second (silver medal)</i>		
100 metres	Greene	USA	10 sec	Bolden	TRI	10 sec
200 metres	Kenteris	GRE	20 sec	Campbell	GBR	20 sec
400 metres	Johnson	USA	44 sec	Harrison	USA	44 sec
800 metres	Schumann	GER	1 min 45 sec	Kipteker	DEN	1 min 45 sec
1500 metres	Ngeny	KEN	3 min 32 sec	EL-Guerrouj	MOR	3 min 32 sec
5000 metres	Wolde	ETH	13 min 35 sec	Saidi-Sief	ALG	13 min 36 sec
10,000 metres	Gebresilasie	ETH	27 min 18 sec	Tergat	KEN	27 min 18 sec
Marathon	Abera	ETH	2 hr 10 min 11 sec	Wainaina	KEN	2 hr 10 min 31 sec
110 m hurdles	Garcia	CUB	13 sec	Trammel	USA	13 sec
400 m hurdles	Taylor	USA	48 sec	Al-Somaly	KSA	48 sec
High Jump	Kljugin	RUS	2.4 metres	Sotomayor	CUB	2.3 metres
Long Jump	Pedroso	CUB	8.6 metres	Taurima	AUS	8.5 metres
Triple Jump	Edwards	GBR	17.7 metres	Garcia	CUB	17.5 metres
Shot Put	Harjun	USA	21.3 metres	Nelson	USA	21.2 metres
Discus	Alekna	LTU	69.3 metres	Riedel	GER	68.5 metres
Javelin	Zelezny	CZE	90.2 metres	Backley	GBR	89.9 metres

<i>Women's Events</i>						
Event	<i>First (gold medal)</i>			<i>Second (silver medal)</i>		
100 metres	Jones	USA	11 sec	Thanou	GRE	11 sec
200 metres	Jones	USA	22 sec	Davis-Thompson	BAH	22 sec
400 metres	Freeman	AUS	49 sec	Graham	JAM	50 sec
800 metres	Mutola	MOZ	1 min 56 sec	Graf	AUT	1 min 57 sec
1500 metres	Merah-Benida	ALG	4 min 05 sec	Szekely	ROM	4 min 05 sec
5000 metres	Szabo	ROM	14 min 41 sec	O'Sullivan	IRE	14 min 41 sec
10,000 metres	Tulu	ETH	30 min 17 sec	Wami	ETH	30 min 22 sec
Marathon	Takahashi	JPN	2 hr 23 min 14 sec	Simon	ROM	2 hr 23 min 22 sec
100 m hurdles	Shishigina	KSK	13 sec	Alozie	NGR	13 sec
400 m hurdles	Privalova	RUS	53 sec	Hemmings	JAM	53 sec
High Jump	Jelesina	RUS	2.0 metres	Cloete	RSA	2.0 metres
Long Jump	Drecshler	GER	7.0 metres	Mai	ITA	6.9 metres
Triple Jump	Marinova	BUL	15.2 metres	Lebedeva	RUS	15.0 metres
Shot Put	Korolchik	BLR	20.6 metres	Peleshenko	RUS	19.9 metres
Discus	Zvereva	BLR	68.4 metres	Kelesidou	GRE	65.7 metres
Javelin	Hattestad	NOR	68.9 metres	Tzelili	GRE	67.5 metres

All times have been rounded to the nearest second.

All distances have been rounded to the nearest 0.1 metres.

Results for . . . . .

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Record of . . . . .

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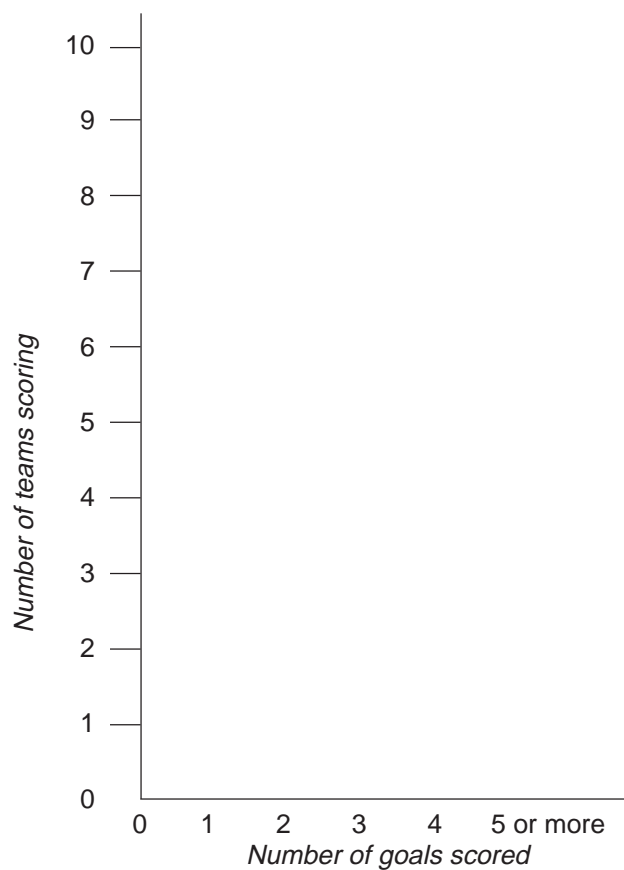
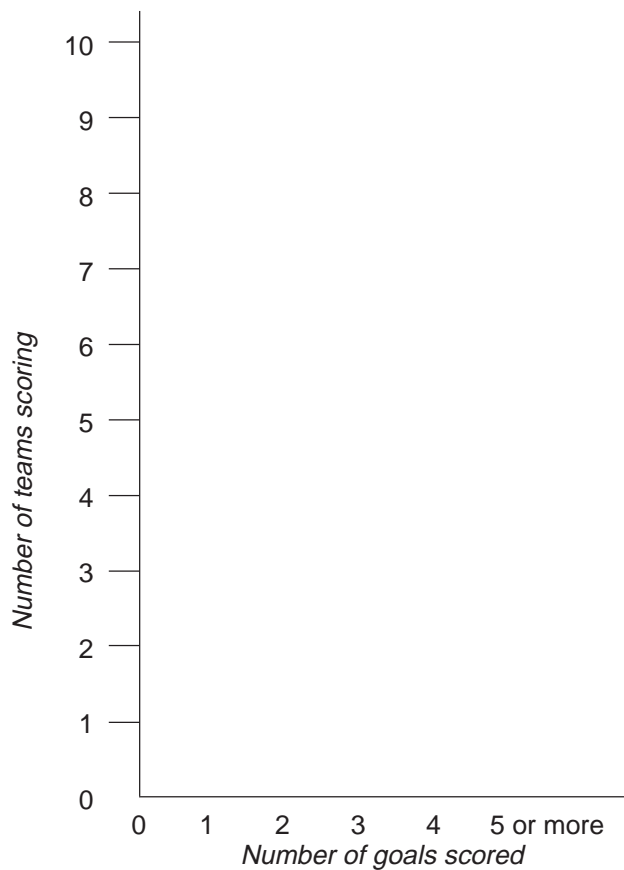
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No. of teams scoring:

0 goals	
1 goal	
2 goals	
3 goals	
4 goals	
5 or more goals	

Total number of games played		
Number of home wins		
No. of away wins		
No. of draws		
Total home goals scored	/	/
Total away goals scored	/	/



- Sheet 1 Problems**
- United States
  - 1
  - 3
  - Men's Triple Jump; Men's 200 metres; Men's Javelin
  - Garcia, Cuba
  - 20 sec
  - (i) 33 sec    (ii) 2 min 59 sec    (iii) 13 min 3 sec
  - 0.3 metres
  - 0.7 metres
  - Times and distances have been rounded, so are not accurate.

**Sheet 2 Problems**

- 3
- 3
- 21
- 4
- 1
- 2

**Activity 1**

	P	W	D	L	Pts
D	6	1	2	3	5
R	6	4	0	2	12
T	6	2	0	4	6
V	6	3	2	1	11

**Activity 2**

<b>Rangers</b>	12
<b>Vipers</b>	11
<b>Tigers</b>	6
<b>Dodgers</b>	5

- Sheet 3 Problems**
- 3
  - 4
  - 3
  - 13
  - 12
  - 6 teams scored 0 goals
 

6	"	1
6	"	2
1	"	3
1	"	4
0	"	5 or more goals
- Activity 1** 0, 1 and 2 goals were scored most often
- Activity 2** Mean = 1.25 goals

- Sheet 4 Problems**
- 4
  - Corrinne v Mark, Jasmine v Kelvin
  - 9
  - 16
- Activity** Possible playing order: R v K, A v T, O v J, R v T, A v J, O v K
- Problems**
- (i) 6    (ii) 3