

Maths in



Sports



Acknowledgments

Maths in 50 Sports is a resource book for teachers. It is produced through the collaborative efforts of many teachers, lecturers, students and friends. The initial inspiration came from the work of teachers in the 1990s who identified a need for additional support materials in various subjects. This resulted in an initiative of teachers publishing for teachers. This initiative has been supported and facilitated by the Director, James Mulcahy, and staff of the Cork Education Support Centre. Our hope is that further publications will follow.

Mary Higgins who was involved in the initial group in the 1990s is acknowledged for her encouragement to undertake a new publication. Maths in 50 Sport was eventually identified as a worthwhile topic. Con Burns, lecturer in the Department of Social and General Studies, Cork Institute of Technology, developed the concept with students on the Sport and Recreation Course in CIT. Additional material was developed by teachers and pupils acknowledged below. Finally a team of editors volunteered to bring the book to publication stage. Thanks to Denis Bohane, Denis Burns, Dave Keane, Joe McCarthy and Mícheál Ó Laoghaire for this work.

We acknowledge Kevin McCarthy for contributions from his publication 'Green Silver and Gold' (2009)- a book that chronicles the story of Irish Olympians and our love of sport. Maths in 50 Sports is an attempt to link this love of sport with the need for practical and motivational maths resources. We hope it will be used to make the teaching of maths concepts more interesting and relevant. The information on each sport is presented in a format that links it to the strands of the curriculum. The Appendices contain examples for further development. Our hope is that teachers and pupils will be encouraged to undertake further research across the curriculum into this wonderful world of sport.

Every effort has been made to ensure the accuracy of all facts in this book. However as sports evolve rules will change and new records will be established.

We acknowledge the contributions made by:

The NGB of Governing bodies of each sport and by the following teachers, lecturers, colleagues and students. Michael O'Donnell, Glenville; Gerry Dineen, Dripsey; Donal Whooley, Greenmount; Sinéad Luttrell, Dr. Susan Crawford and Dr. Julie Walsh, UCC; Valerie Mulcahy, An M'hainistir Thuaidh, Brian Cuthbert, John McCarthy and Liam O'Hanlon, Scoil an Spioraid Naoimh; Dave Collins, Mahon; Dermot O'Driscoll, Carraig na bhFear; Emer Cleary, Schull; Seamus Ó Tuama, UCC; Paddy Hill and Mick Dowling, An M'hainistir Thuaidh, Teddy Vaughan, Michael Moynihan, Diarmuid O'Donovan, Cork Evening Echo, Derry Desmond, Cork Rings; Pat Scanlan, Carraig na bhFear; Mary O'Keeffe, College of Commerce, Jerry McCarthy, JCSP, Aodhán Bohane, Davis College; Cillian Bohane, Mitchelstown CBS; Kennetah O'Callaghan, Mardyke Leevale Leisure, Dan O'Sullivan, UCC.

Foreword

Baineann Matamaitic le sealbhú, le tuiscint agus le cur i bhfeidhm scileanna. Tugann an foilseachán seo 'Maths in 50 Sports' deis don dalta scoile comhtháthú a dhéanamh idir cúrsái spóirt agus cúrsái matamaitice. Tugann sé spreagadh don bhfoghlaimeoir, scileanna, coincheapa agus teanga a fhorbairt ar féidir le daltaí scoile a usáid trasna an churaclaim agus sa saol laethúil.

The Department of Education and Skills have published 'Literacy and Numeracy for Learning and Life' The National Strategy to Improve Literacy and Numeracy among Children and Young People' which outlines numeracy as a priority area. It indicates that a sustained national effort to improve numeracy is needed including enhancing performance in important areas of the curriculum such as problem solving and measures.

In Cork schools we are aware that many innovative teachers are adapting different methodologies for differentiated learning in Maths. One such initiative instigated and tested by a variety of teachers and Principals aimed to improve teaching and learning in Maths by using sports exemplars. This 'Maths in Sports' project ably co-ordinated by Denis Burns (UCC) and a large team of practising primary and post primary teachers initially developed with mediating the Maths curriculum through one or two popular sports. Since then it has grown to 50 sports and it uses the framework of the National Curriculum at its core. It is designed to support a teacher and provide another innovative way of embedding the maths curriculum in an area that may be of special interest to the children.

Cork Education Support Centre supports teacher professional development and also the creation of practical teacher resources and we have supported this creative teaching resource supported since its inception. The 'Maths in 50 Sports' is essentially designed to mediate the curriculum through individual sports offering teachers pedagogical possibilities for differentiating mathematical concepts for individual children using different sports templates. As Cork City and County prides itself in its love of all sports and there is tremendous involvement of young people in a wide diversity of sports hopefully a creative teacher will see possibilities with the book and/ or DVD to integrate some of these ideas into classroom practice thereby stimulating interest, attention and active learning.

I would like to affirm the pioneering work of Mary Higgins, Denis Burns and all the teachers primary and post primary who have given so much of their time voluntarily to develop this resource. I would like in particular to thank Mr. John Mullins (CEO) of Bord Gais Ireland who has agreed to sponsor the publication of the book and DVD.

I believe that this creative resource will be used by inspiring teachers to make maths learning more enjoyable and more importantly help children to understand and apply mathematical concepts both in school and in life and augment their numerical life skills.

James Mulcahy
Director CESC

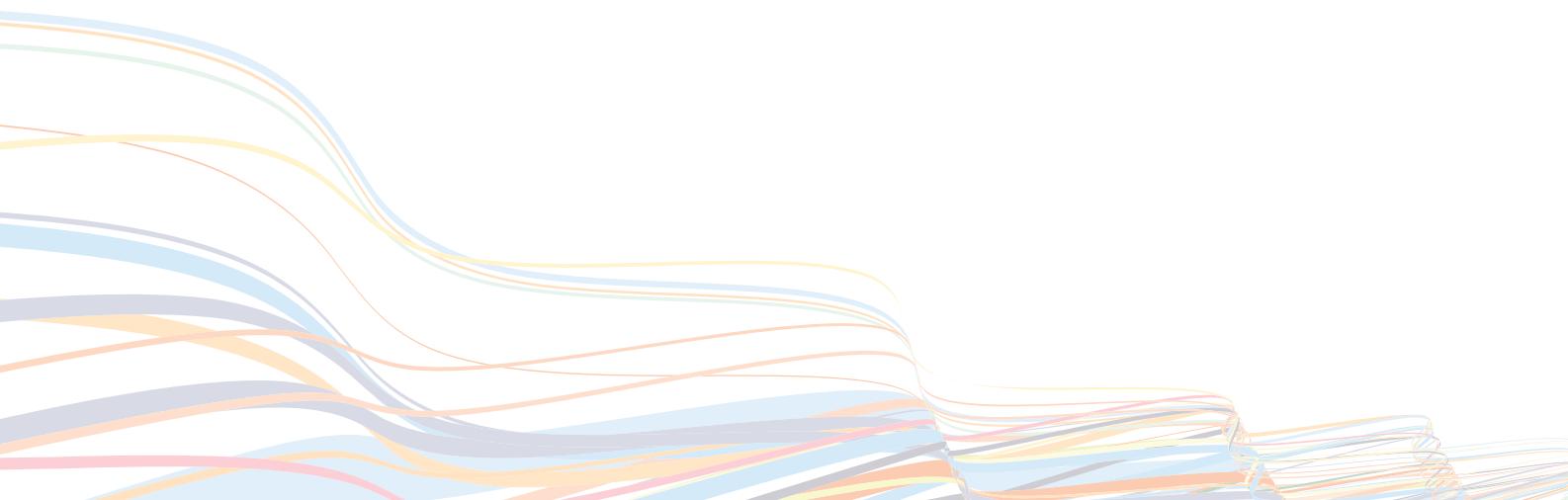


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Appendices

- Appendix A: Measures used in Sport
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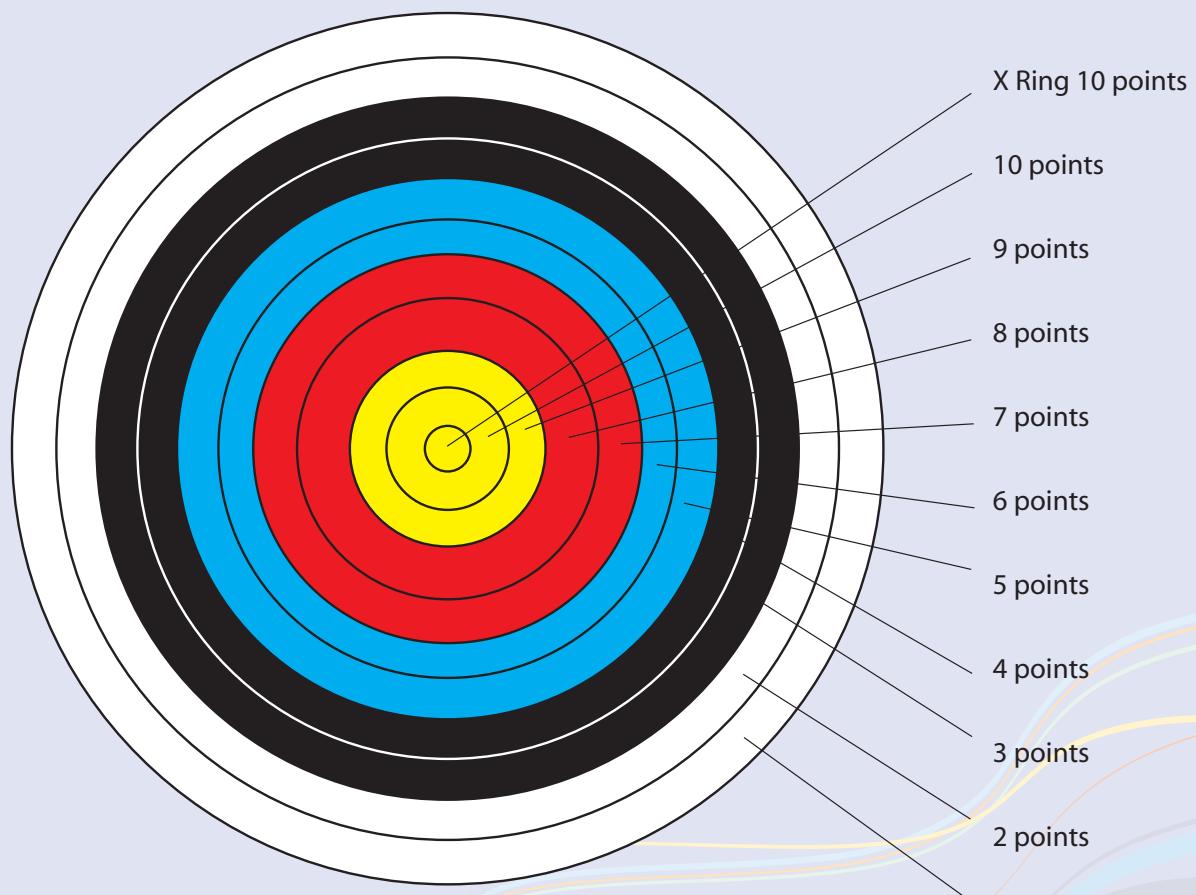


1. Archery

Archery developed from the use of a bow and arrow for hunting and combat. In modern times it is mainly a recreational activity or competitive sport. Competitions consist of rounds. A round is the shooting of a specified number of arrows from set distances. Each round is divided into ends. Each archer shoots 3 or 6 arrows in an end before the score is taken and the arrows retrieved. Arrows can be made of wood, aluminium or carbon fibre. Archery is a sport which is suitable for people of all ages and levels of physical ability.

1. Number

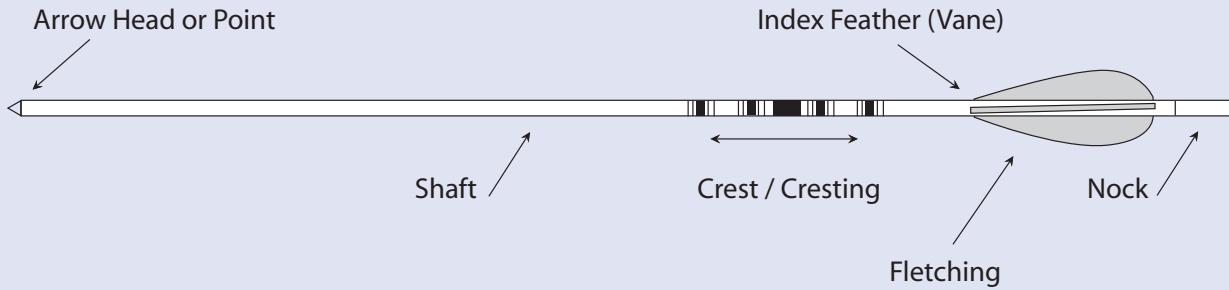
- The Irish Amateur Archery Association represents nearly 600 senior, junior and cadet archers in 27 clubs in 13 counties.
- The International Archery Federation (FITA) currently consists of 140 Member Associations. They are the governing bodies for archery in each country.
- Competition in the sport of archery is classified into 9 disciplines: Outdoor Archery; Indoor Archery; Field Archery; Para-Archery; Run Archery; Clout Archery; Flight Archery; Ski Archery; 3D Archery.
- FITA recognises 9 classes: Women; Men; Cadet Women; Cadet Men; Junior Women; Junior Men; Master Women; Master Men; Para-Archers.
- There are 4 popular bows - Longbow, Barebow, Recurve and Compound.
- Targets consist of 10, evenly-spaced rings with score values from 1 to 10. The inner 10 ring is called the X ring.
- Outdoor target archery is shot on an open flat field. The athletes shoot 36 arrows at each of four distances. This means that, in total, 144 arrows are shot.
- There are 3 archers in each team in team competitions.
- The archer or team with the highest score wins the competition.



Archery cont.

2. Shape

- Recurve and compound bows are two popular bows, each with a distinctive shape.
- Arrows are cylinders with triangular tips.
- Targets consist of 10 concentric circles.
- The trestle on which the target sits is set at an angle of 15 degrees.



3. Length

- Target archery competitions may be held indoors or outdoors. Indoor distances are - 18m and 25m. Outdoor distances are -Men: 90, 70, 50 and 30m; Women: 70, 60, 50 and 30m.
- In the Olympics, archers shoot from 70 m.
- The largest target shot at is 1.22m (48 inches) in diameter, but, to the archer, standing those 70m (86.4 yards) away, it appears about the size of a thumbtack held at arm's length. The centre of the target stands 1.3 m above the ground. The centre ring is 12.2 cm (4.8in.) in diameter. There is also a smaller X10-ring, which is 6.1 cm (2.4in.) in diameter. It does not give an extra point, but it serves as tie-breaker for the archers during qualifications or for a world record.
- Targets used for indoor competitions are identical to the ones used in outdoor competitions, but smaller in size. The archers shoot at 25m on a 60cm target and at 18m on a 40cm target for world championships. In outdoor competition archers shoot at a 80cm target from 30m and 50m and at a 122cm target from 70m and 90m.
- The arrow length for a 1.8m (5'10") man is about 69-74cm (27-29") and therefore needs a bow length of 1.7m (66-68") for target archery. (See estimating the correct length of a bow and arrow p7)
- Arrows have a maximum diameter of 9.3mm, although, for faster flight and less wind drift, most are as small as 5.5mm.
- The length of arrows and bow used by an archer depends on his/her height.

4. Weight

- A bow generally weighs between 2kg and 3.6kgs.
- The bow's draw weight is around 22kgs (48lbs.) for men, and over 17kg (38lbs.) for women.
- Compound bows use wheels at each end to reduce the force required to pull the string (peak weight). This reduced force is called 'let off'. For example a bow with a 27.2kg (60lbs) peak weight but with an 80% let off requires 20% of 27.2kg or 5.4kg of force to draw the string.

5. Time

- Archers have a set time limit in which to shoot their arrows. For indoor competition, this is 2 minutes.
- Arrows in Olympic Archery (70m) can travel at a speed of 150mph.

6. Data

- Research Olympic Archery winners on Internet.

Archery cont.

7. Interesting Facts

- Henry VIII enacted a law banning ball games stating that they interfered with archery practice.
- Archery was a sport in the Olympic Games from 1900 to 1920 and was reintroduced in 1972.
- In 1984 Neroli Fairhill of New Zealand became the first wheelchair athlete to take part in the Summer Olympics.
- The first Irish woman to compete at the Olympic Games also became the first female medal winner from Ireland. Beatrice Hill Lowe finished third in the archery competition in the 1908 Games at London.

8. Development

Number

- What is the maximum score possible when shooting 3, 6, 12, 24 arrows etc.?
- An archer scores with each of 12 arrows. Give possible scores so that the total score adds up to 89, 97, 104, etc.
- In Olympic competition each archer shoots 6 arrows in each end and there are 6 ends in a round. How many arrows are shot in each round?

Shape

- Research and draw different types of bow.

Length

- Estimate the correct length of a bow and arrow for yourself (Internet).

Weight

- Draw weight is the amount of pressure needed to extend the string of the bow. The average draw weight using a recurve (Olympic) bow is 50lbs (27.67kg) for a man and 34lbs (15.42kg) for a woman. What is the total draw weight for a man and a woman if they each shoot 48, 60, 72 arrows, etc.?

Time

- In competition world class archers reduce their heartbeat through relaxation techniques to increase accuracy. Research the normal rate of heartbeat.
- An archer is allowed 20secs to shoot one arrow. How much time allowed to shoot 12, 24, etc.?

Exercise: Estimating the correct length of a bow and arrow.

A. Correct arrow length. (Done in Imperial measure - convert to Metric)

Stretch your arms out in front of you with your palms together and your finger tips fully extended.

Measure from the centre of your chest to the tips of your fingers.

Add ONE INCH to this measurement and this will give your correct arrow length.

B. Correct bow length

Use the arrow length and the chart to help you pick the correct bow length.

Arrow Length (inches)	Bow Length (inches)
14-18	48"
18-20	54"
20-22	58"
22-24	62"
24-26	64"
26-28	66"
28-30	68"
30+	70"

2. Athletics

Track and field athletics is a sport, compromising a group of athletic events or disciplines, each of which involves either running, walking, throwing or jumping.

1. Number

- In Athletics competitors are placed 1st, 2nd and 3rd – Gold, Silver and Bronze.
- Athletes wear numbers across their chests when competing.
- Athletics also has relays which is a team effort. A relay team consists of four athletes and one sub.
- A running track consists of 8 running lanes (outdoor).
- The Pentathlon is a multiple event competition (5) consisting of long jump, javelin, 200m, discus and 1500m
- The Decathlon is another multiple event competition (10) consisting of 200m, long jump, shot put, high jump, 400m, 110m hurdles, discus, pole vault, javelin and 1500m.
- The major competitions for athletes are the Olympic games (held every 4 years, leap years) and the World championships (held every 2 years, odd numbered years).
- Morton Stadium is the home of Irish Athletics, with a capacity of 8,800 (Appendix G).

2. Shape

- The shape of the athletics track is usually oval, consisting of 2 semi circles joined by 2 straight segments.

3. Length

- The typical athletics outdoor track is 400m in length consisting of 2 straight 100m opposite each other with a semi circle at either end. Indoor tracks are similar in shape with reduced dimensions. (Usually 200m in length).
- Sprints are events up to and including 400m, 50m (indoor only), 55m (indoor only), 60m (indoor only), 100m, 200m & 400m
- Middle distance events are longer than sprints and up to 3000m. 800m, 1000m (uncommon), 1500m, 3000m, 3000m steeplechase.
- Long distance events are 5000m and 10000m. Hurdle events require the runner to run over evenly spaced barriers during the race. 60m hurdles (indoor only), 100m hurdles, 110m hurdles (women), 400m hurdles (men).
- Relays are events where 4 athletes participate as a team passing a metal baton at the end of each leg. 4x 100m is the most common relay event.
- Road races are events conducted on open roads, sometimes finishing on a track. 10km, 20km, half marathon (21.0975km), Marathon (42.195km). Race walking events 10km, 20km, 50km.

4. Weight

- Olympic medals are especially designed for each individual Olympic games. Each medal must be at least 3mm thick and 60mm in diameter. The Gold and Silver medals must be made out of 92.5% Silver with Gold covered in 6g of Gold.

5. Time

- In athletics all races are timed. In sprints each individual's time is recorded using electronic starting blocks.
- If there is a tie between competitors a judge must decide the athletes actual time to 1/1000th of a second.
- The world record holder for 100m men is a Jamaican called Usain Bolt who ran 9.58s in 2009 Berlin.
- The World record holder for 100m women is Florence Griffith Joyner with a time of 10.49s in 1988.
- Only one white man has run under 10 seconds - Christophe Lemaitre.

6. Data

- The athlete who has completed his/her distance in the fastest time ever is said to hold the world record for that distance. The present world records are:
100m - 9.58 seconds / 200m- 19.19 seconds / 400m- 43.18 seconds / 800m- 1 minute 41 seconds
1500m - 3mins 26 seconds / 3000m- 7mins 20 seconds / 5000m-12mins 37 seconds / 10.000m-26mins 17sec

7. Interesting Facts

- Athletics was first introduced to the Olympic Games in 1896
- The 5 Rings of the Olympic Flag were created in 1914 but not officially used until 1920. The 5 rings represent the 5 continents and their interlinking symbolize the friendship generated through the games.

Athletics cont.



7. Interesting Facts cont.

- Sonia O'Sullivan's world record in the women's 2,000 metres, 5mins:25.36secs. established in Edinburgh in July 1994 still stands at date of publication.
- Ultra runner, Tony Mangan from Dublin set a world record for the greatest distance run in 48 hours on a treadmill in August 2008. He covered a distance of 405.22 km (251.79 miles) on a treadmill at St. Mel's College, Longford, from 22nd to 24th August.

8. Other

- Ireland has won a total number of 23 medals in Olympic competition, 6 of these for Athletics (track and field).
- Fermanagh born sprinter, Bobby Kerr won Gold in 200 metres and Bronze in 100 metres for Canada at the London Games of 1908.
- When Ronnie Delaney won the 1500 metres at the 1956 Olympics, he was the first Irish born winner of a running event since 1912. In 2000, Sydney, Sonia O'Sullivan became the first Irish woman to win an Olympic athletics medal.

9. Development

Number

- Was there an Olympic Games held in 1956? (Remember they are held on a leap year)
- Between 1984 and 2010 how many world championships were held?

Shape

- Identify all the shapes on the Athletics track?
- What is the perimeter of an outdoor athletics track?

Length

- How many complete laps in a 5000m/10000m race?
- If I run 3 and a half laps, how far have I run?
- If I have run 3365m of a 5000m race, how far have I left to go?
- If an athlete has a stride of 1.4m, how many strides are required to cover a distance of 70m?

Time

- The world record for 5000m is 12 minutes 37 seconds. How far outside the record is a time of 13 minutes 12 seconds?
- How much quicker than 1 minute, is the current 400m record of 43.18 seconds?
- If I run 4 laps at an average speed of 48 seconds per lap, what is my total time in minutes and seconds?

Data

- Graph the world records of a particular discipline over the past 40 years.
- Draw a bar chart of the top 8 medal winning Nations in a particular Olympics.

Other

- Calculate the cost of equipping an athlete competing at an athletics meet i.e. cost of travel, accommodation and equipment.

3. Badminton

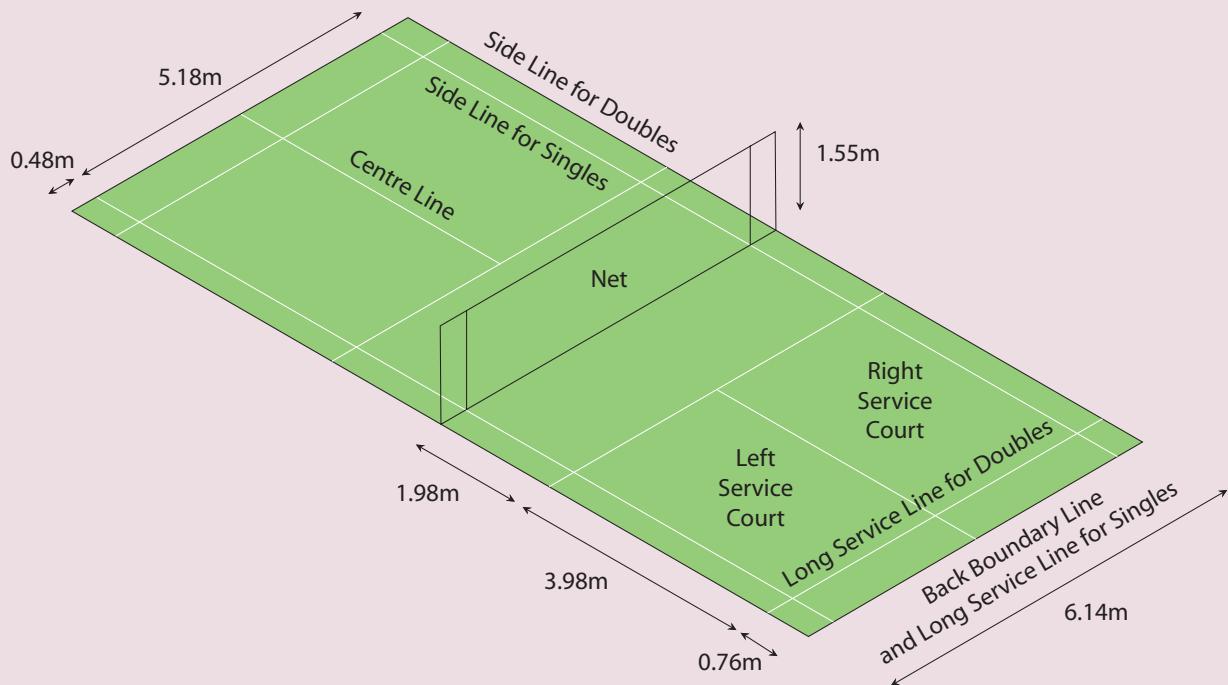
Badminton is a racquet sport. It is played by either two players (singles) or two pairs (doubles). Players score points by striking a shuttlecock (shuttle) with their racquet so that it passes over the net and lands in their opponents' half of the court. Each player may strike the shuttlecock once before it passes over the net and a rally ends once the shuttlecock strikes the ground.

1. Number

- The new sport was launched in 1873 at Badminton House, Gloucestershire, England and the game's official name became Badminton. The Badminton World Federation (BWF) was established in 1934. Currently there are over 13,975 affiliated members to Badminton Ireland from 417 active clubs.
- Each game is played to 21 points. If the score reaches 20-all, then the game continues until one side gains a two point lead (such as 24-22), up to a maximum of 30 points (30-29 is a winning score).
- A match is the best of three games.
- In the BWF World Championships, only the highest ranked 64 players in the world, and a maximum of three from each country, can participate in any category.
- A shuttle contains 14 to 16 feathers.

2. Shape

- Badminton is played on a rectangular court.



3. Length

- The full width of the court is 6.1m (20ft), and in singles this is reduced to 5.18m (17ft). The full length of the court is 13.4m (44ft). The service courts are marked by a centre line dividing the width of the court, by a short service line at a distance of 1.98m (6ft 6inch) from the net, and by the outer side and back boundaries. In doubles, the service court is also marked by a long service line, which is 0.76m (2ft 6inch) from the back boundary.
- The net is 1.55m (5ft 1inch) high at the edges and 1.524m (5ft) high in the centre. Bottom of the net is raised up and does not touch the floor.
- The shuttle's dimensions: The cork has a diameter of 25 to 28mm. The circle produced by the overlapping feathers has a diameter of 54mm. Each feather has a length of 70mm.

4. Weight

- A shuttle weighs between 4.74–5.50 grams.

Badminton cont.

5. Time

- Surprisingly, the shuttle is claimed to be the fastest object in sports. The fastest recorded tennis stroke is Andy Roddick's 153 mph (246 km/h) serve. The fastest recorded badminton stroke is Tan Boon Heung's 261 mph (420 km/h) smash.

6. Data

- Research Olympic Badminton winners on the Internet.

7. Interesting Facts

- Individual competition in badminton was a demonstration event in the 1972 and 1988 Summer Olympics.
- Since 1992, badminton has been an Olympic sport with five events: men's and women's singles, men's and women's doubles and mixed doubles.

8. Development

Number

- What is the average number of players per club in Ireland?
- In a 3 game match a total of 149 points are scored. Each match is won by 2 points. Give some possible scores.
- In the World Championships 64 players begin in knockout competition. How many matches must the eventual winner play? How many matches are played in total?
- In a game, a player served 96 times. However, 25% of these were foul serves. How many serves were successful?

Shape

- How many rectangles on a badminton court?
- What is the area of a singles/doubles badminton court?
- Draw a badminton raquet to scale.



Length

- How far from the endline is the halfway line?
- What is the perimeter of a singles/doubles badminton court?
- Calculate the length of tape required to mark all the lines on a badminton court.
- In a three game match, a player was calculated to have run 3858m. What was the average distance covered per match?

Weight

- What is the difference between the minimum and maximum weights of a shuttle?
- What is the minimum/maximum weight of nine shuttles?

Time

- Starting in 2006, the World Badminton Championships was changed to an annual event with the goal to give more chances for the players to be crowned as official "World Champions". However, the tournament is not held once every four years to give way to the Olympic Games. How many times has the event been held since 2006?

Other

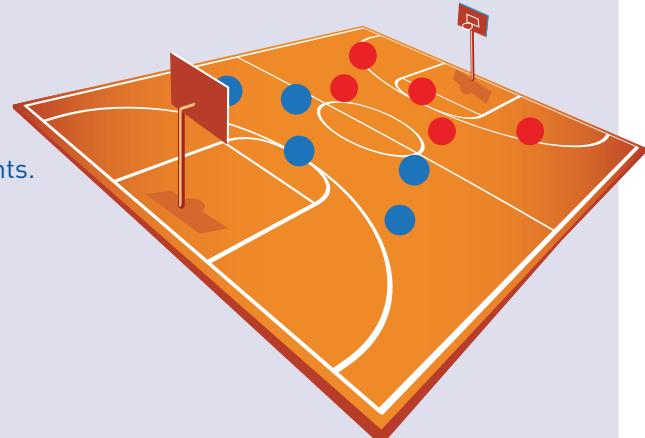
- Show the Olympic medal count in graph form – a different graph for Gold, Silver and Bronze.
- What percentage of medals has been won by the top three Nations?

4. Basketball

Basketball is a team sport in which two teams of five players try to score points against one another by placing a spherical ball through a high hoop under organized rules.

1. Number

- Basketball was first entered in the Olympics in 1936
- Players can score baskets for the value of 1 point, 2 points or 3 points.
- 1 point is scored per free shot.
- 2 points can be scored from inside the 3 point arc.
- 3 points can be scored from outside the 3 point arc.
- 5 fouls eliminates a player from the game.

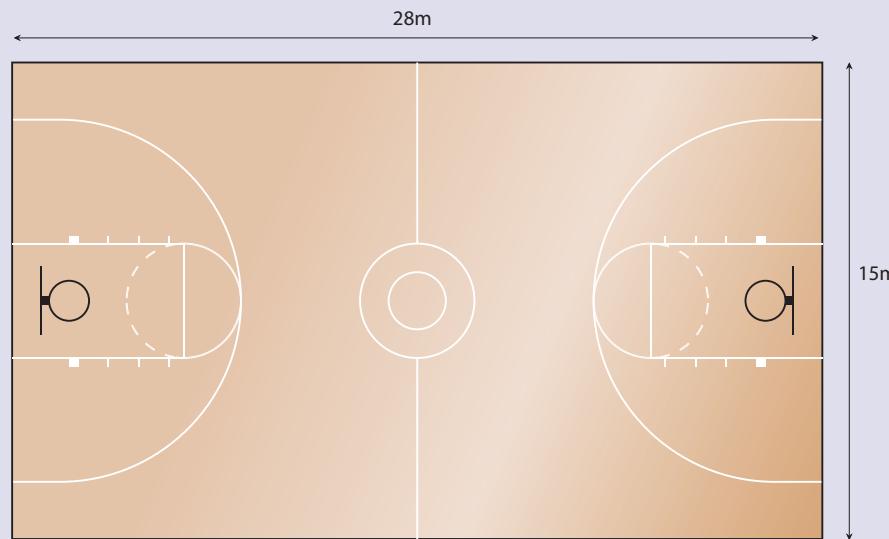


2. Shape

- The basketball court is rectangular in shape
- There is a circle (centre) in the middle of the court where two players must jump for the ball at the start. The 3 point line is a semi-circle line found at both ends of the court.
- Within the semicircle is a trapezoid (key) at the edge of which free throws are taken.
- Points are scored into a circular hoop, in front of a rectangular backboard.

3. Length

- The basketball court is 28m long and 15m wide.
- The basketball is 74.912cm in circumference, 23.857cm in diameter.
- The hoop which is 3m from the ground is 45.7cm in diameter.
- The 3 point line (semi circle) has a radius of 6.25m.
- The free throws are taken 4.5 m from the base of the hoop.
- The key measures 9.8m wide at its widest points and 4.5m from the hoop.



4. Weight

- The weight of a basketball is 623g for men (size 7), 567g for women (size 6).

5. Time

- A game of basketball has four quarters, each lasting 12 minutes.
- There is a 15 minute break for half time and a 2 minute break between each quarter.
- If overtime is needed it lasts five minutes.
- A coach is allowed 1 time out per quarter except for the final quarter when two are allowed.
- The clock is stopped when a foul is committed, for time outs and when subs are being brought on and off.
- Whenever a team has the ball their team must attempt a shot within 24 seconds.

Basketball cont.

6. Data

TOP FIVE NBA POINT SCORERS OF ALL TIME

1. Kareem Abdul-Jabbar (38,387 points), 2. Will Chamberlin (31,419 points) 3. Karl Malone (30,599 points),
4. Michael Jordan (29,277 points), 5. Moses Malone (27,409 points).

7. Other

- First game of basketball was in 1892. Only 1 point was scored in the whole match.
- Basketball has been played in Ireland since the 1920's when Sergeant Major Doogan introduced it to the army.
- The only thing that hasn't changed since the day Naismith invented basketball is the height of the hoop

8. Interesting Facts

- Will Chamberlin holds the record for the most points scored in a game (100)
- In 1967 the slam dunk was made illegal. It was legalized again in 1976.
- The longest basketball game ever lasted 58 hours.
- In 1913 the bottom of the basketball net was left open meaning it was no longer necessary to retrieve the ball from the net after a score.
- In professional basketball the average height of a player is 1.95m
- Players have no set numbers in basketball. They may choose any 1 or 2 digit number.
- The smallest player (professional) ever to play was Maggsy Bogues at 1.6m
- At 13 years of age Shaquille O'Neal was 1.98m tall.

9. Development

Number

- A team scores 100 points in total. This includes 35x2pt scores and 6 free throw scores. The remainder were 3pt scores. How many 3 pointers were scored?
- What is the least number of scores required to score 91 points if there were no free throw scores?

Shape

- If a ball enters a hoop exactly in the middle how much space is left on each side of the ball?
- Investigate all the vertical, horizontal, parallel and oblique lines visible on a basketball court?
- How many right angles can you see on the ground of a lined court?

Length

- If a player scores from a distance of 825cm, what is the value of the score?
- If a player is 1.78m tall, how far above his head is the hoop?

Weight

- What is the weight of a kit-bag containing 8 basketballs?

Time

- If a team scores in the 37th minute of playing time, in which quarter does the score occur?
- If no time outs are used, what is the duration of a basketball game including breaks?
- What is the maximum duration of a game, including breaks, if both teams use all of their allowed time-outs?

Other

- A professional basketball team share win bonuses among the whole squad. This bonus is 5000 dollars per victory. If they win 36 games during the season and there are 12 squad members, how much does each player receive?

5. Bowling (Road)

Road bowling is an ancient Irish game. It is played on public roads using a cast-iron bowl or bullet. The object of the game is to cover a designated distance in the least number of throws. It is most popular in Cork and Armagh but is also played in other counties including Waterford, Limerick, Tyrone, Mayo, Galway, Wexford and Louth. International competitions generally involve Ireland, the Netherlands, Germany and Italy and include 1. Irish road bowling. 2. Dutch Moors bowling and 3. German Lofting

1. Number

- Competition, game or score is usually one against one.
- There are 30 grades of All-Ireland championships.
- The national governing body for the sport is Ból-Chumann na hÉireann, which has over 100 clubs in Munster, 20 in Ulster and five in each of the other provinces.
- Competitions were originally played from one town or village to another. Courses were then shortened to 20 throws and hence competitions were called 'scores', which is an old word for the number 20. This term is still used today although most championship courses are covered in 17 or 18 throws.

2. Shape

- The bowl or bullet is spherical. The bowl for adult competition has a circumference of 18cm.

3. Length

- The length of a course varies but is usually covered in 17-18 throws.
- When contestants finish the course in an equal number of throws, the player furthest over the line is declared the winner.
- A 'Bowl of Odds' occurs when one bowler is equal or farther in distance than his opponent but has thrown one less shot. For example Player A throws a distance of 180m, 170m and 80m with his first three shots. His opponent B throws 220m and 215 m in two shots and is thus ahead of A with a shot in hand.
- The bowl may also be lofted over a corner. German bowlers specialise in lofting bowls using a ramp and the world record loft is 106.2 m set by Stefan Alberus in 1996.
- In the Dutch version (Dutch Moors) each contestant throws 10 times, reaching total distances of over 2km (men) and 1.300m (women).
- Examples of very long throws of 28 oz bowl in road bowling competitions include:
 - 500m by John Creedon in European Championships in Germany 1977.
 - 466m by Danny McParland in Armagh Tournament (Moy Rd.) in 1964.
 - 387m by Jerry Boylan in World Championships, Whitechurch, Co Cork in 1987.
 - 365m by Michael Toal in McVeigh Cup, Armagh in 1992.
 - 295m by 18 year old Killian Kingston on the Tassagh Road, Co. Armagh in 2010.

4. Weight

- A bowl weighs 28 oz. (794g) for adults and 24 oz (680 g) or 16 oz (454 g) for youths.

5. Time

- The first All-Ireland competition was held in 1963 (Cork v Armagh)
- The first world championships took place in 1985.
- In 2004 Ból Chumann na hÉireann celebrated its Golden Jubilee year

6. Data

- Research winners of various World and Irish titles including 'King of the Roads' and 'Queen of the Roads'.
- Make a graph of 'very long throws' as recorded in 3 above.

7. Interesting Facts

- The Chetwynd Viaduct in Cork is 90 feet high and 21 feet wide. Lofting it has long been an ambition of bowlers. A famous bowler Mick Barry achieved this feat with a 16 oz bowl in 1955. Hans-Georg Bohlken from Germany was the first to loft a 28 oz bowl cleanly over the Viaduct. He used a ramp to achieve this in 1985. It was estimated that to loft the Viaduct one had to stand 45 feet back, loft the bowl at an angle of 77 degrees and at a velocity of at least 20 feet per second.

Bowling (Road) cont.



8. Development

Number and Length

- A supporter often places a sop or clump of grass on the road as a guide to the bowler. What is the length of the throw if the sop is placed 39m away and the bowl travels an extra 95m?
- Player A has an 87 metre lead after 7 throws and throws the bowl 196 m. on her eight throw. However Player B throws a super shot on her eight throw and takes the lead by 12metres. What was the length of Player B's super throw?
- I can average 130 metres a throw with a 28oz. (794g) bowl. I can throw a 16 oz (454g) bowl on average a distance of 45% farther. How far do I expect to throw the lighter bowl in ten throws?
- A player completes a course of 2.7 km in 18 throws. What was the average length of each throw?
- A player throws an average distance of 172metres. How many throws to complete a course of 2.824km?
- David Murphy (Ireland) reached a mark of 2,010m in ten throws when winning the 2008 European championships. After three throws he had reached 450m, what was the average length of his next seven throws?
- The Irish senior women's team won the Gold, Silver and Bronze medals at the 2008 European Championships. Each contestant played ten shots and reached an average distance of 144.95m per shot. The combined score of the first two players was 2.912.2m. What was the score of the third player and the combined score of the three medal winners?
- Player A's first throw is 126 metres. Player B throws 9 metres less. How long was B's first throw? In the second shot, A throws 117 metres. B throws further and is now 17 metres ahead. How long was B's second throw?

Shape

- Write a newspaper report on a bowling score and draw a road map to illustrate the score.

Weight

- What is the total weight of 12 adult bowls or bullets?
- What is the difference in weight between 10 of the heaviest and 10 of the lightest bowls?

Time

- A score commences at 2.36 pm and finishes at 5.13 pm. How long did it take to complete?
- A score begins at 2.46 pm. Each throw takes an average of 4 mins: 30 secs to complete. Player A takes 17 throws and player B 18 throws. At what time will the score finish?

6. Boxing

Boxing is a sport (offensive and defensive) where 2 opponents punch each other with gloved fists. The winner is the boxer scoring the most points by the end of the contest or who KOs or knocks out their opponent. Boxers may be professional or amateur. Amateur boxers wear headgear and are not paid for competing.

1. Number

- Amateur boxing has been a modern Olympic sport since 1904.
- Amateur contests, or bouts, generally last for 4 rounds. Professional bouts last 10-12 rounds.
- Computer scoring was introduced in the 1992 Olympic Games.
- There are normally 3 judges for professional and 5 for amateur contests.
- Once a contest begins, only three people are allowed in the ring.
- In professional boxing, the winner of each round gets 10 points, the loser gets 9 points. A point is deducted from his/her score when a boxer is knocked down.
- The fighter with the most points at the end of a fight wins, provided the fight goes the full distance.

2. Shape

- The fight is conducted in a square, called a ring, cornered off by rope on every side.
- The boxing ring is usually 1.3m above floor level.

3. Length

- The size of the ring varies from amateur to professional.
- Standard size for amateur is 4.575m x 4.575m/ professional 6.1m x 6.1m.
- The biggest ring used for a professional fight was 7.3m x 7.3m.
- The floor of the ring is usually covered by a canvas 2.54cm thick.

4. Weight

- Boxing gloves come in different weights ranging 240g to 600g.
- Boxers only fight against opponents of a similar weight. There are many weight divisions from Straw-weight to Heavy-weight. These common divisions are:

- | | |
|-----------------------------------|---|
| 1. Straw-weight – up to 47.6kg | 2. Flyweight – 49kg to 51kg |
| 3. Bantamweight – 52kg to 53.5kg | 4. Featherweight – 55kg to 57kg |
| 5. Lightweight – 59kg to 61.25kg | 6. Welterweight – 63.5kg to 66.67kg |
| 7. Middleweight – 70kg to 72.5kg | 8. Light heavyweight – 76.2kg to 79.3kg |
| 9. Cruiserweight 79.3kg to 90.7kg | 10. Heavyweight over 90.7kg |

5. Time

- Professional boxing matches usually last 10-12 rounds; 3 minutes per round with a 1 minute interval between rounds.
- Amateur boxing matches last for 4x2min rounds, with a minute interval between rounds.
- A bout may be won on a ko or knockout when a boxer is knocked to the canvas by a punch and is unable to stand up within 10 secs.
- In amateur boxing one boxer wears red and the other blue. Each judge has a red and blue button. A point is awarded when 3 or more judges push the red or blue button within half a second of a punch making contact.

6. Data

Data and information which may be gathered and presented on boxing include previous belt holders in each weight class, record capacities at fights and boxing records.

- Ireland has won 12 Olympic boxing medals (1 Gold, 4 Silver, 7 Bronze).
- Ireland has won 10 world championships (male), 3 female (Katie Taylor).

Boxing cont.

7. Interesting Facts

- Boxing for women is to be introduced in the 2012 Olympic Games. A current female world champion is Irishwoman, Katie Taylor in the 60kg category.
- In his whole career, Rocky Marciano was never defeated (49 bouts).
- The fastest ever boxing match lasted 10.5 seconds and that included the referee's "10" count.
- The longest boxing match recorded took place in 1893 in New Orleans when Andy Bowen and Jack Burke fought an amazing 110 rounds over 7 hours for the world lightweight title. The result was declared a 'no contest'.
- The 3 tallest men ever to box were all 2.23m tall and one of them was an Irishman, Jimmy Cullen. Another Irishman called Dan Donnelly is reputed to have had the longest reach of any boxer.
- Mike Tyson has the World Record for the most wins in under a minute (9) ranging from 30 seconds to 54 seconds.
- The largest outdoor boxing attendance was set in Mexico City 1993. A reported 136,274 attended a light welterweight fight between César Chavez and Grey Haugen.

8. Other

- Records of boxing as a sport date back over 5000 years to Ancient Mesopotamia. Another word for boxing is Pugilism.
- Boxing first appeared as an Olympic event in the 7th century B.C.
- During the Roman Empire boxing became more brutal with boxers often fighting to the death.
- With the spread of Christianity in Europe boxing disappeared for the most part until the late 1600s when it resurfaced in England.
- In 1866 the Marquess of Queensbury established the Queensbury rules of boxing (these rules still pertain today).
- Joseph Lyndon was the first Irishman to win an Olympic boxing medal, a Bronze at welterweight in 1904. Amazingly, he also won a Silver medal for soccer at the same Olympics, both while representing the USA.
- Since Ireland got independence in the 1920's, the country has won more Olympic medals at boxing than in any other sport.

9. Development

Number

- If a professional boxer wins 8 rounds and loses 4 rounds in a fight, how many points does he score?
- If a boxer wins 5 rounds and loses 7 rounds and his score is 110 points, how many times was he knocked down?

Shape

- What is the perimeter and area of the boxing ring?

Length

- What is the difference in length of one side of a standard professional ring and a standard amateur ring?
- If I walked 8 times around a professional ring, how far have I walked?

Weight

- How many 240g gloves would weigh the same as 6kg?
- If a boxer weighs ___ how much weight does he need to lose to fight in the ___ division?
- If a flyweight weighs ___ how much weight does he need to gain to become a middleweight?

Time

- If a professional boxing match lasts 10 full rounds what is the duration of the fight including intervals?
- If a boxer is knocked out one minute into the 7th round, how long was the boxer in the ring?

Data

- Research the number and type (Gold, Silver, Bronze) of Olympic boxing medals won by Irish boxers.

Other

- A ringside seat at the Muhammad Ali v George Foreman world heavyweight title fight in Oct. 1974 in Kinshasa, Zaire cost 2,492 dollars. Convert to euro at today's conversion rate.

7. Canoeing

Canoes were developed over the course of thousands of years by the native people of North America. The word canoe originated from the word 'keenu' - meaning dugout. In modern canoe sport, canoes and kayaks are classified together.

1. Number

- There are seven branches to the sport: Canoe Polo; Canoe Slalom; Freestyle; Paddle Surf; Marathon Racing; Sprint Racing; Wild Water Racing
- Kayaks use a double blade paddle while a single blade paddle is used in canoes.
- Kayaks and canoes are manufactured in a variety of sizes that carry one (K1 and C1) up to crews of four (K4 and C4).
- The sprint is the oldest discipline in canoeing, sometimes referred to as "Flatwater Racing". It involves:
Kayak - K-1: single seat kayak; K-2: double seated kayak; K-4: four-seated kayak
Canoe - C-1: single kneeling canoe; C-2: double kneeling canoe; C-4: four-person kneeling canoe
- Canoe Polo is a fast-action competitive goal-scoring ball game on water, between two teams of 5 players.

2. Shape

- The canoe starts off quite narrow and gradually gets wider before getting narrow towards the end again. Being narrow at the front allows the canoe to cut through the water with minimal amounts of friction.

3. Length

- Canoes range from 3.048m (10ft) to over 7.924m (26ft).
- Most paddle blades are about 20cm. across the face and 45-60cm. long.
- Distances covered in races are 200, 500, 1,000m. In "long distance racing" over mostly flatwater, course lengths typically vary from a few miles to the epic 125-mile (201km) Devizes to Westminster International Canoe Marathon on the Thames, the 120-mile (190km) overnight Au Sable River Canoe Marathon in Michigan, and the 260-mile (420km) "World's Toughest Boat Race", the Texas Water Safari.

4. Weight

- The weight of a canoe/kayak can range from 18.14kg (40lbs.) to 87kg (192lbs).

5. Time

- Races vary in duration from 35 seconds to just under 3 minutes for a four-seater kayak.
- Competitors are timed in completing a descent down the rapids of a whitewater course, in the process steering their canoes or kayaks through "gates" (a pair of suspended poles about 1m apart), including going up against the flow, across the flow, and surfing the standing waves of the rapids.

6. Data

- Data on Olympic Canoeing winners is available on Internet.

7. Interesting Facts

- Canoeing events became part of the Olympic Games in 1936 (1948 for women). In addition to various singles, pairs, and team still-water events for distance and speed, there are white-water racing competitions and, for kayaks, slalom events involving the use of gates similar to those of slalom skiing. The kayak is raced by both men and women. The canoe is raced only by men.
- Ireland has been represented at all of the Olympic Sprint Events since the Munich Games in 1972.

Canoeing cont.

8. Development

Number

- What do the following mean in Olympic competition?
 C1-500m (Men)
 C2- 500m (Men)
 K2 -500m (Men and Women)
 K4- 500m (Women)
- Calculate different ways that 24 people can sail in a combination of single, double and 4-seater kayaks.

Time

- The Canoeing World Championships have taken place every year in non-Summer Olympic years since 1970.
 How many have taken place to date?
- In a white water or slalom event penalties of 2 secs. are incurred for hitting a gate and 50 secs. for missing a gate.
 A contestant finished the course in 200secs. but hit 3 gates and missed 2. Calculate adjusted finishing time in mins and secs.

Weight

- A K4 weighs 73kg. The 4 crew members have an average weight of 56kg. Find the total weight of the Kayak and crew.

Money

- A kayak costs €571.15. Find the cost to a club of 9 such kayaks.
- Calculate the cost of equipping yourself for kayaking. Include cost of Kayak, paddles and all safety equipment.

Data

- Show the Olympic medal count in graph form – a different graph for each medal. What percentage of Olympic medals has been won by the top three Nations?



8. Cricket

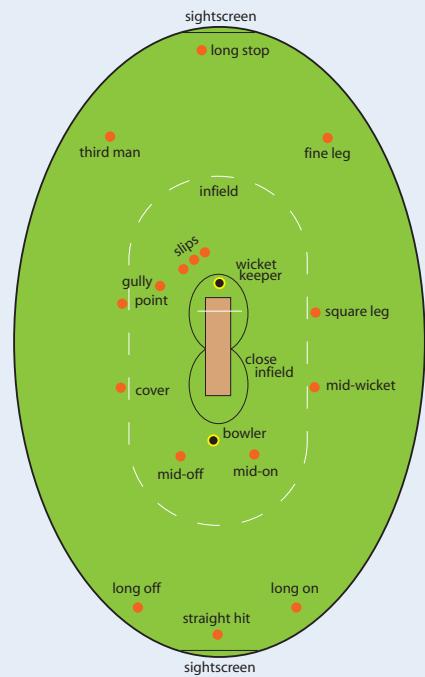
Cricket is a field game played by two teams. Two sets of wooden stumps or wickets are set 22 yards (20.12m) apart. The fielding side selects a bowler to bowl the ball from one wicket in an attempt to strike the other wicket. The batsman defends the wicket, attempts to strike the ball with a bat and run to the other wicket. This is called a run. If the bowler strikes the wicket with the ball the batsman is out and is replaced by another batsman. The object of the game is to score more runs than the opposing team.

1. Number

- Two teams of eleven players. During a game the batting team will have two players on the field, one at each wicket.
- The bowling or fielding team will have eleven players in different positions around the field.
- Scores are called runs. When the batsman strikes the ball well, more than one run can be scored.
- Four runs are scored when the ball crosses the outfield boundary after touching the ground, and six runs scored when the ball goes over the boundary rope without touching the ground.
- Five runs are awarded if the ball is stopped illegally by one of the fielding team, i.e. with a cap, or a stray helmet. However, if one of the bowling team catches the ball before it touches the ground the batsman is out.
- There are 10 different ways a batsman can be dismissed. Bowling the ball to strike the wickets is one way to get a batsman out.
- Scoring 100 (or more) runs is called a century. AC Botha and NJ O'Brien have both scored 5 centuries for Ireland.
- A match is divided into either 2 or 4 innings and each innings is divided into a number of overs. This can be 20 (in a T20), 50 (in a One-Day International) and a maximum of 90 overs a day for 5 days in a Test match.
- The bowler throws or bowls six times in each over.
- The innings ends when 10 out of the 11 batsmen have been dismissed.

2. Shape

- The playing area for cricket is an ellipse, divided into the pitch (rectangle), the infield and the outfield.
- The cricket ball is spherical. It is made of cork and leather and has circumference of 22.4cm - 22.9cm.



3. Length

- The pitch (see diagram) is where the batting and bowling take place. The two wickets are 22 yards (20.12m) or one tenth of a furlong (1 chain) apart.
- The cricket bat is not more than 965mm long and the blade (striking part) is not more than 4.25 inches (108mm wide)
- The three stumps of a wicket are 28 inches (71.1 cm) high and when placed together are 9inches (23cm) wide.

4. Weight

- Cricket bats (not standardised) generally weigh between 1.1kg - 1.4kg.
- The ball weighs between 155.9 and 163g

Cricket cont.

5. Time

- A game of cricket can be played over different periods of time.
- Short games consist of three hours of play. Twenty overs of batting to each side.
- One day games- 6 hours play- 50 overs of batting to each side.
- Two day games – one innings of unlimited time to each side.
- Three, four and five day games- two innings of unlimited time, with a maximum of 90 overs a day for 5 days in a Test match.

6. Data

- Research World Cup Winners, Famous Cricket Grounds and capacities, batting and bowling averages in cricket matches.

7. Interesting Facts

- Cricket was one of the most popular games in Ireland during the 19th century.
- Ireland played in the 2007 World Cup (50 overs) in Jamaica.
- Nine countries play at the highest level (test cricket). They are Australia, New Zealand, The West Indies, South Africa India, Pakistan, England, Bangladesh and Sri Lanka.
- The Ashes is a famous 5 day international cricket match, England v Australia

8. Development

Number

- A batter scores a 'six', two 'fours' two 'threes', seven 'twos' and eleven 'ones'. What is his total score?
- A batter scored a six, some fours, twos and ones. His total score was 63. Give some possible combinations.
- How many players on the field at any time?
- If a bowler bowls 10 overs in a game, how many balls has he bowled?
- A bowler concedes 147 runs during a game but also takes 6 wickets. What is his bowling average?
- How many balls have to be bowled in a game of cricket when each side bats for 50 overs?
- Kevin O'Brien of Ireland scored the fastest century in one day cricket (Ireland v. England, Bangalore 2/3/2011). His record breaking innings exceeded 100. It consisted of 6 x 6's, 13 x 4's, 5 x 2's and 15 x 1's. How many runs in total.

Area

- What is the area of the cricket pitch?
- What is the measurement (length, width and depth) of the smallest box that will enclose 6 cricket balls in a 2 x 3 arrangement?

Length

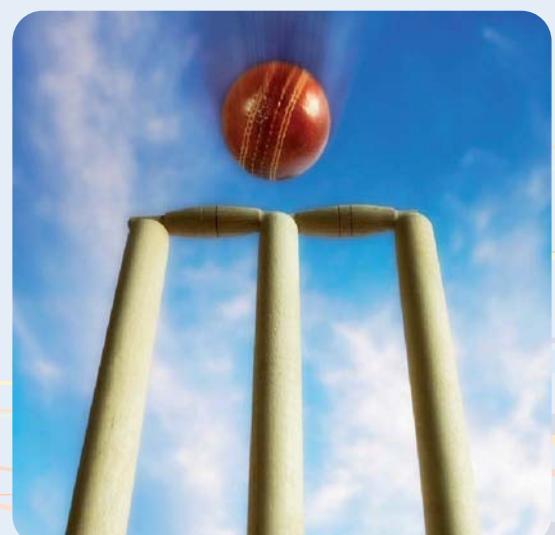
- How far does a batsman have to run to score three runs?

Time

- A team is allotted one and a quarter hours to bowl 20 overs. What is the average time to bowl each over?
- 90 overs are played each day during a five-day cricket match. One team batted for 42% of the time. How many times did they bat? How many times did they bat?

Data

- Represent statistics from Cricket Ireland website in graphical form.
- Collect data from a Cricket match and represent it in graphical form.



9. Cycling

The first bicycle was invented in 1817 by the German Baron Karl von Drais. The first bicycles ever made were called "boneshakers". The first tyres were made of solid rubber. In 1889, the modern tyre and tube were invented by John Boyd Dunlop, a Scotsman who lived in Belfast and Dublin.

1. Number

- Cycling is usually an individual sport.
- 14% of Irish sports cyclists are women.
- A bicycle that can fit for two people is called a tandem. A bike for three people is called a tridem/triplet while a quadruplet is a bike for four. The largest multi-bike had 40 riders.
- There are eight main disciplines in cycling: Road Racing; Off Road Cycling or MTB, Track Cycling, Time Trials, Artistic Cycling or Indoor Cycling, and Bicycle Polo.



2. Shape

- A bike has many shapes: circles (wheels), triangle (frame), etc.
- Cyclists often race on tracks which are circular.

3. Length

- The length of bicycles can vary. An average gent's bike is 210cm long.
- The diameter of wheels (not including tyres) of road racing bicycles is usually 70cm.
- The longest bicycle with 2 wheels was 28.1m long.
- Races can vary from a 200m sprint to a race like the Grand Boucle which covered 454km in 2010 and the Tour de France which generally covers more than 3,500km.

4. Weight

- A modern bike usually weighs between 7 and 11.5kg. Older road bikes could weigh as much as 18kg.
Every bike used in bike races must weigh at least 7kg.

5. Time

- In a traditional individual time trial, riders set off alone at intervals, typically anything from one to five minutes, and try to complete the course in as short a time as possible.
- Cyclists average about 25mph in races, 30mph in time trials and can reach speeds up to 50mph in sprints.
- The Grand Boucle, meaning "great loop", formerly known as the Tour Feminin is one of the grand tours of women's cycle races. It describes the series of individual stages which form a circuit around France. It consisted of five stages over four days in 2010.
- The Tour de France is a three-week bicycle race, first held in 1903. It usually lasts 23 days. Cyclists from all over the world take part. The leader at the end of each day wears the yellow jersey. The course changes every year but it always finishes in Paris.

Cycling cont.

6. Data

- Data of Tour de France winners; of Olympic winners; etc. is available on Internet.

7. Interesting Facts

- One of the most famous cycling races in Ireland is the Tour of Ireland. (Appendix C)
- Stephen Roche became only the second cyclist to win the Triple Crown of victories in the Tour de France, the Giro d'Italia stage and the World Road Race Championship in 1987. His son, Nicolas, was 28th out of a field of 219 in the 2010 Tour de France.
- Athlone athlete Mark Rohan secured Ireland's first ever Paracycling World Championship Gold Medal when winning the H1 Handcycling Road Race in Baie-Comeau, Canada in 2010.
- In 1899, Charles Murphy, of Irish descent, became the first cyclist to ride a mile in under a minute. He achieved this in New York and became known as "Mile-a-Minute Murphy".
- Siobhán Horgan from Mayo finished 25th in the World Championships in 2008.
- Fiona Meade, a Cork cyclist was 90th out of a field of 190 in the Grand Boucle in July 2010.
- Ireland sent a cycling team by mistake to the Stockholm Olympics in 1912. We weren't supposed to compete, as we were not an independent country, but the local organisers let us take part instead of sending us home. Our top rider finished sixty-seventh in a time of over twelve and a half hours.
- Bicycle polo was invented by an Irish man named Ralph McCready and was contested as a demonstration sport at the London Olympics in 1948. Ireland defeated Germany but got no Olympic medals.
- Women's Cycling was introduced into the Olympics in 1984.

8. Development

Number

- Cycling teams usually consist of 9 riders. How many cyclists on 8, 9, 10, 11, 12, etc. teams?

Shape

- Draw all the different shapes of bicycle parts.

Length

- The 97th Tour de France in 2010 covered 3642km over 23 days. What was the average distance covered each day?
- The 2010 FBD Rás covered 1240km over 8 days. What was the average distance covered each day?
- If a wheel has a diameter of 70cm, how many times does it turn when travelling 100m?

Weight

- A cyclist weighs 58kg and her bike weighs 12kg. What is the combined weight?

Time

- A racing cyclist's average speed is 40kmph. How long will it take to complete a stage that is 180km long?

Money

- A road bike costs €732.50. Find the cost to a club of seven such bikes.

Data

- Show the Olympic medal count in graph form – a different graph for each medal.
What percentage of Olympic medals has been won by the top three Nations?
- Show the countries of Tour de France winners in graph form.

10. Darts

Darts is an indoor target game in which small pointed missiles are thrown at a circular board. The board is usually made up of cork, bristle or elmwood and is divided up into 20 numbered sectors.

1. Number

- A dartboard is divided into 20 numbered sections, scoring from 1-20 points, separated by wires running from the small central circle to the outer circular wire.
- Circular wires divide each section into single double and triple scoring areas.
- The bulls eye is divided into outer ring (25 points) and an inner circle (50 points).
- The highest score possible with 3 darts is 180, obtained when 3 darts land in triple 20.
- 3 darts make up a set which are thrown each time a player makes a visit to the board.
- 301 and 501 are the most frequently played games.

2. Shape

- Darts are cylindrical in shape with a point at the end.



3. Length

- A dart board, 45.72cm in diameter, should be set with the bulls-eye exactly 1.73m from the floor.
- Players throw from behind a line (oche) 2.37m from the base (wall) on which the board is set.
- The maximum length for a dart is 30.48cm but darts usually measure between 10cm-18cm.

4. Weight

- Steel tip darts generally weigh 18g-20g. Maximum 52g.

5. Time

- Games usually finish when a player successfully counts back from 501 to 0 finishing on a double or bull (see appendix D for 3 and 2 dart finishes).
- In games over a number of sets, players are allowed take 5 minute breaks after a defined number of sets.
- Darts must stay on board for at least 5 seconds after they are thrown to count.
- The average speed of a dart hitting a board is 64km per hour.

Darts cont.

6. Data

- Although playing straight down from 501 or 301 is standard, other variations exist.

7. Other

- Some believe that the history of darts began when bored soldiers challenged each other by throwing their spears into turned over barrel bases or a cut up tree trunk as a target.
- To decide who throws first, players throw a dart at the bull's eye. The closest is said to win the DIDDLE.

8. Interesting Facts

- John Lowe was the first player to win the perfect 9 dart leg (501) on TV in 1984. He received £102,000.
- The longest unbeaten run at world championships is held by Phil Taylor (44 matches). In his career to date he has won over 130 professional tournaments including 15 world championships.
- The metal frame attached to the face of the board is called the SPIDER (resembles a web).

9. Development

Number

- If a player begins a game of 501 by scoring treble 19, double 12 and single 4 , what is remaining?
- If a player has a remaining score of 41 and 2 throws left, name some ways he can finish? (remembering that he must finish on a double)
- What is the least number of scores required to reduce a score of 156 to 0 (must finish on double or bull 50)
- What is the least number of throws required to reduce a score of 501 to 0 (finish on double or bull)
- Can you find a way to get 161 to 0 in 3 throws? (finish on double or bull)
- Can you find a way to get 169 to 0 in 3 throws? (finish on double or bull)
- What is the highest number you can reduce to 0 in your last 3 throws? (finish on double or bull). See 3 dart and 2 dart finishes. (Appendix D)

Shape

- Investigate the measurements of sectors of the board, ie. area, angle etc.
- Construct a Darts board using compass, ruler and protractor. Draw concentric circles. Calculate degrees needed for 20 sections. Mark off sections using protractor.

Length

- How far does a player walk if he retrieves his darts from the board ___ times during a game?
- If a player is ___ tall, how much shorter is he than the height of the bullseye?

Weight

- A tournament has 48 players. Each player has 3 darts. If each dart weighs 19g, what is the total weight of all the darts?

Time

- Study the game durations during a particular championship and work out average match times etc.

Data

- Information can be obtained as to the variety of darts games played, ie. "killer", "double in", "round the clock" and "jumpers".
- Tabulate the statistics of a particular game, eg. No of 180s, 140s, 120s, 100s etc.

11. Disability Sports

There are 650 million disabled people in the world, 10% of the total population (Aitchison 2003). Over the past 30 years life chances for many disabled people have dramatically improved. Empowerment through sport can now become a reality especially for those once excluded (De Pauw 2009).

- Organised international Sports for athletes with disabilities are divided into 3 groups:
 - 1. Deaflympics:** For athletes with hearing loss of at least 55 decibels in their better ear.
 - 2. Paralympics:** for athletes with physical disabilities
 - 3. Special Olympics:** for athletes with intellectual disabilities
- Although 'disability sports' may be 'adapted', competition is the same as for able athletes. Many Disability Sports Groups have developed specific sport materials for coaches and athletes.

1. Deaflympics - Equality through Sport

- Sometimes called the 'Silent Olympics' as referees use a flag instead of a whistle, races are started by flashing a lamp and there is little clapping.
- The 2009 Deaflympics were held in Taipei. Eighty countries sent 2670 athletes to compete in 182 events (20 disciplines). Ireland won a Silver and Bronze medal at these Games.
- The 2013 Olympics will be held in Athens. Individual Sports: Athletics (Track and Field), Badminton, Beach Volleyball, Bowling, Cycling (Road), Judo, Karate, Mountain Bike, Orienteering, Shooting, Swimming, Table Tennis, Taekwondo, Tennis, Wrestling (Freestyle), Wrestling (Greco-Roman)
Team Sports: Basketball, Football (Soccer), Volleyball

Exercise

The 2009 Deaflympics were the 21st such event. Five were held before 1949 and have been organised every 4th year since. Name the years of the Deaflympics since 1949.

2. Paralympics - Spirit in Motion

- Are held immediately following the Olympic Games in the same host city and using the same facilities. It is the 2nd biggest international sport event after the Olympics.
- In Beijing (2008) over 3,900 athletes from 146 countries competed.
- Athletes will compete in the following sports at the London Paralympics (2012)- 1.Archery. 2.Athletics.3.Bocce (similar to Boules) 4.Cycling(Road). 5.Cycling (Track). 6.Equestrian. 7.Football (5-a-side). 8.Football (7-a-side). 9.Goalball. 10.Judo, 11.Powerlifting. 12.Rowing. 13.Sailing. 14.Shooting. 15.Swimming. 16.Table Tennis. 17.Volleyball. The following will be played as wheelchair sports, 18.Basketball, 19.Fencing, 20.Rugby, 21.Tennis.
- Sighted guides are allowed for all athletes with visual impairments. Both receive medals.

Interesting Facts

- Neroli Fairhill (1944-2006) of New Zealand was the first athlete to take part in Paralympics and Summer Olympics. Paralysed following a motor cycle accident she represented her country in Archery in the Los Angeles Olympics in 1984. She competed in the Paralympics of 1972, 1980, 1988 and 2000.
- Between 1984 and 2010 four other athletes competed in both the Paralympics and Summer Olympics. They were Paulo Fantato from Italy in Archery, Marla Runyan from the USA in Athletics, Natalia Partyka from Poland in Table-Tennis and Natalie du Toit in Swimming.
- Pel Szekers, a Hungarian fencer won a Bronze medal at the 1988 Summer Olympics. He was disabled in a motor accident and went on to win 3 Gold and 3 Bronze medals in Wheelchair Fencing at the Paralympics.

Exercise

Find out more about the athletes mentioned above.

Disability Sports cont.



3. Special Olympics - Let me win. But if I cannot win let me be brave in the attempt

- Special Olympics World Summer Games for athletes with intellectual disabilities were first held in 1968.
- They are held every 4 years.
- In 2003 the Special Olympics were held in Dublin. 7000 athletes from 150 countries competed in 18 disciplines. Irish towns hosted the athletes. In 2011 the Special Olympics will take place in Athens. Athletes will compete in 21 events.
1.Aquatics. 2.Athletics. 3.Badminton. 4.Basketball. 5.Bocce. 6.Bowling. 7.Cycling. 8.Equestrian. 9.Floor Hockey. 10.Football (Soccer). 11.Golf. 12.Gymnastics. 13.Judo. 14.Powerlifting. 15.Roller Skating. 16.Sailing. 17.Softball. 18.Table Tennis. 19.Team Handball. 20.Tennis. 21.Volleyball. (Canoeing may also be included.)

The following Disciplines are included in the Special Olympics and are not included elsewhere in this book

- Bocce: Bocce is a game of Italian origin and similar to Lawn Bowls. The object of the game is to roll a bocce ball close to the target ball called a pallina. Bocce is played as a singles, doubles and team event.
- Roller Skating: In Roller skating athletes compete in artistic events, speed events and roller hockey (5 a side). The speed events are held over 100m, 300m, 500m and 1,000m courses. Relay competitions are also included.
- Softball: Softball is similar to Baseball or Rounders. In the Special Olympics slow-pitch softball is played over seven innings between teams of ten or eleven players. The pitching distance is agreed at a distance of 40-50 feet. Special Olympics Softball also includes a skills competition.

Development - Test your Knowledge

Number

- How many people with disabilities are there in the world?
- How many international disability sports organisations are there?
- What number of classifications is there for athletes at the Paralympics?
- What year did Ireland host the Special Olympic World Games?

General

- What is different about the start and finish of each event at the Deaflympics?
- Which of the Olympic organisations cater for visual impairment?
- What famous American political family was associated with the Special Olympics?

Practical

- Find out if there are Deaflympic, Paralympic and Special Olympic athletes in your area, arrange to meet and discuss their experiences and sports with them... they may have Olympic medals!

12. Dog Racing

Greyhound Racing and Draghunting are two popular sports in Ireland. Greyhound racing takes place in a specially built racetrack. Draghunts are run over open countryside.

1. Number

- A maximum of 6 greyhounds run in every race. They each wear a different numbered and coloured jacket. They break out of a box or trap and chase a mechanical hare.
- The greyhound on the inside trap, nearest the rails is no.1. The dog on the outside trap is no. 6
- Greyhound 1 wears red, 2 wears blue, 3 wears white, 4 wears black, 5 wears orange and 6 wears stripes.
- There are 19 racetracks in Ireland (Appendix E).
- A greyhound race night usually involves 10-12 races.

2. Shape

- The racetrack is shaped like an oval. A complete circuit involves racing around 4 bends. Greyhounds generally race left handed or anti-clockwise around the track.
- Sprint Races: race around 2 bends
- Middle Distance: race around 4 bends
- Stayers race: race around 6 bends
- Marathon: race around 8 bends



3. Length

- Races are measured in imperial measures (yards). The most popular race distance is 525 yards (480m)
- Hurdle races require the greyhounds to jump hurdles that are 32 inch (81.3cm) in height.

4. Weight

- Racing greyhounds generally weigh 50-90 lbs. (22.68Kg - 40.82Kg)
- Each greyhound is weighed before the start of a race. If a greyhound has gained or lost more than 3lbs (1.36Kg) since its previous race it may not run.

5. Time

- The winning time is announced after each race. Times of the other five greyhounds are calculated by adding 0.07 sec for every length they finish behind the winner.
- Times for previous races run by each greyhound are printed on the race card.
- Each track has track records for each distance. Some track records for Shelbourne Park(2010) are 320m =18.41 secs., 480 m=28.08 secs., 937m = 58.87 secs.
- Winning times are sometimes recalculated by adding or subtracting up to 0.40 secs depending on whether the track is considered very fast (usually in Summer) or very slow (usually in Winter).
- Greyhounds can average up to 60kph (33mph) when racing.

6. Data

- See statistics for record times in race tracks in Ireland (Internet).

7. Other

- People bet on greyhounds to win, to be placed (to finish first or second). Other bets include a forecast (1st and 2nd) and trio (1st, 2nd and 3rd).
- The favourite is the greyhound expected to win and will be the shortest price, e.g. even money, 6 to 4. Other greyhounds will be a longer price. A greyhound with little chance of winning could be 10 to 1. (See Probability - Appendix F)

Dog Racing cont.

8. Interesting Facts

- Greyhound racing is an important industry. Almost 30,000 people attend greyhound racing every week.
- The most important greyhound races in Ireland are called 'classics'. They include The Derby, the Oaks (Shelbourne Park) The Laurels (Cork) and The Leger (Limerick). The shortest classic is 325 yds (300m approx) and the longest classic is the Marathon in Harolds Cross at 1010 yds (925m approx).

Draghunting

- In Draghunting hounds (foxhounds or beagles) race in open countryside following an artificial scent that is laid (dragged) over a pre planned course. The course can be up to 7 miles (11.27km) long. The hounds are released by their owners on a given signal and the first hound to cross the finish line wins the drag or race. Draghunting owners and clubs take great pride in their hounds and betting is part of the drag (Appendix F).

9. Development

Number

- Calculate the number of greyhounds that race on a given week in Ireland if there are 19 racetracks, 3 race meetings per track, 12 races per meeting and 6 greyhounds per race.
- In a dog race only 5 dogs completed. If the product of their numbers was 180, which dog did not complete?

Shape

- Draw a Greyhound track using these dimensions:
Track Circumference = 455 metres
Length of Straight = 86 metres
Track Width = 8 metres

Length

- A greyhound raced eight times over 525yards (480 metres). What was the total length of all its races?
- Each of the greyhounds in a 525 yards (480m) race covers an extra 10% in distance (running wide etc). Calculate the total distance covered by all the 6 greyhounds in a race?

Weight

- If the total weight of 6 dogs in a race is 215.10kg what is the average weight of each dog?

Time

- A greyhound runs 480m in 30 secs. What is its average speed in km per hour?
- Greyhound A finishes 8 lengths behind greyhound B who records a time of 29.35secs. Calculate greyhound A's time.
- A greyhound raced on June 10th, July 9th, Aug. 6th, and Sept 24th. What was the average number of days between races?

Other

- Calculate the return on a winning bet of €5 at 3/1 etc. (Appendix F)
- Last year a greyhound won €3,500 in prizemoney. Training costs etc. averaged €40 euro a week. What profit or loss did the owner make?
- 'Forecast All Ways' is a bet where you pick 3 dogs. To win, any 2 of the dogs must finish 1st and 2nd. If you pick dogs in traps 1, 3 and 5 list all the combinations of your bet.
- In a sweepstake 1st, 2nd and 3rd from each race advance to the next round. The winner raced five times. How many greyhounds were entered in the sweepstake.
- Look up greyhound racing results in a newspaper. Do a comparison of winning times, starting prices and trap numbers etc. of winning greyhounds
- Look up statistics from some of the 19 racetracks in Ireland (www.igb.ie) and check percentage winners from each trap, record times for various distances etc.
- Write a newspaper article of a real or fictional greyhound race. Include all important pre and post race information and statistics.

13. Equestrian Sports

The word comes from the Latin word equester meaning horseman. It was introduced into the Olympics in 1912.

13a. Show Jumping

1. Number

- If a horse refuses to jump or knocks down a pole a rider incurs 4 faults.
- The purpose is to jump cleanly over a set course within an allocated time.
- Time faults are assessed for exceeding the time allowance.
- Jumping faults are incurred for knockdowns and blatant disobedience such as refusals (when the horse stops before a fence or runs out).
- At Olympic level horses are allowed two refusals before being disqualified.
- A refusal can also lead to a rider going over the time allowed on course.
- Placings are based on the lowest number of points or “faults” accumulated.
- A horse and rider who have not accumulated any jumping faults or penalty points are said to have scored a “clear round”. Tied entries usually have a jump off over a raised and shortened course, and the course is timed; if entries are tied for faults accumulated in the jump-off, the fastest time wins.
- Olympic horses usually vary in height between 14.1 hands and 16 hands.
- A hand is 4 inches or 10.16cm.
- A horse’s height is measured from the ground to the withers which is the ridge between the shoulder blades and is the tallest point of the body.

2. Shape

- The word ‘vertical’ is used to describe poles or planks placed directly above one another.
- An ‘oxer’ is where two sets of poles are placed close together to make a jump wider. This is also called a spread.
- A ‘square oxer’ is where both top poles are of an equal height.
- A ‘descending oxer’ is where the furthest pole is lower than the closest.
- A ‘Swedish oxer’ is where poles slant in opposite directions, so that they appear to form an x shape when seen head on.
- Most show jumping arenas are rectangular in shape.

3. Time

- Each second or fraction of a second over the time allowed to complete the course results in a time penalty e.g. with a time allowed of 70 seconds, a time of 71.1 seconds would result in 2 time faults.

4. Development

- Amend the rules so that a time penalty of 0.5 seconds or above results in 1 time fault. This will help to explain the concept of rounding up.
- Teach 4 times tables through a rider incurring 4,8,12... faults.
- How long is it since Olympic Show Jumping was introduced into the Olympics?

Equestrian Sports cont.

13b. Horse Racing

Horse Racing is often called 'the sport of kings' because of the expensive outlay involved in keeping horses. The sport is divided into flat racing and national hunt racing where horses jump over hurdles and fences. The number of horses allowed in a race is usually limited for safety reasons.

1. Number

- People at race meetings like to bet or wager on horses. If a person places a bet of €10 on a horse at 2/1 and the horse wins, the return is €30 i.e. the original €10 plus €20 winnings (Appendix F).

2. Shape

- Racetracks can vary in shape but all have a straight run-in section to finish the race.
- Dundalk is an example of a circular course that favours horses racing next to the rail.
- Racetracks may be clockwise (right handed) or anti-clockwise (left handed).

3. Length

- Races are measured in furlongs (Appendix A) in Ireland and Great Britain. The name furlong derives from two Old English words *furh* (furrow) and *lang* (long). It originally referred to the length of the furrow in one acre of a ploughed open field.
- An acre is an area that is one furlong (220 yards) long and one chain (22 yards) wide. The French use the metric system (metres) to measure horseraces.



4. Time

- The most important and valuable races are called 'Classics' or 'Grade I Races' (Appendix G).
- The shortest races in Ireland and Great Britain are 5 furlongs which is approximately one kilometre (1.00584 km). Two year old colts and fillies usually start their racing career in these sprint races.
- Horses that display speed are often kept at the 5f/6f distance but horses that display stamina are upped in distance.
- The racing newspapers give the times for winning horses. A good racehorse should race 5f in one minute or less.

5. Money

- There are two Classic Races run over a mile. They are the 1,000 Guineas and the 2,000 Guineas, so named because of the original prizemoney attached.

6. Interesting Facts

- The first steeplechase was organised in 1752 as the result of a wager between Cornelius O'Callaghan and Edmund Blake. They raced their horses four miles (6km) from Buttevant Church to St. Leger Church, Doneraile, County Cork. This race from steeple to steeple, jumping ditches and fences on the way, introduced the steeplechase to horse racing.

7. Development

- If I place a winning bet of €25 on a horse at 8/1 what is my return?
- The Derby is a Classic Race run over 1 mile & 4 furlongs. How many furlongs is that? Convert to km and m. One furlong = 201.168m.
- Convert 1,000 Guineas to £ sterling (one guinea = £1.05) and convert answer to Euro.

14. Fencing

Fencing is one of the most popular sports worldwide. The origins of fencing date back to Egypt and ancient Greece around 1200 BC. Hieroglyphic artwork records a sport in which two combatants fight using sticks and padding much like modern day fencers. The sport came to Ireland in 1906 when the Irish Fencing club was founded in Dublin.

1. Number

- In individual competitions, the winner of a bout is the person who first reaches a set number of 'hits', usually 5 or 15.
- In team events, the hits scored in the individual bouts are accumulated, and the winning team is the first to reach a set total, typically 45.
- Fencers often specialise in just one of the three different weapons used in fencing, the foil, épée, and sabre.
- Team competition involves teams of three fencers with one substitute allowed.
- In the modern team competition, fencers from opposing teams will each fence each other once, making for a total of nine matches.
- Matches between teams are three minutes long, or to 5 points, and the points then carry onto the next bout, thus making it a forty-five touch bout fought by six fencers. A fencing match consists of 27 bouts, nine for each weapon.
- Penalties fall into three categories for three types of card: yellow, red and black.

2. Shape

- The weapons differ in the way they are used to score hits - in foil and épée, only a thrust with the point of the weapon counts, whereas in sabre a hit can also be made by the side of the blade. A hit must arrive on the correct target area. In foil, this is the trunk of the body, the limbs and head are 'off target'. In épée, the target is the whole body, while in sabre the target is everything from the waist up.



3. Length

- Fencing bouts take place on a long narrow strip, or 'piste', 14 metres long and 2 metres wide. A fencer who goes off the piste during a bout may have a hit awarded against him or her. A bout is controlled by a Referee. An electronic apparatus is used to detect when a fencer makes a hit, and the referee then decides whether a score should be awarded.
- Foil guards are limited to a diameter of 9.5 to 12 cm in international competition.
- The maximum length of the weapons are: foil/épée 89cm, sabre 88cm

4. Weight

- The overall weight of the weapons are: foil 500g, épée 300-450g and the sabre 1.2kg.
- The mask includes a bib which protects the neck. The mask can usually support a blow of 12 kg on the metal mesh.

Fencing cont.

5. Time

- The time limit in fencing is 3mins for a five touch bout and 9 mins for a 15 touch bout. The time limit for direct elimination matches is nine minutes - three three-minute periods with a one-minute break between each. Bouts are timed, and if time runs out, the fencer who is leading is awarded the victory.

6. Data

- Data on World Champions; Olympic winners; etc., is available on Internet.

7. Interesting Facts

- Fencing is a formal sport, in which fencers salute one another before a bout and shake hands afterwards.
- The sport has recently witnessed an increase in participation, thought to be inspired by such films as Star Wars, Die Another Day and The Mask of Zorro.
- The sport has been included in the Olympic Games since their modern day inception in 1896.
- In the 1900 Olympics, a man with a double-barrelled Irish name, Georges Dillon-Cavanagh, won sixth place in the foil event but he was representing France.
- The Irish Fencing Federation was established in 1936.
- Fencing contests begin when both contestants take up the 'en garde' position, 13ft. (4m) apart.

8. Development

Length

- Research the difference between Foils, Épées and Sabres.
- What is the total length of 3 foils and 3 sabres placed end to end (max length)?

Shape

- What is the perimeter and area of the piste?

Weight

- Find the difference between a foil (500g) and épée (800g).

Time

- How long is it since the sport came to Ireland?
- Since 1960 the World Championships in Fencing is an annual competition with the exception of years during which the Summer Olympics are held. How many times has the event been held since 1960 to date?
- How long is a direct elimination match?

Data

- Show the Olympic medal count in graph form – a different graph for each medal.
- What percentage of Olympic medals has been won by the top three Nations?

Money

- Find the cost of a sword and protective clothing (Jacket, Glove, Plastron, Breeches and Mask).

15. Fishing

There are three main forms of recreational fishing or angling (fishing with a line and hook):

- (a) Game fishing is fishing for Salmon, Brown Trout and Sea Trout.
- (b) Coarse fishing is freshwater fishing for all other species other than Salmon, Brown Trout and Sea Trout.
- (c) Sea fishing can be divided into 3 sections: shore fishing, inshore fishing and deep sea or offshore fishing.

1. Number

- Ireland has over 8,000 miles of river, lake and canals and 3,000 miles of coastline to fish.
- Over 150,000 overseas anglers fish in Ireland each year and add over €90 million to tourist income.
- 20 freshwater species of fish inhabit Irish waters.

2. Shape

- The shape of a fish tells us about its habitat.
 - A bullet or torpedo shaped fish lives in moving waters and swims fast
 - Flat fish live at the bottom of the sea and move slowly.
- A typical fish is drawn as an oval with a triangular tail.

3. Length

- The average length of a fishing rod for fresh and salt water fishing is around 9ft (2.7m).
- A 'double hander' rod for salmon fishing can measure up to 15ft (4.57m).
- For deep sea fishing a 6 - 7ft (1.8 - 2.1m) boat rod is often used.
- Inshore Fishing is fishing with small boats (up to 20ft (6.1m) in length) generally less than 5km from the shore.
- Deep sea fishing is carried out up to 20 miles (32km) offshore on boats of 30 feet (9m) in length or more.

4. Weight

- The average weight of fishing rods is 3-5 ounces (85g - 142g).
- Strength of fishing Line (Tensile strength) is the breaking point of a fishing line. For Coarse fishing a 2.5-6lb (1.13-2.72kg) line is generally sufficient but for sea fishing a 25 lb (11kg) line is recommended.
- Records of the biggest fish caught are recorded by 'The Irish Specimen Fish Committee' (ISFC). Fish over a certain weight are classified as specimen fish. Specimen weight for...
 - Pike = 9.072kg (20lb)
 - Salmon = 9.072 kg (20 lbs)
 - Brown Trout = 4.536kg (10 lbs)
 - Brown Trout (river) = 2.278 kg (5lbs)
 - Sea Trout = 2.722 kg (6lbs)
- Irish records for fish caught (in Imperial Measures).
 - Pike = 42 lbs
 - Salmon = 57 lbs
 - Brown trout (river) = 20 lbs
 - Sea trout = 16 lbs
- Anglers calculate the weight of fish before release using the Girth Method as follows.
 1. Measure the fish from jaw to tail = length in inches.
 2. Measure the girth (widest part around the body in inches).

Formula for calculating weight = (Girth x Girth) x length divided by 800 = approximate weight of fish in pounds.
Now convert to kg (Appendix A).

5. Time

- The salmon season in Ireland starts on different dates between January and February with the earliest river fished on January 1st. The season ends September 30th .
- There is a limit of ten fish to be taken by each angler in a season.
- There is no closed season for coarse or sea fishing except for bass from May 15th to June 15th
- For brown trout, most fisheries open between February 15th and March 1st and close on September 30th

Fishing cont.



6. Data

- Make a bar chart of 'specimen weights' of fish caught in Ireland.

7. Other

- Fish can be divided into three categories: Coldwater fish such as Salmon and Trout prefer water temperature of 10-18 degrees celsius.
- Coolwater fish: Pike etc. prefer water temperature of 18-25 degrees.
- Warmwater fish: Bass and Carp prefer water temperature over 25 degrees.
- An annual State Licence (costing €120 in 2010) is available online from www.salmonlicences.ie and is legally required to fish for Salmon and Sea Trout.

8. Interesting Facts

- A single national authority called 'Inland Fisheries Ireland' now implements fishing regulations in Ireland.
- Most recreational fishing is now done on a catch and release basis.
- Fishing was proposed as an Olympic Winter Sport for 2010.

9. Development

Number

- There are over 60 Fishing Clubs in Ireland. Identify one club and research its activities.

Shape

- Identify and draw the shapes of the various species of fish that inhabit Irish waters.

Weight

- Calculate the approximate weight of a fish using the Girth Method if the length = 16 inches and girth = 28 inches. Then convert the answer to kg.

Data

- Research and make a bar chart of 'record weights' of fish caught in (a) Ireland (b) the World.

16. Gaelic Football & Ladies Football

Gaelic football is a field game. It is played in all counties in Ireland and in other countries where Irish people have migrated, especially in the UK and North America. Ladies football is a sister game to Gaelic Football and has enjoyed spectacular growth since the 1970s.

1. Number

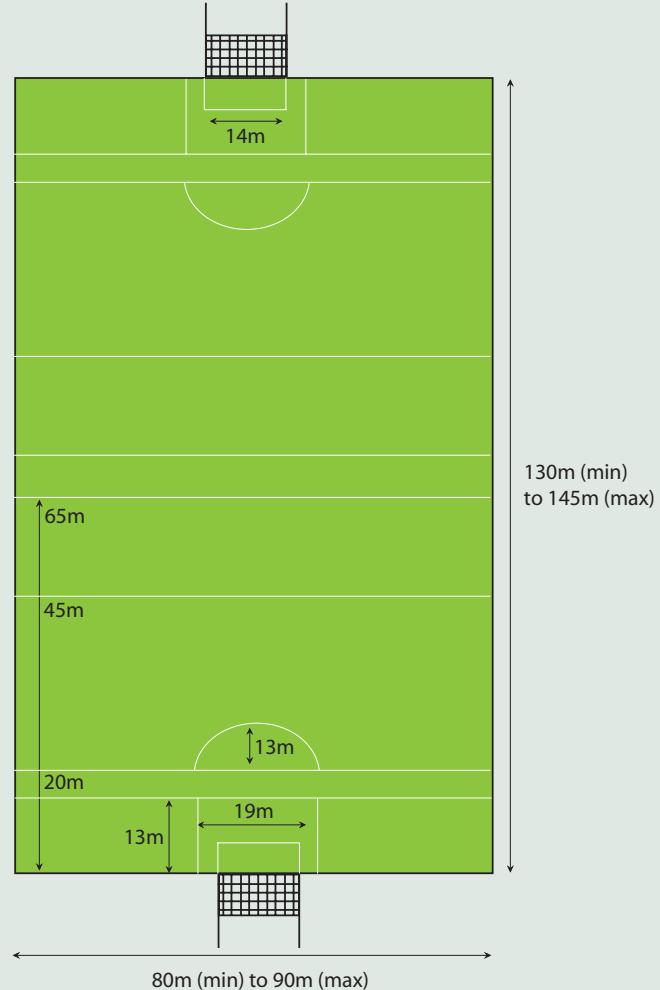
- Each team consists of 15 players with up to 5 substitutions allowed during the course of the game (not including blood subs).
- Teams line out with a goalkeeper, 6 defenders, 2 midfielders and 6 forwards wearing jerseys numbered 1-15. In Ladies Football, the number 16 jersey is worn by the sub-goalkeeper
- Scoring is in goals and points where a goal is equal to three points.
- All-Ireland finals are played in Croke Park, capacity 82,300.
- In both games, the secondary competition is the National League which is divided into 4 sections.
- There are over 2,000 GAA clubs in the country.
- The ambition of every footballer is to win an All-Ireland medal. See table of All-Ireland winners (Appendix I).

2. Shape

- The field of play is a rectangle. Other lines are drawn on the pitch to define a small rectangle, large rectangle and two semi-circles. Other lines on the pitch are the 13m. line, 20m. line, 45m. line and 65m. line. (see diagram)
- The standard size 5 ball used is round and is slightly smaller than a soccer ball. A smaller size 4 ball is used for certain under age competitions and for Ladies' Football.

3. Length

- The length of a playing pitch can vary between 130m. (min) and 145m. (max). The width is between 80m. (min) and 90m. (max).
- The small rectangle centred in front of each goal measures 14m. x 4.5m.
- The goal height is 2.44m. and its width is 6.4m.
- The large rectangle measures 19m. x 13m.
- The dimensions of the semi-circle are 26m. with a radius of 13m.
- The goalposts are a minimum of 7m. in height.



4. Weight

- The weight of a Gaelic football can vary between 370 and 425 grams.

5. Time

- All senior inter-county matches are played over 70 minutes which is divided into two 35 minute periods.
- All other matches are of 60 minutes duration as are Ladies' Football matches.
- Extra time consists of two periods of 10 minutes.
- The half time break lasts for 15 minutes.

6. Data

- See All-Ireland Winners (Appendix D).

7. Interesting Facts

- Down were the first team to take the Sam Maguire Cup across the border in 1960.
- Since 1922 only Tipperary 1922 and Clare 1992 have broken the Kerry/Cork strangle-hold on the Munster Senior Football Championship.

Gaelic Football & Ladies Football cont.

7. Interesting Facts cont.

- The 1947 All-Ireland Senior Football Final was played in the Polo Grounds in New York. Cavan were victorious over Kerry.
- Only Kerry from 1978-1981 and Wexford from 1915-1918 have won four in a row All-Ireland Senior titles.
- The numbers of the jerseys of opposing players add to 17. That is number 6 marks number 11 etc.
- In Gaelic Football all counties except Kilkenny compete in the Sam Maguire Cup as do London and New York.
In Ladies Football, teams compete for the Brendan Martin Cup. There are also Junior (West County Hotel Cup) and Intermediate Championships. The Ladies Football Championship, unlike the Gaelic Football championship, is not necessarily run on a provincial basis.
- Kerry won nine Ladies' All-Irelands in a row between 1982 and 1990
- Cork never played in a Ladies All Ireland Final before 2005. They then went on to win the next five Championships.

Differences between Gaelic Football & Ladies' Football

Ladies Football is run by the Ladies Gaelic Football Association, which is a separate organisation from the GAA. It also has Australian, North American British and European boards. Although most of the rules of the game are parallel to those for men's Gaelic football, there are some differences. The main ones are:

- A player may pick the ball up directly from the ground, so long as she is standing.
- All matches last 60 minutes; in the men's game, senior inter-county games last 70 minutes.
- Kickouts may be taken from the hand.
- A countdown clock with siren is used if available; in the men's game, the referee decides the end of the game.
- It is permitted to change the ball from one hand to the other.
- The game is less physical: all deliberate bodily contact is forbidden except when "shadowing" an opponent, competing to catch the ball, or blocking the delivery of the ball. Shouldering an opponent is not permitted.
- A player who receives a yellow card is 'sin-binned', without replacement, for ten minutes.

8. Development

Number

- It takes 7 officials to handle a football match. How many would be required for 6 matches?
- A team scored four goals and one point. The other team scored only points. The game ended in a draw. What was the final score?
- You are playing full-back. What is the number of the player you are marking? Continue for numbers 2,4,5,6,7,8.
- Take 5 GAA Stadia in Munster. List them in order of capacity starting with the largest (Appendix H).
- If the No. 2 switched corners to mark No. 13, what would be the sum of the numbers worn by the other corner back and corner forward?

Shape

- Identify and count all the shapes you can find on a football pitch.

Area and Perimeter

- Find the area and perimeter of a maximum/minimum size football pitch.
- Find the area of the small rectangle and the large rectangle.
- Find the area of the pitch inside the 45m. line. Do likewise with the perimeter.
- How far would a groundsman walk to mark all the lines on a maximum sized pitch?

Length

- On a maximum size pitch a defender took a free on his own 45m. line. It landed on the opposing 45m. line. What distance did he kick the ball?
- Which is the longer distance: A free on the 20m. line in front of goal or a free on the 13m. line on the sideline?
- A midfielder runs the length of 8 minimum sized pitches during a game. What distance does he travel?

Time

- A game started at 3.30 pm and ended at 4.55 pm. How long did the game last if there was a 15 min. break for half time?
- A team bus arrived at Croke Park one hour and 10 minutes before a game scheduled to start at 2.30. At what time did the bus arrive?

Money

- Calculate the cost of 8 footballs at €45 each.
- An All-Ireland Final ticket costs €80. What will it cost a family of five to attend the match?

17. Golf

Golf is played on a course of either 9 or 18 holes. The golfer uses various clubs or golf sticks to strike the golf ball into each hole in a minimum number of shots.

1. Number

- There are 9 or 18 holes on a golf course varying in length, design, direction and order of difficulty.
- Each hole has an assigned rating (called Par), i.e. the number of shots generally taken to finish the hole.
- Courses usually have a total par of 70, 71 or 72 for 18 holes.
- Shorter holes have a par of 3, medium holes 4 and longer holes 5
- If a player scores 1 less than the par for a hole his score is -1 (birdie) / 2 less is -2 (eagle) 3 less is -3 (double eagle or albatross).
- If a player scores 1 more than the par for a hole his score is +1 (bogey) / 2 more is +2 (double bogey) / 3 more is +3 (triple bogey) etc
- Major competitions are usually played over 4 rounds. The player with the lowest aggregate score is the winner.
- Penalties may also be imposed on golfers who have
 - (a) To move the ball from an unplayable place to continue (eg. Water hazard, under a shrub) = Penalty +1
 - (b) Transgressed the rules = Penalty +2
- A golfer is allowed maximum 14 clubs in the golf bag.
- For the long shots a player will use a driver or a wood. Woods are assigned a number and the lower the number the longer the distance.
- For medium to long shots a golfer will use an iron, numbered from 1 to 9.
- For shots near the green (putting area) a wedge is used.
- Shots on the green are struck with a putter.



2. Shape

- The normal golf hole consists of drive off area called the tee, the grass area where this shot should land called the fairway and the smooth grass area from where you putt the ball called the green.
- A golf ball is spherical and is dotted with 300-400 dimples to improve aero-dynamics
- The shaft (from grip to neck) of each club is straight and tubular.
- The base of the club (striking part) varies in shape. From relatively flat (2 wood, 3 iron) to acutely sloped (9 iron, wedge).
- When driving off, the ball may be placed on a wooden or plastic shaped nail with a small cup on the head (tee).

3. Length

- The total length of a golf course can vary (par 70-72). Generally, length ranges from 5950m to 6675m.
- Par 3's usually range from 100m to 260m / par 4's, 260m – 480m / Par 5's, 480m – 620m.
- The overall length of a club must be at least 457.2mm and except for putters, must not exceed 1219.2mm.
- The length from the neck of the club to the sole of the club must not exceed 127mm.
- The shaft of the club is roughly 12mm in diameter.
- The diameter of the ball must be less than 42.67mm.
- The golf hole has a diameter of 12.7cm.

4. Weight

- The golf ball weighs 45.927g.

5. Time

- Golf games take the form of stroke-play or match-play. In stroke play the player with the lowest score is the winner. In match-play the player who wins most individual holes wins. There is no set time on a golf game but a referee may warn players to speed up if they play too slowly. Failure to speed up can result in a penalty.
- In competition, if a player arrives late for his tee-time, he may be penalized.

Golf cont.

5. Time

- The Ryder Cup, between the best 12 players in Europe and the U.S., is played over 3 days every 2 years. [Foursomes, four-balls, singles]. The 2006 Ryder Cup was played in the K Club in Ireland.
- Four golf majors are played every year; The U.S. Masters in Augusta in April, the U.S. Open in June, the British Open in July and the U.S. PGA in August.

6. Data

- Research data for:
 - (a) World rankings
 - (b) European rankings
 - (c) Driving accuracy ratings
 - (d) Greens in regulation rankings
 - (e) Driving distance rankings
 - (f) Overall skill rankings

7. Other

- 2 main types of golf course:
 - (a) Links course - a seaside course
 - (b) Parkland course – an inland course.

8. Interesting Facts

- Golfers are allocated a handicap that reflects their ability. A golfer with a handicap of 18, scoring a round of 86 gross, has a net score of 86 minus 18.
- Jack Nicklaus holds the record for the most world majors won (18).
- World's highest golf course is the Tacta Golf club in Morococha, Peru which sits 4369m above sea level.
- Longest putt in competition was over 42.67m on the 18th hole in St.Andrews, by Bob Cook in 1976.
- Americans spend over \$600,000,000 on golf balls every year.

9. Development

Number

- If a golf course has 10 par 4s, 4 par 3s and 4 par 5s, what is the total par for the course?
- If a golfer completes a round of golf in 64 shots and his final score is 7 under par (-7) what is the total par for the course?
- If golfer A has a final score of 3 over par (+3) and golfer B has a final score of 5 under par (-5), how many shots difference between their scores?
- Player A [10 pars, 4 birdies, 1 eagle, 2 bogeys, 1 double bogey]
Player B [9 pars, 3 birdies, 2 eagles, 4 bogeys]
Who wins and by how many shots?
- A player finishes a round with a score of level par after 18 holes. During the round he had 12 pars, 3 birdies, 1 eagle, 1 double bogey and ___. What is the missing score?

Shape

- Print off an aerial map of a famous course (example Augusta) and examine this with regard to:
 - (a) holes running parallel
 - (b) holes at right angles to each other
 - (c) holes with dog legs etc.

Length

- The distance a player hits a ball with irons vary by about 15m per club. What's the difference in length between a 3 iron and a 9 iron?

- A player drives a ball 295m. What's the difference between his drive and the longest recorded drive of 464m (held by Michael Hoke Austin)?

Weight

- Rounding a golf ball's weight off to the nearest gram, how many golf balls would it take to weigh 2.3kilos?

Time

- If an average round of golf takes 4 hours 35mins to complete, how long would it take to complete 5 rounds?

Data

- Examine the results of the Major winners for the last 20 years.
- Answer the following questions:
 - (a) How many have been won by US Golfers
 - (b) European golfers
 - (c) Asian golfers
 - (d) Australasian golfers
 - (e) Other nationalities
- Draw a graph of this information: A golfer scores 89, 85, 93, 83, 90. Find the average score.

Other

- Dan, Jack and Billy play for 20c a hole. Dan wins 8 holes, Billy wins 5 holes, Jack wins 3 holes (they half the rest). Who pays what at the finishing hole?
- Tiger and Harrington shared 3rd place so they shared the prize for 3rd, 57,000 euro and 4th, 45,000 euro. How much did each get?

18. Gymnastics

Gymnastics is a sport involving performance of exercises requiring physical strength, flexibility, agility, coordination, balance and grace. Artistic gymnastics is the best known of the gymnastics sports. It involves the women's events of uneven parallel bars, balance beam, floor exercise, and vault. Men's events include floor exercise, pommel horse, still rings, vault, parallel bars, and high bar. Other forms of gymnastics are rhythmic gymnastics, various trampolining sports and aerobic and acrobatic gymnastics. The Irish Amateur Gymnastics Association was founded in 1964 and affiliated to the International Gymnastics Federation (FIG) in 1976. It affiliated to the Olympic Council of Ireland (OCI) in 1979.

1. Number

- There are three main disciplines of gymnastics: Artistic, Rhythmic and Acrobatic.
- There are four pieces of apparatus in Artistic Gymnastics: Beam, Bars, Floor and Vault.
- Everything in Artistic and Acrobatic Gymnastics is judged out of ten.
- There are five pieces of apparatus - rope, hoop, ball, clubs and ribbon.
- Floor exercises combine four elements - Gymnastics, Ballet, Theatrical Dance and Apparatus Manipulation.
- Three values add up to the final points - artistic, technical and execution.
- In Acrobatic Gymnastics boys and girls can work in pairs. Only women can work in trios. Men work in fours.

2. Shape

- Floor Exercise – Artistic and Acrobatic floor events occur on a carpeted square, usually consisting of hard foam over a layer of plywood.

3. Length

- **Artistic and Acrobatic floor events** - occur on a carpeted 12m x 12m square.
- **Balance Beam** - The beam is 125cm from the ground, 500cm long, and 10cm wide.
- **Uneven Bars** - These are two flexible horizontal bars of different heights, set at 1.7m apart. The upper bar is between 2.35m and 2.4m from the floor. The lower bar is between 1.4m and 1.6m from the floor.
- **Vault** - The vault is set at a height of 125cm for women and at 135cm for men. Gymnasts sprint down a runway, which is a maximum of 25 meters in length, before hurdling onto a spring board.
- **Parallel Bars** - Men perform on two bars slightly further than a shoulder's width apart and usually 1.75m high.
- **Still Rings** - This is arguably the most physically demanding event. The rings are suspended on wire cable from a point 5.75 meters off the floor, and adjusted in height so the gymnast has room to hang freely and swing.

4. Time

- **Balance Beam** - The gymnast performs a choreographed routine up to 90 seconds in length consisting of leaps, acrobatic skills, somersaults, turns and dance elements on a padded sprung beam.
- **Floor Exercise** - Female gymnasts perform a choreographed routine up to 90 seconds long, in a floor exercise.
- Men's floor routines usually have four passes that will total between 60–70 seconds and are performed without music, unlike the women's event. Rules require that gymnasts touch each corner of the floor at least once during their routine.
- Acrobatic routines last for 90 seconds.

5. Data

- Data in relation to World Champions; Olympic winners; etc., is available on the Internet.

Gymnastics cont.

6. Interesting Facts

- The International Federation of Gymnastics was founded in Liege in 1881. By the end of the nineteenth century, men's gymnastics competition was popular enough to be included in the first "modern" Olympic Games in 1896.
- Female gymnasts have to be over 16 to compete in the Olympics.
- In 1996, Barry MacDonald became the first and only Irish Gymnast to compete at an Olympics when he performed at the Atlanta Games.



7. Development

Number

- Competitors score the following in Artistic Gymnastics:

A -	8	7	6	4
B -	9	5	6	5
C -	8	8	7	8

Who was declared the winner?

Shape

- Draw and identify all the shapes of the various apparatus used in Gymnastics.

Length

- Find the area of the Balance Beam, Floor Exercise Carpet, etc.

Time

- How long is it since the Irish Gymnastics Association was founded?
- 20 competitors perform a routine that takes each of them 90sec. with a 20 sec. gap between each routine. How long will the competition last?
- Gymnastics Camp started at 12.30 P.M. The gymnasts spent 2 hours and 30 minutes on the balance beam and 1 hour on the uneven bars. What time did the gymnastics camp end?

Data

- Show the Olympic medal count in graph form – a different graph for each medal.
- What percentage of Olympic medals have been won by the top three Nations?

19. Handball

Handball is one of the national games of Ireland but has a strong international element. It is played in an alley or court which can be either indoor or outdoor. The aim of the game is to strike a ball with the hand against the front wall of the court with skill and precision to outscore an opponent.

1. Number

- Each team consists of either one or two players.
- There are four walls and, while the ball can rebound off any wall, the players have to strike the front wall with the ball during play.
- The winner is the person who scores 21 points in a game. He has to win two out of three games to win the match.
- Ireland has over 170 clubs with almost 5,000 of the players under the age of 20.
- There are over 400 indoor and outdoor handball courts in Ireland.

2. Shape

- The court is rectangular in shape. It is divided and marked with 5cm wide lines for the service area.
- The ball is spherical.

3. Length

- Handball is played in an alley. Most of these alleys measure 12.2m in length by 6.1m in width.
- The front wall is 6.1m high and the back wall is 4.2m high.

4. Weight

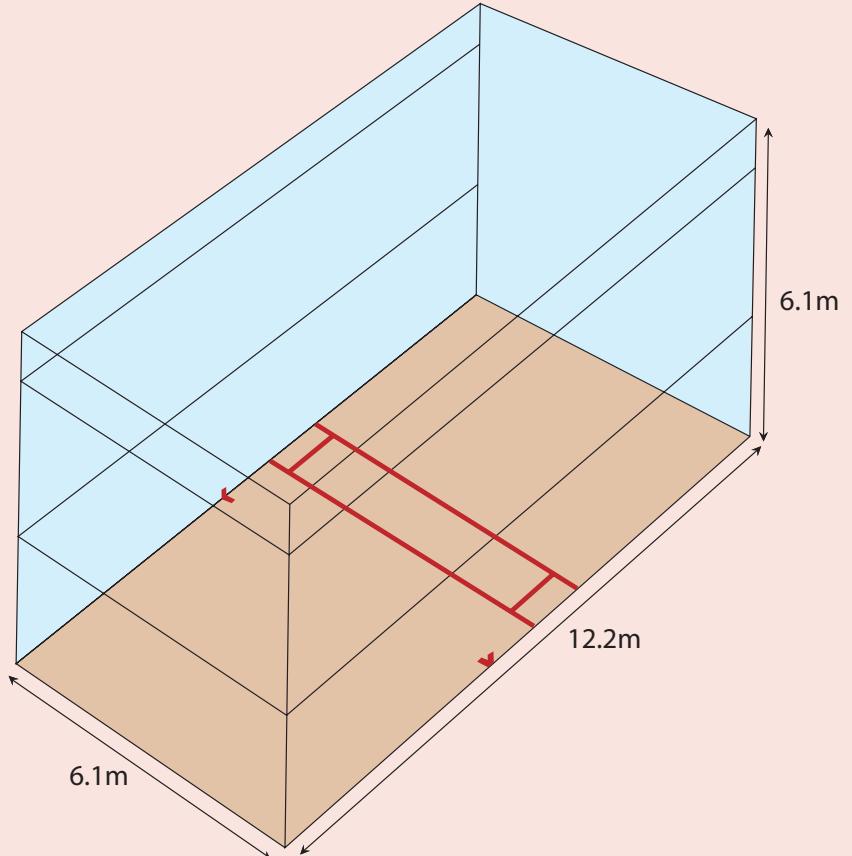
- The ball is 6cm in diameter and weighs 60g.

5. Time

- There is no time limit in handball due to the method of scoring involved.
- The earliest recorded game of handball in Ireland took place in Galway 1527.

6. Data

- For further information on handball records search the Internet.



Handball cont.

7. Interesting Facts

- The first record of handball is from 2,000BC in Egypt
- In 1884 handball was recognised as an official GAA sport.
- Michael 'Ducksy' Walsh holds the most All Ireland titles which is 15 and he won 12 consecutively from 1985 to 1997.
- To be properly ventilated a handball court would require four air changes per hour for proper humidity control.
- 1924 The Irish Handball Council is established to promote, develop and organise the game.
- 1928 The All Ireland Junior Softball and Handball Championships are introduced.
- 1970 A 60 x 30 court was built in Croke Park for the World Championships.
- 1971 Comhairle Liathróid Láimhe na mBan is founded.

8. Development

Number

- If a player's score is 12, what does she need to win? etc
- If a player travelled from the back to the front of the court how far did she go?
- If a point was scored every 15 seconds on average, how long did a game last if the final score was 21 to 18?

Shape

- What shapes are there if the ball is cut in half?
- What is the area of the different walls and of the floor?
- How many right angles in the court?

Length

- Starting at the service area, if the ball rebounds off the front and then back wall how far did it travel?
- What is the perimeter of the floor and walls?
- What is the internal surface area of a Handball court? (Don't forget to include the area of all the internal walls)
- If you added the length of all the lines marked on the floor of a handball court, what is their combined length?

Weight

- What is the weight of 2,3,4,5 handballs? etc

Time

- Find out how long a match takes if the first game lasts 45 mins, the second lasts 52 mins and the third lasts 38 mins.
- How long has handball been an official GAA sport?
- A match started at 11:30 am and ended at 12:10 pm. How long did it last? If there was a break of 5 mins after each game, for how long were they playing?



20. High Jump & Pole Vault

The high jump is performed in the field area of a track and field competition. Athletes jump a horizontal bar (which is held by two vertical poles). The jumper who achieves the greatest height is declared the winner. It has been contested since the Olympic games of ancient Greece.

1. Number

- A jumper has 3 attempts at a particular height. If these 3 attempts are unsuccessful, he is eliminated.
- If any 1 attempt is successful he progresses to the next height (at least 2cm higher)
- He then has 3 new attempts and the same process continues.
- The high jump (men) has been held since the Olympic games of 1896. Women first took part in 1928.
- In major competitions the number of competitors is reduced to 12 finalists.

2. Shape

- The horizontal bar over which the athletes jump is held between 2 vertical poles.

3. Length

- The vertical poles, holding the high jump bar, are 4m apart.
- The athlete can run up to a max of 15m before taking his/her jump.
- The present world record for the high jump is 2.45m. The 3 previous records were 2.44m, 2.43m and 2.42m.
- Men's 2008 Olympics was won with a height of 2.36m. (Men's 1896- height of 1.81m).



4. Weight

- Jumpers use many techniques. Both feet may not leave the ground at the same time.

5. Time

- Each competitor has 1 minute to complete the jump.

6. Data

- Information on the winning heights of each Olympic Games can be graphed and tabulated.

7. Other

- A jumper may pass up the opportunity to jump at any height. But if he is not successful at the next attempted height his recorded height will be the height at which he was last successful.
- In the event of a tie, a count-back system is applied and the jumper with the least number of misses at previous heights wins.

8. Interesting Facts

- In the 1968 Mexico Olympics Dick Fosbury (USA) introduced his signature back-first technique. This technique is named the Fosbury Flop.
- Pat Leahy from Charleville won a Silver medal at the 1900 Olympics clearing 1.78m. Eight years later, his brother Con won Gold, clearing 1.775m. (First brothers to win Olympic medals in athletics).
- Martin Sheridan, of Bohola, Co. Mayo, won Olympic Silver 1908 for the USA, clearing 1.4m in the standing high jump. He won a total of 9 Olympic medals in his career.

High Jump & Pole Vault cont.

Pole Vault

The Pole vault is a track and field event in which an athlete uses a long, flexible pole (fibre-glass or carbon) as an aid to leap over a bar. It is conducted similarly to the high jump. It has been a full medal event at the Olympics since 1896 for men and since 2000 for women.

Number

- An athlete brings, on average, 10 poles to a competition.
- An athlete usually takes 18-22 strides on his run-up.

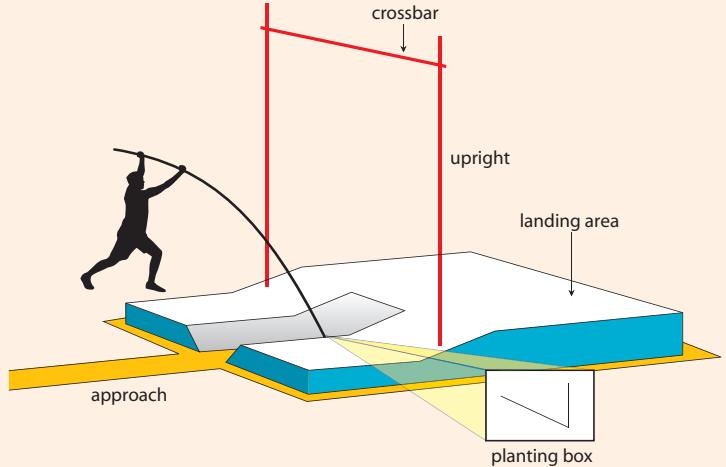
Length

- The pole usually measures between 3.05m and 5.30m.
- The landing mat is between 1m and 1.5m thick.

Shape

- The vaulter jumps in a pendulum motion.
- The sloping box, into which the pole is placed for take-off, is trapezoidal in shape.

The World Record is held by Sergey Bubka at 6.14m



9. Development

Number

- If there are 5 jumpers in a competition and their respective final jumps are: 2.25m, 2.5m, 2.35m, 2.35m, 2.4m, what was the average height achieved?
- How many Olympic Games took place between 1972 (Munich) and 2008 (Beijing)?
- If 32 men and 30 women competed in competition and if 12 reached each final
 - (a) How many jumpers did not reach the final? (b) How many did not win a medal?

Shape

- How many right angles can you see in a high jump set up?
- If the crossbar is placed at a height of 2.35m, what is the area beneath the crossbar?

Length

- If a jumper cleared a height of 2.07m and the lead stands at 2.35m, how much higher must he jump to share the lead?
- If an athlete has a runup of 15m per jump, how much does he run for 8 jumps?
- A bar at a height of 1.99m is raised by 2cm, what is the new height?
- If a jumper uses a run-up of 12.5m, then jumps exactly 2.4m, how far has he travelled when he reaches the ground after his jump?
- Deirdre Ryan set an Irish record of 1.92m in 2006. How much short of 2m is that?
- A bar is raised by 2cm for each new height in a competition. Ann jumps 1.97m on her first height. She successfully jumped three more heights before failing her fifth height.
 - (a) What was her best jump? (b) At what height did she fail?

Time

- If the 12 competitors in a final use their maximum allotted time per jump and they each have 3 jumps, how long does the final take?

Data

- Graph the winning heights of the Olympic Champions for the past ___ years?

Other

- A competitor left Ireland for a competition in Barcelona. His flight cost €240, hotel and food €230, and physio cost €90. If his prize money was €650, what was his profit?

21. Hockey

A game in which two teams of players, equipped with sticks, curved or hooked at the end, attempt to score by flicking or pushing a spherical ball into the opponents' goal.

1. Number

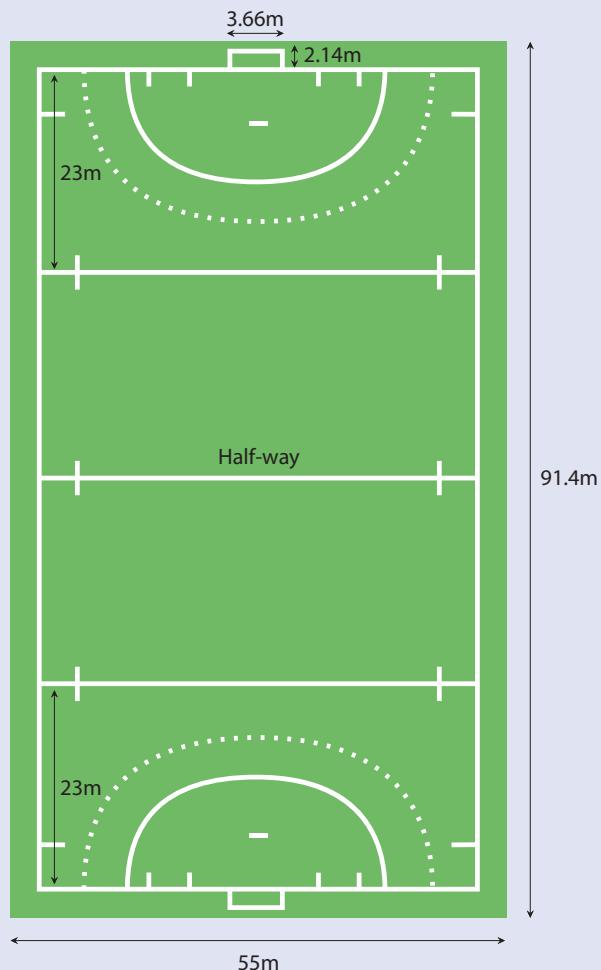
- Each team consists of 11 players with a maximum of 5 substitutes allowed per team.

2. Shape

- The playing field and goalposts are rectangular in shape.
- There are two semi circles in front of each goal.

3. Length

- The length of the field is 91.4m and the width is 55m.
- Other line markings are the halfway line and 2 lines 23m in distance from each endline.
- Radius of the smaller semi-circle around the goal is 14.63 (continuous line)
- Radius of the larger semi-circle around the goal is 19.63 (broken line)
- A penalty spot is marked 6.4m from the goal line.
- The goal is 3.66m wide and 2.14m high.
- The hockey ball has a circumference of 22.4cm- 23.5cm



4. Weight

- The weight of a hockey stick must be between 340g and 794g and the hockey ball 160g

5. Time

- The duration of a hockey game is 70mins, 2x35mins halves with a 5min interval.

6. Data

- Research tables of Olympic winners on the Internet.

7. Other

- The modern game of hockey grew from English public schools in the early 19th century. British servicemen brought the game to India in the late 1800s. India, and later Pakistan, would become very powerful in the sport. They dominated the Olympic games from 1928 to 1968.
- In early 1970s, artificial turf began to be used. This switch ended Indian and Pakistani domination of hockey. Since the 1970s Australia, Holland and Germany have dominated the sport.

8. Interesting Facts

- The referee in a hockey match is called an umpire. There are usually two umpires, one for each side of the field.

Hockey cont.

8. Development

Number

- In 1908, although we weren't an independent country, Ireland was allowed to enter a hockey team at the London Olympics. We were beaten 8-1 in the final. How many years ago was this?
- If there are 8 teams involved in a league, and each team plays every other team once, how many games are played in the league?
- If there are 16 teams in a tournament, what is the maximum number of players (including subs) that play in the tournament?

Shape

- What is the (a) perimeter (b) area of a hockey pitch?
- What is the (a) perimeter (b) area of the area bordered by the 2x23m lines?
- What is the (a) perimeter (b) area of the semi circular area around the goalpost?

Length

- How far is the half-way line from the goal line?
- How far inside the 23m line is the penalty spot?
- What is the distance between the 2 penalty spots?

Weight

- How many hockey balls would balance the weight of a hockey stick weighing 640g?
- What is the combined weight of a hockey team's sticks (including subs) if a stick weighs 550g.

Time

- If a player is substituted 18mins into the 2nd half, how long was the player on the pitch?

Data

- Draw up the data of hockey medal winners in the Olympics from 1924 to 2008. Award 3 points for Gold, 2 points for Silver, one point for Bronze. Draw a block graph of the results.
- Compare and contrast the amount of medals won by European countries and Asian countries.

Other

- If a hockey squad wins a tournament with a first prize of €28,000, how much does each squad member receive if the money is shared evenly?



22. Hurling / Camogie

Hurling is the national game of Ireland. It is considered to be one of the fastest and most exciting team sports in the world. The written history of hurling begins with the story of Setanta in the 11th century but the game is much older. It is played in all counties of Ireland and in countries where Irish people have settled.

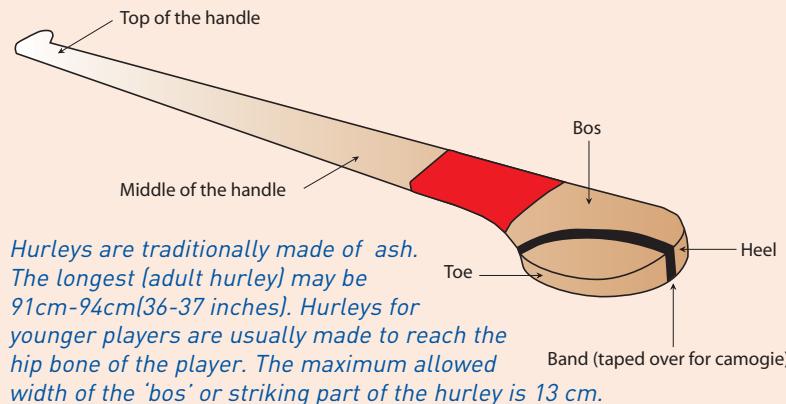
Camogie is the female version of hurling. It was first played in 1904 and gets its name from camóg, a smaller hurley than the camán used by males. Hurling and Camogie are similar in most aspects except for some rule differences. Camogie and hurling provide a rare instance of a different name for the male and female version of a sport.

1. Number Both games are...

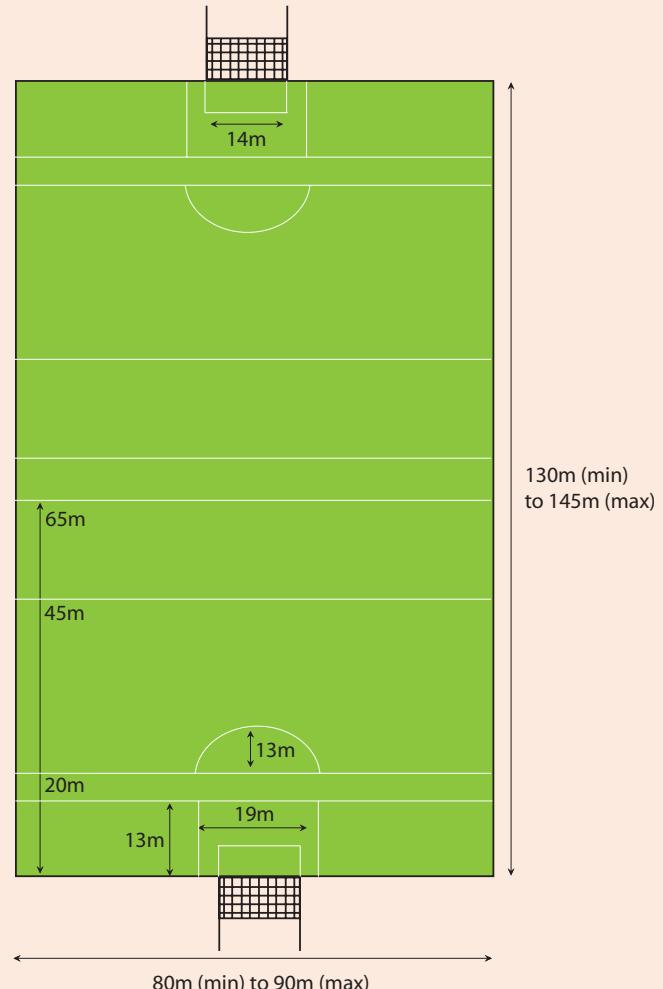
- 15 aside with 5 substitutions allowed
- Players are numbered 1 to 15 consisting of a goalie, 6 backs, 2 mid (centre) field and 6 forwards
- Seven officials are in charge of each game. These are the referee, 4 umpires to signal goals and points and 2 sideline people, (linesmen or lineswomen).
- Matches are scored in goals and points. A goal equals 3 points.
- All-Ireland finals are played in Croke Park: Capacity 82,300. Other major stadia are Semple Stadium (Thurles) 55,000, Gaelic Grounds Limerick, 50,000, Páirc Uí Chaoimh (Cork) 43,000.(Appendix H)
- Counties play in the National Leagues during the Spring months.
- There are over 2,000 GAA clubs in the country. Nearly all have underage teams (Under 21, 18 (minor) down to youngest age group. Most, but not all of the clubs play hurling.
- There are over 550 Camogie Clubs with 85,000 members in total.

2. Shape

- The field of play is a rectangle. Within the field are rectangles and semicircles. The goalposts also form rectangles.



The hurling ball called a sliotar is made of cork and leather. It has a circumference of between 23cm – 25 cm. A smaller sliotar is used for camogie, colleges and under 15 games and has a circumference of 21cm. The rib of the sliotar must measure between 2.2mm and 2.4 mm.



3. Length

- The length of the field can vary between 130 metres (min) and 145metres (max). The width is between 80 metres (min) and 90metres (max).
- The small rectangle, centred in front of goal, measures 14 metres by 4.5metres.
- The large rectangle measures 19 metres by 13 metres.
- The semi circle is 26 metres in diameter.
- The goalposts are a minimum of 7 metres high and 6.5 metres apart. The crossbar is 2.5 metres high.
- The main lines marked across the pitch that are important in hurling are the endlines, sidelines, the 20 metre lines, the 65 metre lines and the halfway line.
- The main lines marked across the pitch that are important in camogie are the endlines, sidelines, the 13 metre line, the 20 metre lines, the 45 metre lines and the halfway line.

Hurling / Camogie cont.

4. Weight

- The weight of the senior sliotar (size 5) can vary between 100g-130g. The weight of sliotars for camogie, college and under 15 games (size 4) can vary from 90g- 110 g. Size 3 sliotars are also manufactured for very young players.



5. Time

- Senior intercounty hurling matches last for 70 minutes. All Camogie and hurling club matches are of 60 minutes duration. The half time break lasts for 15 minutes. Extra time consists 10 minutes aside in both Hurling and Camogie. 3 substitutes may be used during extra time.

6. Data

Information is available on the web for both sports for the following:

- Roll of honour- Number All Irelands won by each county in different grades (senior, junior, minor etc.) (Appendix J).
- Number of All Stars won by players from each county
- Capacity of county grounds (Appendix H).

7. Other

The 32 counties in Ireland and London play in either the Liam MacCarthy , the Christy Ring , the Nicky Rackard or the Lory Meagher Cups. The cups presented to Camogie All-Ireland winners are the O Duffy, the Jack McGrath , the Kay Mills, Nancy Murray and Máire Ní Chinnéide Cups. Can you find out which counties are playing in each of the above Championships this year?

8. Development

Number

What is the minimum number of players needed to field 2, 3, 4, 5 teams etc.?

What number would be required to have 3 substitutes, 4 substitutes etc on each team?

You are playing centre back (no. 6). What numbered player are you marking? Continue for all other positions.

My team scores 12 points. Write down all the possible scores (goals and points) that the opposing team needs to score to earn a draw.

Research the capacity of GAA stadia and county grounds . How many would be in selected grounds if they were half full, quarter full etc.? (Appendix H).

Shape

Identify all the shapes on the hurling/camogie field

What is the perimeter of the maximum sized playing field.?

What distance would a person lining the field travel to mark all the important lines for (a) a hurling game (b) a camogie game?

Length

Have a long puck competition. Measure and compare longest pucks.

What length of hurley would best suit you? Measure distance to your hip bone.

A player can take 4 steps with the ball in hand. How many metres can you travel in 4 steps?

Weight

Weigh and compare various sliotars.

Time

20 mins have gone in first half of All Ireland. How much time left (a)in first half (b) in rest of game

Croke Park can be evacuated in 8 mins. Given a full attendance, how many people on average can be evacuated per minute from the stadium?

Data

Game stats are a very important part of team preparation. Present a record of stats. for a game you attended or viewed.

Other

Calculate cost of equipping a player to play hurling or camogie. Price playing gear: boots, hurley, helmet and sliotar.

23. Indoor Bowls

The most popular version of Indoor bowls is called Short Mat Bowling. It is played in Community and Sports' Halls. Players roll wooden bowls to stop as close as possible to a smaller target bowl or jack. Versions of this game are played with local rules.

1. Number

- Games can be played as Singles (1v1), Doubles (2v2), Triples or Fours.
- Each player plays up to 4 bowls in Singles and Doubles, up to 3 bowls in Triples and 2 bowls in Fours.
- An 'end' is the term used to describe when all players have rolled their bowls.
- A match may be played over a specific number of ends, to an agreed score (e.g. first to 21 points) or over a set time.
- A player/team scores a point for each of their bowls that is closer to the jack than their opponents' closest bowl. For example, in a singles' game, A and B playing 4 balls, the score 4-0 for A is possible if A has the four closest bowls to the jack on completing the 'end'.

2. Shape

- The playing mat and delivery mat are rectangular.
- Bowls are not true spheres. They are skewed or biased on one side. Skilful players use this bias to turn the bowl into the jack as it stops.

3. Length

- The green bowling mat is a minimum 12.2m (40ft) and maximum 13.75m (45ft) long by 1.83m (6ft) wide.
- As a player rolls the bowl he/she must have at least one leg on a delivery mat measuring 610mm (24in) long by 356mm (14in) wide.
- A block 380mm (15ins) long, 75mm (3ins) high and 75mm wide is placed in the centre of the bowling mat. Bowling to avoid this block is one of the skills of the game.
- The jack or target is placed 915mm (36in) approx. from the edge of the mat.
- The bowls are between 115mm (4.5ins) and 135mm (5.25ins) in diameter.
- The jack measures between 63mm (2.5ins) and 70mm (2.75ins) in diameter.



4. Weight

- The maximum weight of a bowl is 1.59kg (3.5lbs)
- The jack generally weighs 850g (30ozs)- can vary from 397g (14oz) to 907g (32oz).

5. Time

- A game may also be played to a time limit.
Examples of this are Singles-30mins., Pairs 35mins, Triples 40mins. and Fours 50mins.

6. Data

- The following is the score in a singles match, AvB, played to 12 points - (4,0), (3,0), (0,3), (2,0), (3,0). Represent on a Pie chart.

7. Interesting Facts

- Indoor Bowls games are based on the rules of 'Lawn Bowling'.
- Short Mat Bowls was played in Belfast and surrounding areas in the early 1950s. It spread from there to other parts of Ireland and to the UK in the 1980s.
- World Championships are played every two years. In 2010 Ireland won the Pairs, Triples and Fours titles. Colm McHugh from Ireland won the World Singles Championship in 2008.
- Terms to research: Live Area, Dead Line, Foot-Fault, Fender, Ditch, Rink, Toucher.

Indoor Bowls cont.



8. Development

Number

- In a singles game, each playing 4 bowls, what is the least number of ends played for one player to score 21 points?
- If the game is played over 12 ends, what is the maximum score possible?
- In a game of Triples, 18 bowls are played in an end. How many bowls did each player roll?
- An end was scored by the umpire as 0-0. How was this possible?

Length and Shape

- Calculate the perimeter and area of the bowling and delivery mats.
- How many bowling mats would fit in your school hall if a distance of 1.83m (6ft) is required between each mat?
- Draw a bowling mat to scale-include centre block, delivery mat and jack-line.

Weight

- What is the maximum weight of 8 bowls and a jack used in a singles match?

Time

- A competition is played by time (50 mins per match). My team played for 3hrs:20mins. How many matches did we play?

Data

- Research the results of the World Championships on the Internet. Present the information in different ways.

Other

- Research the cost of purchasing all the equipment necessary to purchase new Short Mat Bowling equipment for your school hall. Include the following, 1 bowling mat, 2 delivery mats, 2 fenders, 1 centre block, 1 jack, 2 sets of bowls {8 bowls in a set}.

24. Judo

Judo, meaning "gentle way", is a combat sport that was developed by Professor Jigoro Kano in Japan in 1883. Judo's most prominent feature is its competitive element, where the object is to either throw one's opponent to the ground, immobilize or otherwise subdue one's opponent.

1. Number

- Judo is an individual sport, where one fighter faces off against another. Victory is achieved by the opponent's submission or by obtaining higher points than an opponent at the end of the fight. If both fighters achieve the same points, the type of pins and submissions scored is assessed and the fighter with the better score wins.
- There are five scores a judo referee can award during a judo contest. The scores that are shown on a score board are Koka, Yuko and Wazari. Scores which are not shown on a scoreboard are Ippon and Kinsa. Ippon is the maximum score you can obtain in a judo contest and like a knockout punch in boxing, ends the contest. A Kinsa is not technically a score but is a way for referees to keep track of who is doing better in the contest when neither contestant has been able to score the minimum Koka score.
- There is a conversion to points equivalent to these Japanese names:

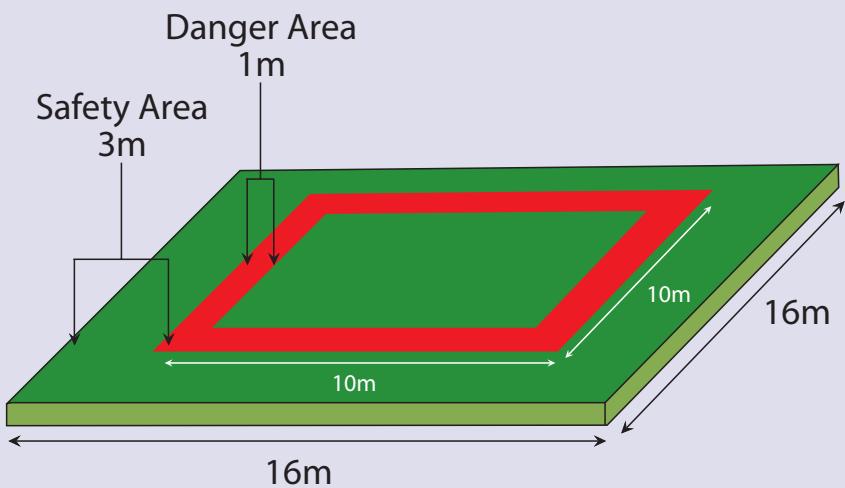
Kinsa	= No value
Koka	= 3pts
Yuko	= 5pts
Waza-ari	= 7 pts
Ippon	=10 pts
- There are 49 clubs in Ireland affiliated with the Irish Judo Association.

2. Shape

- Competition area is a minimum of 14m x 14m and a maximum of 16m x 16m and is covered by Tatamis or similarly acceptable material, generally green in colour. It is divided into three zones. The main contest area is in the middle measuring between 8m and 10m squared. The danger zone is red and is located around the contest area measuring 1m, but competitors can only remain in that area for a few seconds before attempting a throw or they will be penalised with a point reduction. Outside of the Danger Area is the safety zone in which a player can be thrown as long as the thrower remains inside the contest area.

3. Length

- An adhesive blue tape and a white tape, approximately 10cm wide and 50cm long are fixed on the centre of the contest area at a distance of 4 m apart, to indicate the positions at which the contestants must start and end the contest.



4. Weight

- There are seven weight divisions:
- | | | | | | | |
|--------------|-----------|-----------|-----------|-----------|------------|--------------|
| Men | | | | | | |
| Under 60 kg; | 60–66 kg; | 66–73 kg; | 73–81 kg; | 81–90 kg; | 90–100 kg; | Over 100 kg. |
| Women | | | | | | |
| Under 48 kg; | 48–52 kg; | 52–57 kg; | 57–63 kg; | 63–70 kg; | 70–78 kg; | Over 78 kg. |

Judo cont.

5. Time

- At senior level contests are arranged in five 3 minute rounds.
- At junior level contests are arranged in three 2 minute rounds.
- A koka is scored if a hold lasts for between 10-19 seconds.
- A hold for between 20-24 seconds scores 'yuko'.
- Any hold which is maintained, with certain components, for between 25-29 seconds, will be awarded waza-ari.
- If a contestant throws an opponent fully on his/her back (with impetus) and the hold lasts for 25 seconds, the fight finishes at that moment.



6. Data

- For contestants aged 8 to 15 years, there are 18 levels of skill grades known as Mon (Junior) grades, which are denoted by coloured and banded belts. These grades denote technical skills achieved.
- From 16 years, Kyu (Senior) skill grades apply and are again denoted by belts of different colours.
- Everyone has to work through the grading system to reach the 1st Dan Grade when the player is entitled to wear the famous black belt.
- The belt colours in ascending order are white, red, yellow, orange, green, blue, brown and finally black.
- Data on World Champions; Olympic winners; etc., available on Internet.
- Judo was introduced to Ireland in 1952.
- Since its inclusion in the 1964 Olympic Games, Judo has progressed rapidly.
- In the 1964 Tokyo Olympics Ireland was represented by John Ryan from Sligo.
- Kieran Foley of Dublin secured 7th place in the 1984 Los Angeles Olympics.

7. Development

Number

- What is a contestant's score who is awarded 5 kokas, 2 yokas and a waza-ari?
- A player scores a total of 26 points. What combinations of holds might he have used? Similarly for 21 points, 35 points etc.

Shape

- Draw the competition area to scale.

Length

- What is the (a) perimeter (b) area of the maximum competition area?
- What is the area of the Danger Area?
- What is the perimeter of the safe area?

Time

- How long does (a) a senior and (b) a junior contest last?
- Judo was first included as an Olympic sport in 1964. In how many Olympic Games has it featured if omitted just once in 1968?
- If a 16 year old competitor is awarded two Dan belts each year, what age will he be when he is awarded his Black Belt?

Data

- Show the Olympic medal count in graph form – a different graph for each medal.

Other

- What percentage of medals has been won by the top three Nations?

25. Long Jump / Triple Jump

Long Jump is an individual Olympic sport. The contestant sprints to the take-off board and jumps as far as possible to land in a sand pit.

The Triple Jump is a separate event but similar in many ways to the long jump. It is also known as the Hop, Step (or skip) and Jump. The three phases are completed in one sequence. The Triple Jump or Geal-Ruith was a contest in the ancient Tailteann Games in Ireland. The first final in the renewal of the Olympic Games in 1896 was the Triple Jump won by James Connolly, son of Irish immigrants to the USA. He later finished second in the High Jump and third in the Long Jump. The present world record in the Triple Jump (2010) is 18.29m (men) and 15.50m (women)

1. Number

- Contestants may take any number of strides in the approach run. Younger and beginner jumpers are advised to take 12 to 19 strides. Elite jumpers take 20 – 22 strides.
- Each contestant gets up to three attempts to achieve her best long jump.

2. Shape

- The sand pit should be rectangular. It is 2.75m wide and 9m long
- The take-off board is between 1m - 3m in front of the sand pit (3m for Olympic competition). It is usually coloured white and is 1.20m long and 20cm wide.



3. Length

- The running track leading to the sand pit should be 40m - 50m long.
- Each jump is measured from the take off board to the nearest mark in the sand made by the athlete.
- Each jump is measured to the nearest 1/100th of a meter, eg 8.21m
- The jumper's shoes should have a sole not more than 13mm thick.

4. Weight

- The long jump was one of the original Olympic events that imitated skills required in war. The warrior was required to jump over obstacles and streams. In the original long jump the athlete had to carry a weight of 1-4.5kg in each hand.

5. Time

- At a given signal, the athlete has one minute to complete the jump.
- A record jump is not recognised if a backing wind of 2m a second or more aids the athlete.

6. Data

- See National and World Records, Olympic medals etc.

Long Jump / Triple Jump cont.

7. Other

- For the elite long jumper, the optimum take off angle is between 18 and 25 degrees.
- The long jump is one of the events of the pentathlon, heptathlon and decathlon

8. Interesting Facts

- The oldest record of a long jump was that of the athlete, Chionis, who jumped 7.07m in the Olympics of 656BC.
- Peter O Connor of Waterford held the world long jump record of 7.61 m from 1905 to 1923. He won a Silver medal in the long jump and a Gold in the triple jump in the 1906 Olympics. Read the remarkable story of Peter O'Connor in "The King of Spring" written by Mark Quinn (Liffey Press 2004). Other long lasting world records in the long jump are held by Jesse Owens- 8.13m (1935-1966) and Bob Beamon - 8.90m (1968-1991)
- The present World Records for the Long Jump (2010) are 8.95m (men) and 7.53m (women).
- Jonathan Edwards (UK) triple jump of 18.43 metres in 1995 was not recorded as a world record as wind assistance was over the permitted limit.
- In 1924 Robert Le Gendre shattered the world record with a jump of 25 feet : 4 inches (7.76m). However the jump was in the Pentathlon. The Gold medal in the long jump was won with a jump of 24 feet : 5 inches (7.44m)

9. Development

Number

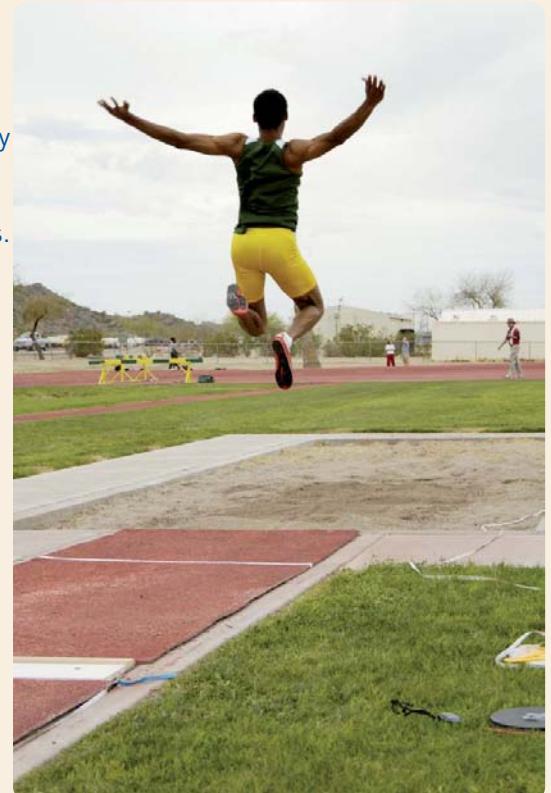
- 17 athletes enter the first round of a long jump competition. How many jumps will be needed to complete the round if each athlete completes three jumps?
- In a long jump competition 8 competitors made an average of 15 jumps. How many jumps were legal if (a) 20% (b) 45% or (c) 50% were fouled?

Shape

- Track the trajectory of a long jump when the athlete takes off at an angle of 20 degrees. Consider other angles.

Length

- An algorithm to predict the average distance an athlete would be expected to jump for a given speed was developed by Dr. Philip Smith and Dr Adrian Lees of the UK.
 - Male: Distance = (speed in metres per sec. by 0.95) – 2.23
 - Female: Distance = (speed in metres per sec. by 0.99) – 2.81
 - Estimate and then check the distance you can travel at speed in 12, 13 etc strides.
- An athlete jumped 7.10 m. However her coach calculated that her jump started 6cm behind the board and her hand went back 45 cm when she landed. Calculate her perfect jump.
- The Olympic long jump also included a standing- jump competition up to 1912. From a standing position measure how far you can jump to land on both feet. What is the difference between your height and your standing jump?



Data

- Graph the improvements in World record jumps (Long and Triple) over the past 20 years.
- Make a bar chart of Countries whose athletes have won Olympic Gold medals in (a) Long Jump and (b) Triple Jump.

Other

- Research the disciplines in the pentathlon, heptathlon and decathlon.

26. Motor Sport / Rallying

Eleven different disciplines make up motorsport in Ireland.

1. Autocross: On a circuit or loose gravel surface. Fastest time wins.
2. 4 by 4 Trials: Over rough terrain course and passing cleanly through gates.
3. Hillclimbs: Fastest time driving up a steep hill on closed roads.
4. Autotests: An event that involves a number of tests and manoeuvres.
5. Circuit racing: Races on circuits such as Mondello Park and Kirkstown.
6. Kart Racing: Races on circuits.
7. Midget Car Racing: Race over grass course in (Bantam) cars.
8. Navigation Trials: Cars cover a course on minor roads.
9. Rallycross: Short races on a combination of tarmac and loose surfaces.
10. Sporting Trials: Purpose built cars over rugged terrain avoiding markers.
11. Special Stage Rallying: Rallies on special stages with link sections on public roads.

1. Number

- In 4 by 4 trial, drivers travel 4 courses twice in each competition.
- Autotest involve 10-12 individual tests of skill. The best total score wins.
- In Rallycross, 5-8 cars compete in each race.
- Special Stage Rallying is the most popular discipline. Approx. 35 Stage Rallies are held in Ireland each year. The most famous is the Circuit of Ireland Rally.

2. Shape

- In 4 by 4 events, cars climb and descend steep banks. The gradient of a hill or bank is usually expressed as a ratio. A rise of 5 metres in a 100 metre stretch of track is expressed as a slope ratio of 1 in 20.
- A racing circuit, now measuring 3.5km, was first opened in Mondello Park in 1968.

3. Length

- In Hillclimbs, the course is approx one mile (1.6km) long.
- In Karting, the Kart is just 5cm off the ground.
- Navigation Trials involve the driver and navigator working out the route from grid references. The route is generally between 96- 224 km long.

4. Weight

- The minimum weight of a Formula 1 car (including driver), is 620Kg.
- In all speed events, crash helmets must be worn. They generally weigh between 1130g-1140g.

5. Time and Speed

- In Autocross, competitors get 2 to 4 attempts to record their best time.
- In Kart Racing, competitors travel at speeds of 100kph (Cadet Class) to 225kph (250cc Class).
- In Navigation Trials, competitors must adhere to an average speed of not more than 50 kph.
- Rallycross races generally last from 4-5 mins.
- In Special Stage Rallying, competitors keep to 30mph (48.28 kph) on public roads, but travel at high speed on closed roads.
- Age of entry for Cadet Class Kart Racing is 8 years. The minimum age for Sporting Trials, Rallycross and Autocross is 14 years. Parental consent is required for all competitors under 18 years.

6. Data

- See Formula 1 World Championship points.

Motor Sport / Rallying cont.

7. Other

- Formula 1 car racing is considered the most expensive world sport.
- There are 12 teams and 24 drivers in F1 (2010).
- There are 19 F1 races (2010) – 11 outside Europe.
- At the end of a race the winning driver is awarded 25 points, 2nd =18, 3rd =15, 4th = 12, 5th =10, 6th =8, 7th = 6 and 8th =4, 9th =2 and 10th =1.

8. Interesting Facts

- An Irish team called Jordan entered in the F1 series from 1991 to 2005, winning four Grands Prix.



9. Development

Number

- A total of 4,900 drivers took part in 210 motorsport events in Ireland in 2009.
What was the average number in each event?
- A driver finishes 1st, 6th, 11th and 3rd in the first four Formula 1 races of the year. How many points scored ?

Shape

- Identify and draw the shapes of all parts of (a) A Kart (b) A F1 car etc.
- What is the slope ratio of a hill that rises 20m in 100m of track?

Length

- The track in Mondello Park is 3.5km. How many circuits must be completed to cover 315km ?

Weight

- You are the driver of a Formula 1 car. Calculate the net weight of the car by subtracting your weight + helmet weight (1130g)+ fireproof clothing (1150g) from 620Kg.

Time

- In a Navigation Trial you must keep to an average speed of 50kph. You start at 12.10 pm. What time should you arrive at checks 35km, 60km, 100 km ... 220 km from the start?
- A driver completes a one mile (1.6km) hillclimb course in 48 seconds. What was the average speed ?

Data

- Make a bar chart of present ' World Championship' points for Formula 1.

Other

- Calculate cost of kart and all equipment necessary to take part in a Karting race.

27. Mountaineering

Mountains are generally measured in height above sea level. Thus Everest, at 8,848m, is the highest mountain.

1. Number

- The number of people participating on a climb should be no less than 2 and no more than 15 depending on the experience of the climb leader.

2. Shape and Height

- Heights of mountains are generally given as heights above sea level. The Himalayas are generally about 5km above sea level, whilst the Andes are around 4km above sea level.



3. Length

- The standard safety rope is approx 10mm (1cm) in thickness and up to 60m in length.

4. Weight

- An individual in good health should be able to carry 20% of their body weight.
Intermediates should be able to carry 25% of their body weight.
Experienced and well conditioned backpackers can carry 35% of their body weight.

5. Time

- A hike should begin early in the morning to get as many daylight hours as possible. During winter months, there are fewer daylight hours and only short hikes should be planned.
- For well-maintained trails, a climber should travel 3km in an hour. Add a half an hour for every 30 meters of elevation gained and add fifteen minutes for every 30 metres coming down. Group size must also be taken into consideration. A group of about 3-5 people could move at a faster pace than a group of 15-20. The experience of hiking and previous experience of travelling that particular route will also have an effect on the time it takes to complete the journey.

6. Data

- Check on the web for the heights of mountains worldwide.

7. Interesting Facts

- Mount Everest can be found at Latitude 27° 59' N....Longitude 86° 56' E. Its summit ridge separates Nepal and Tibet. It was first climbed by Sir Edmund Hillary and Sherpa Tenzing Norgay on May 29, 1953 via the South Col Route. There were over 400 members on the expedition which included 262 porters, twenty Sherpa guides and over 5,000 kgs of equipment. The climb began in March with the establishment of base camp. From then on it was a slow climb to the top.
- The largest known mountain in our solar system is Olympus Mons, which rises to a height of 26km into the atmosphere. It exists on Planet Mars.

Mountaineering cont.

The highest mountains of each continent (the Seven Summits):

Summit	Elevation m	Continent	Range	Country
Kilimanjaro	5,895 (19,341 ft)	Africa	Kilimanjaro	Tanzania
Vinson Massif	4,897 (16,500 ft)	Antarctica	Ellsworth Mountains	(claimed by Chile)
Puncak Jaya	4,884 (16,024 ft)	Oceania	Sudirman Range	Indonesia
Everest	8,848 (29,035 ft)	Asia	Himalayas	Nepal
Elbrus	5,642 (18,510 ft)	Europe	Caucasus	Russian Federation
Mt. McKinley	6,194 (20,320 ft)	North America	Alaska Range	USA
Aconcagua	6,962 (22,841 ft)	South America	Andes	Argentina

Mountains of Ireland

Name of Mountain	Height m	Location
Carrauntoohil/ Corrán Tuathail	1041 metres	Co. Kerry / Ciarraí
Beenkeragh / Binn Chaorach	1010 metres	Co. Kerry / Ciarraí
Mount Brandon / Cnoc Bréanainn	952 metres	Co. Kerry / Ciarraí
Lugnaquilla/ Log na Coille	926 metres	Co. Wicklow / Cill Mhantáin
Galtymore / Cnoc Mór na nGaibhlte	920 metres	Co. Tipperary / Limerick / Tiobraid Árainn / Luimneach
Nephin Beg / Néifinn Bheag	806 metres	Co. Mayo / Maigh Eo
Mount Leinster / Stua Laighean	796 metres	Co. Wexford / Carlow/ Loch Garman / Ceatharlach
Croagh Patrick / Cruach Phádraig	765 metres	Co. Mayo/ Maigh Eo
Errigal / An Earagail	752 metres	Co. Donegal / Dún na nGall
Slievenamon / Sliabh na mBan	722 metres	Co. Tipperary / Tiobraid Árainn
Knockboy /An Cnoc Buí	706 metres	Co. Cork / Kerry / Ciarraí / Corcaigh
Silvermines / Sliabh an Airgid	695 metres	Co. Tipperary/ Tiobraid Árainn
Trostan/Trostán	554 metres	Co. Antrim/ Aontroim

8. Development

Number

- How much higher is Everest than K2?
- Using the Internet find a table giving the highest mountain on each continent. How much higher is the tallest over the lowest?
- Work out the combined height of mountains on each table. Convert this height to kms.
- Repeat this exercise for Irish mountains.

Weight

- An intermediate climber is carrying 22.7kg of baggage (25% of bodyweight) and a senior climber is carrying 31.78kg (35% of bodyweight). What does each climber weigh?

Time

- Research challenges to climb various numbers of mountains over a specified time period.

Data

- Draw a bar graph of the seven highest peaks.
- Draw a graph of the seven highest peaks in Asia.
- Draw a graph of the seven highest peaks in Ireland.
- Find the latitude and longitude for each of the seven summits.

Temperature

- Temperature drops 6.5° for every 1000m you travel above sea level. If the temperature at sea level is 90° , what is the temperature at (a) 1000m above sea level (b) 2500m above sea level?
- Find the difference between (a) and (b).

28. Netball

Netball derived from an early version of women's basketball. Players are constantly involved in the game, as each player may only retain the ball for 3 seconds. Teams score goals by passing into the Goal Circle and then shooting the ball into the opponent's Goal Ring. The team with the most goals at the end of the game is the winner.

1. Number

- Teams of 7. Each player has a specific role identified by the bib he/she wears.
- The Court is divided into thirds. Players may be confined to Defending, Centre and Attacking thirds.
- Each player wears a bib identifying his/her position on the field.
- Only 2 players on each team may score.
- A player in possession may take only 1 full step with the ball.

Position	Bib	Role
1. Goal Shooter	GS	Plays in Attacking Third, including Goal Circle. May score
2. Goal Attack	GA	Plays in Centre and Attacking Thirds, including Goal Circle. May score
3. Wing Attack	WA	Plays in Centre and Attacking Thirds, but not in Goal Circle.
4. Centre	C	Plays in all areas of Court, except Goal Circles
5. Wing Defence	WD	Plays in Centre and Defending Thirds, except Goal Circle.
6. Goal Defence	GD	Plays in Centre and Defending Thirds, including Goal Circle.
7. Goal Keeper	GK	Plays in Defending Third, including Goal Circle.

2. Shape

- The game is played on a rectangular Court. Other markings identify semi circles (shooting or Goal Circles).



3. Length

- The netball court measures 30.5m (100ft) by 15.25m (50 ft).
- The centre-circle is 90cm in diameter.
- The lines are marked with tape that is 5cm (max) wide.
- Players defending a pass or shot must remain at least 90cm (3 ft) from opponent in possession. This minimises physical contact.
- Goals must be scored from inside a 4.9m (16ft) radius semi-circle called the Goal Circle.
- Goal Rings (Scoring Hoops) are 380mm (15in) in diameter on top of 3.05m (10 ft) posts.
- The ball (leather or rubber) measures 680-710mm (27-28 in) in circumference.

4. Weight

- The ball weighs 397-454g (14-16oz)

Netball cont.

5. Time

- Games are 60 min. long divided into 15 min. quarters.
- There are 3 min. intervals between the 1st and 2nd and between the 3rd and 4th quarters with a 5min. break allowed at half time.
- Players have a maximum of 3 sec. to pass or shoot the ball.
- World Netball Championships are played every four years. The 2011 Championships were played in Singapore.

6. Data

- Draw a table to compare Netball and Basketball under various headings.

7. Interesting Facts

- Ireland affiliated to the international Netball Federation in 1976 and enters women's teams at Adult, U21, U19 and U17 levels.
- Women's Netball is very popular in Northern Ireland and in 2011 it was ranked 12th in the world.
- Netball is often played in the smaller Basketball Court. However if the ball strikes the backboard it is considered out of play.

8. Development

Number

- What is the maximum number of players who may legally be in each third of the court at one time?

Shape

- Identify all the shapes on a Netball Court

Length

- What length of tape is required to mark all the lines a Netball Court?

Weight

- Compare the weight (max) of the ball used in Netball with those used in Basketball, Volleyball, Soccer, Gaelic Football etc.

Time

- If a game commences at 2pm, what time should it finish if there are no stoppages for injury?

Data

- Construct a pie-chart to show the amount of time the ball was in each third of the court during a Netball game.

29. Olympic Handball

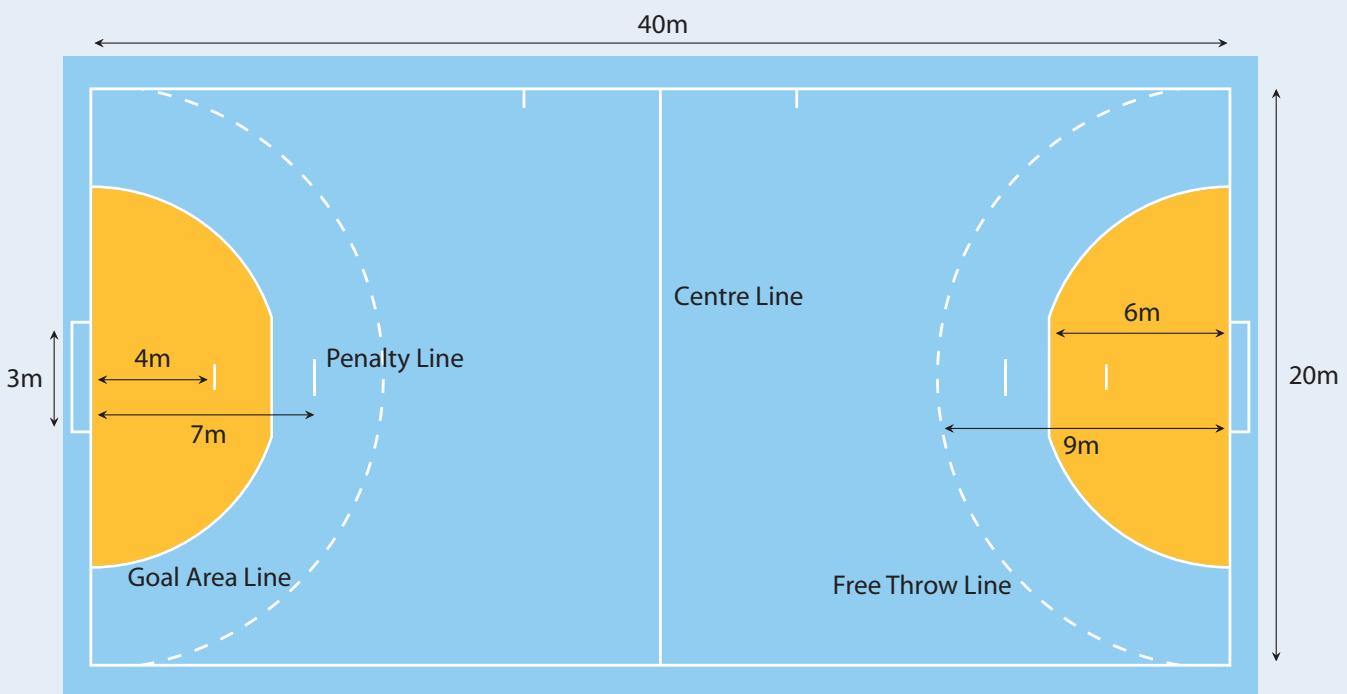
Olympic Handball was introduced as a sport for men at the 1936 Olympics. Women's competition was introduced at the 1976 Olympics. Olympic Handball was introduced to Ireland in 1974. In 1975 the Irish Olympic Handball Association was formed.

1. Number

- Handball is a fast-paced game involving two teams of seven players.
- A team has twelve players of which seven may be on court at the one time. One of these seven players must be nominated as goalkeeper.

2. Shape

- The playing court is rectangular in shape, 40m long x 20 m wide, with a goal in the centre of each end. The goals are surrounded by a near-semicircular area, called the zone or the 6m area, defined by a line six metres from the goal. A dashed near-semicircular line nine metres from the goal marks the free-throw line.



3. Length

- Full size goals are 3m x 2m. The goal line is 8cm in width but other lines are only 5cm in width.
- The radius of the free throw line is 9 metres.
- Team / Base area (minimum size: 44m x 24m) with benches for exactly 14 players and 4 officials.

The Ball:

Size	Used by	Circumference (in cm)
III	Men	58–60
II	Women, male youths older than 12 and female youths older than 14	54–56
I	Juveniles 8 years or older	50–52

4. Weight

- The ball weighs 425–475 g in weight (Size 3), 325–375 g (Size 2) and 290–330g. (Size I)

Olympic Handball cont.

5. Time

- A standard match for all teams of 16 years and older has two periods of 30 minutes with a 10 minute half-time.
- For youths, 12 to 16 years, games are 2 x 25 minutes duration.
- Each team is entitled to call a one-minute time-out in each half.
- The referees may also call time-outs for interruptions in play like injury to players. Referees exchange their positions approximately every 10 minutes (long exchange) and change sides every 5 minutes (short exchange).
- For breaching certain rules, players can receive a 2 minute suspension. If a player receives a third suspension, she is excluded for the remainder of the match.

6. Data

- Played in 160 countries world-wide with over 15 million participants.
- Second largest participant sport in Europe
- One of the world's fastest team sports.
- Voted Best Sport at the 2000 Olympic Games in Sydney.
- In 2003, to commemorate the 2004 Summer Olympics, Greece minted a commemorative €10 coin, depicting Olympic Handball.

7. Development

Number

- How many players on the court at any one time? How many not on court?
- If there were three games being played on adjacent courts at the same time, how many players would be playing and not playing at any one time?

Shape

- What is the area/perimeter of an Olympic Handball court?
- What size box would be needed to carry 10 Olympic handballs for a sixth class competition?
- What is the area of the semi-circular zone around the goal?
- What is the area/volume of the ball used by Men/Women/Juveniles?

Length

- If a goalkeeper was standing on the edge of his goal area and threw the ball to a team-mate standing directly in front of him on the centre line, how long was his throw?
- What is the shortest distance between the two goal areas?
- If the goalkeeper was standing at the left hand side post of his goal, how far from the nearest sideline would he be?

Weight

- How much would a box containing 10 Juvenile handballs weigh if its empty weight was 25g?

Time

- How old is the Irish Olympic Handball Association?
- What is the maximum length of time it would take for a match involving eleven year olds if the referee does not call any extra time out?

Data

- Using the Internet, find the medal count for the Olympic Games.
- What percentage of the medals has been won by the top three nations. Show this information on a pie chart.

30. Orienteering

Orienteering involves finding your way from one point to another, using only a map, a compass and your wits. Orienteering is usually organised in woods, hills or parks, with the participants on foot. Park Orienteering, Mountain Bike Orienteering (MTBO) and Wheelchair Accessible (Trail-O) events are also organised. The sport originated in Scandinavia where it evolved from military exercises in the 19th century to an organized sport in 1919. The first Orienteering event in Ireland was organised in the Glen of the Downs, Wicklow, in 1969.

At an orienteering event, several courses of varying difficulty are laid out in the woods. Each course consists of a series of checkpoints (or "controls"), marked by a brightly coloured orange and white orienteering flag. Participants are given a map with the locations of the checkpoints circled. Using the map and a compass, each participant finds his/her way from one control point to another in the order specified.

1. Number

- There are twenty-one Irish Orienteering clubs with approximately 1,100 members ranging in age from nine to ninety.

2. Length

- This varies according to experience. A beginner's course is 2-3km long while more experienced participants take part over courses of 8-12km.

3. Time

- Participants are timed when they are in a competition. The average time to complete a course is set for 45mins to 1 hour. Competitors set off at 2 minute (approx) intervals. More difficult, technical courses are set for more experienced competitors.

4. Shape

- Each control point is marked by a flag, or "kite". It is orange and white and approximately 30cm square. There is also an electronic box or plastic pin-punch. The orienteer uses a card or the pin punch to register that he has been to the control.
- In Orienteering Courses a triangle marks the starting point and a double circle marks the finish.

5. Ratio

- Maps are usually to the scale of 1:10000 (1cm;100m), 1:15000 or 1:5000. Some maps used for school events are 1:4000. Height is shown by contours at 5 m intervals.

Orienteering map symbols:

- Black: rock features (for example, boulders, cliffs, stony ground) and for linear features such as roads, trails and fences as well as for other man-made features
- Brown: landforms such as contour lines, small knolls, ditches, earthbanks.
- Blue: water features: lakes, ponds, rivers, streams, marshes.
- Yellow: vegetation - specifically for open or unforested land. The density of the yellow colour shows how clear the area is: brightest yellow for lawns, pale yellow for meadows with high grass.
- Green: vegetation that slows down the passage of an orienteer. The darkest green areas are almost impassably overgrown.
- White: forest with little or no undergrowth - forest that an orienteer can run through.
- Purple (or red): the orienteering course on a map. Out-of-bounds areas are also designated in red or purple.

Permanent Orienteering Courses

There are a number of Permanent Orienteering Courses (POCs) set up in the Leinster and Cork Areas by Coillte and Cork City Council respectively (www.corkcity.ie). There are also POCs in Ennis and in areas of Connacht. See Irishschools.blogspot.com and www.orienteering.ie for further information

Orienteering cont.

6. Development

Number

- A map shows an area of 8,000sq.metres. 40% of the map is coloured blue. What area is under water?
- What is the average membership of an orienteering club in Ireland?
- If 30% of a club are under 25 years of age, 45% between 25 and 40 and 15% between 40 and 60 and they have 2 members over 60, how many members are in the club altogether?

Length & Height

- There are 12 contour lines shown on the map. The first one is at 55m. What is the highest point on the map?
- If the highest point on a hill is 75m and the lowest point is 30m, how many contour lines are required to show the hill?

Time

- Teams of 3 are competing and the team with the lowest total time wins. Team A runners finish in 55minutes, 1hour and 7minutes and 49 minutes. Team B runners finish in 54 minutes, 58 minutes and 1 hour and 1 minute. Which team wins?
- What is the average time taken by the runners?

Shape & Area

- What is the area and perimeter of a standard control marker?

Ratio

- A map is drawn to the scale of 1:10000. The distance between 2 control points on the map is 3cm. How far apart are the control points in reality?
- The scale of a map is 1:5000. What does 1cm represent? (5cm? 2.5cm?) in metres/ in paces. (Pacing is very important in orienteering).
- Family Orienteering Day

A family of 5 took part in a Family Orienteering Day. Each completed a different course. See details below. Compile questions on time, length etc. using information provided.

Name	Course	Distance	Time
Pat	Yellow (beginners)	1.5km	15 mins : 13 secs
Mary	Orange (novice)	2.5km	24 mins : 28 secs
Sile	Red (improver)	3.5km	43 mins : 47 secs
Dad	Blue (advanced)	5.1km	82 mins : 49 secs
Mam	Green (elite)	6km	84 mins : 13 secs

31. Pitch and Putt

Pitch and Putt is often called Par 3 golf and is played over 18 holes. Par is 54 strokes and the winner is the player with the lowest number of shots over the course. To give every player a chance, players may get a handicap (a stroke allowance). For example a person with a handicap of 5 may consider par for them to be 59 strokes.

1. Number

- Negative numbers used to record score (winner is 3 under par)
- A player uses two clubs – a putter and a pitching wedge. A player may carry up to three clubs, one of which must be a putter.

2. Length

- Official courses in Ireland do not exceed 1,200m.
- Maximum distance for 1 hole is 90m.
- The hole must be 108mm in diameter and at least 101.6mm deep.
- The average length of a club is 90cm.

3. Shape

- Hole is circular. Ball is spherical.
- The diameter of a pitch and putt ball is 42.67mm
- Pitching wedges are angled differently to give variations in lofts. Angles can vary from 45° to 60°.

4. Weight

- The weight of a golf ball must not exceed 45.93g

5. Data

- Typical score card:

Hole 1 – 41 metres	Hole 9 – 60 metres	Hole 17 – 47 metres
Hole 2 – 52 metres	Hole 10 – 81 metres	Hole 18 – 55 metres
Hole 3 – 64 metres	Hole 11 – 39 metres	
Hole 4 – 85 metres	Hole 12 – 49 metres	Strokes taken -----
Hole 5 – 32 metres	Hole 13 – 61 metres	Handicap -----
Hole 6 – 44 metres	Hole 14 – 73 metres	
Hole 7 – 58 metres	Hole 15 – 89 metres	Gross Score -----
Hole 8 – 51 metres	Hole 16 – 78 metres	Net Score -----

- Research on the Internet a pitch and putt course near your school.

6. Interesting Facts

- The game was developed mainly in Ireland since the 1940s, but today is a growing sport all over the world. Bord Fáilte was a major supporter as part of its tourist drives. Owing to the small amount of land necessary for a course it was relatively cheap to develop and because it was not expensive it became very popular.
- At a meeting in Dublin in October 1999 the European Pitch and Putt Association (EPPA), was launched.
- The game has now spread to Britain, Catalonia, France and the Netherlands, all of which have their own associations.

Pitch and Putt cont.

7. Development

Number

- A player with a zero handicap won a competition in 4 under par (-4). How many shots did she take?
- A player with a handicap of 10 won a competition with 3 over par. How many shots did he take? ($54 + 3 + 10 = 67$)
- I played 4 rounds of pitch and putt. How many holes did I play?
- A player with a handicap of three takes 57 shots to complete a course. Her partner, who has a handicap of 9, finishes in 61 shots. Which player is the winner and by how many shots?
- I finish a course in 55 shots. I score a par on 10 holes, one over par at 5 holes and one under par at 2 holes. How many shots did I take at the remaining hole?

Shape

- Download the layout of a pitch and putt course and examine this course for:
 - (a) Holes parallel.
 - (b) Holes perpendicular.
 - (c) Holes at right angles to each other.

Length

- How long is the course outlined on the score card (p66)?
- A hole is 61m long. If I pitched a ball 58.7m, how long is my putt?

Weight

- What is the maximum weight of 12 golf balls?

Time

- If a round of pitch and putt takes 1hr 21mins to complete, what was the average time to play each hole?

Data

- Draw a graph, using the score card (p66), illustrating
 - (a) Number of holes under 50m.
 - (b) Number of holes between 51-61m.
 - (c) Number of holes between 61-70m.
 - (d) Number of holes over 71m.

Other

- The annual membership fee for a course is €275. The cost for a round for a non-member is €8. If a player plays 40 rounds in a year, how much money is he saving by becoming a member?

32. Racquetball

Racquetball is a game similar to squash. It is played with a stringed racquet. It was first played in the 1950s, began to be played competitively in the 1970s and the first World Championships were held in 1981. It is usually played indoors.

1. Number

- It may be played as a singles (1v1) or doubles (2v2) game.
- Points can only be scored by the serving player or team.
- The server is allowed two opportunities to serve successfully.
- Matches are the best of three games. The first two games to 15 points and the tie breaker to 11 points.
- Professional games are the best of 5 games to 11 points, requiring a two point victory in each game.

2. Shape

- The court is a rectangle.
- The shape of the racquet can vary from rectangular to triangular. The usual shape is like a tear drop with a short handle.
- The ball is hollow and 2.25in (57mm) in diameter.

3. Length

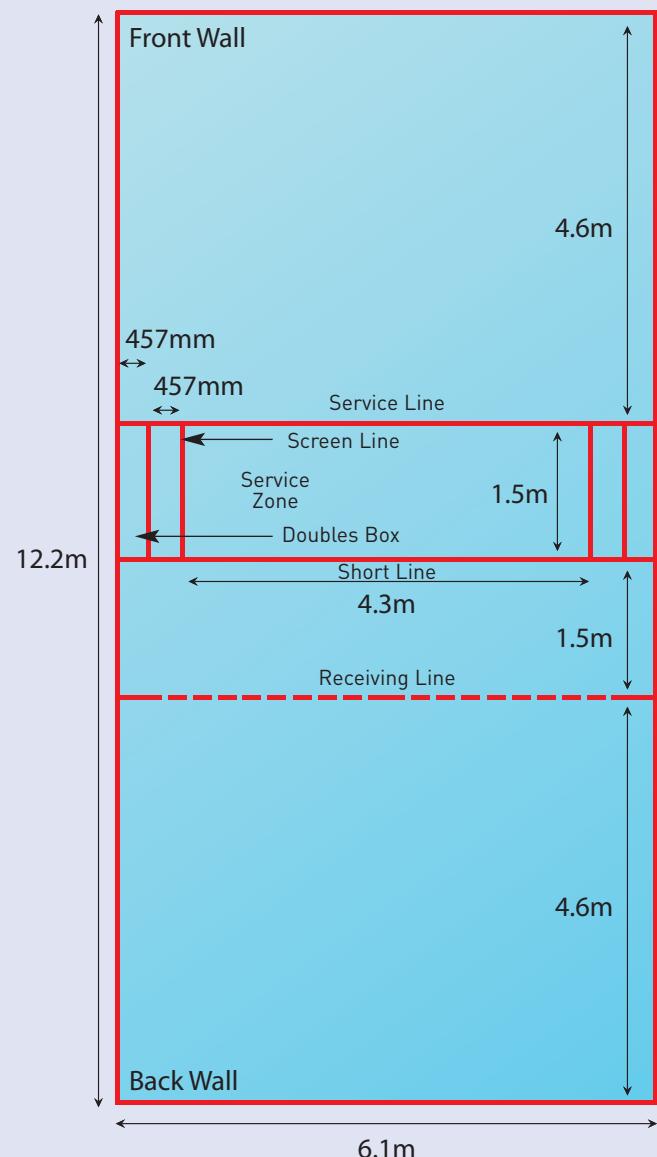
- The court is 40 feet x 20 feet (12.182m x 6.096m).
- The racquet should be a max of 22 inches (55.9cm) long.

Dimensions (See diagram)

- The Court is 20 feet (6.096m) high.
- The back wall should be at least 12 feet (3.6576m) high.

Play

- The serve is hit from the “service box” - between the Service line and Receiving line. The server stays outside the Screen Lines.
- The ball must hit the Front Wall and hop between the Receiving line and Back wall.
- In doubles, the non-serving partner stands inside a Doubles Box.
- Points are scored when the serving player, or team, wins a rally.
- The racquetball is very dynamic (bouncy). When dropped from a height of 100 inches (254cm) it should bounce 68-72 inches (172.7cm-182.9cm) at temp 70-74 degrees F.
- Professional players run, on average, a distance of 3650ft (1112.52m) in a game?



4. Weight

- There is no specification but professional racquets generally weigh between 165- 215 grams
- Racquetballs are blue and weigh 1.4 ounces (39.6893g)

5. Time

- The average time to complete a professional game (15 points) is 20 minutes.

Racquetball cont.

6. Other

- Players must wear eye guards during competition and have a wrist safety cord on their racquets.

7. Interesting Facts

- Joe Quirke is the most successful Irish player. He has won World Championships in Senior Competitions.

8. Development

Number

- In a singles match of 3 games, Player A and Player B each win 37 points. However Player A won the match. List some possible scores for each game.

Shape

- Draw a Racquetball Court to scale in metric measurement

Length

- Estimate how far a professional player would run in a five game match.
- Estimate the shortest time it takes a ball to travel the length of the court, if it travels at 150 mph (241.4016kph).

Weight

- A racquetball player has a gear bag weighing 2.3kg, containing 2 dozen racquetballs and 6 racquets (average weight 175g each). What is the total weight of gear bag + equipment?

Time

- The winner of a racquetball tournament played 23 games, each averaging 18 mins. How much playing time did the winner play?

Money

- Estimate cost of equipment to play racquetball.

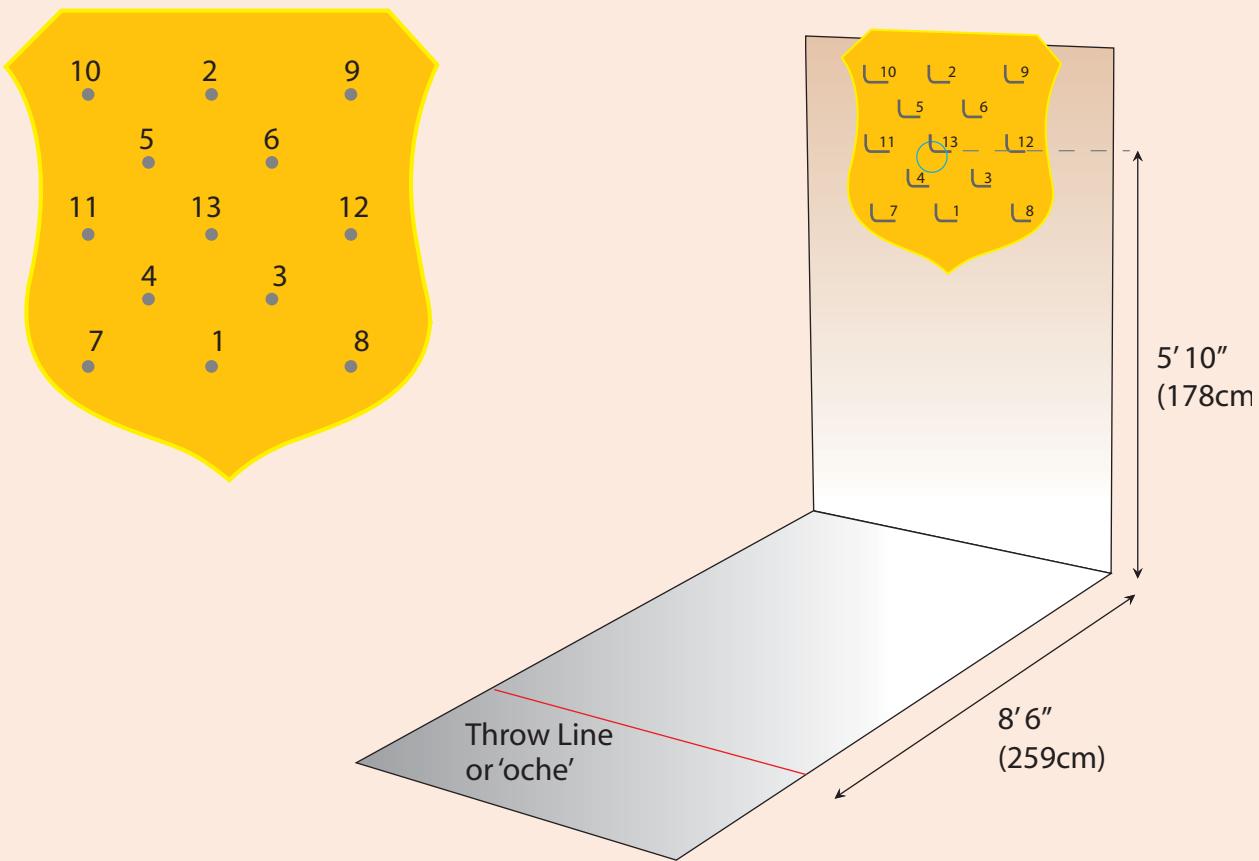


33. Rings

This is a very popular family game. Each player throws six rings on each turn (hand or visit to the board). In most games the aim is to score the highest total.

1. Number

- There are 13 hooks on the ringboard.
- A player throws 6 rings on each turn or visit to the board and usually tries for the higher numbers.
- Doubles and trebles (rarely) can also be scored by hanging 2 or 3 rings on the same number.



2. Length

- Players throw from behind the *oche* (line). The *oche* is 259cm from the ringboard.
- The height of the board from the floor to the No 13 hook is 178cm.
- The vertical distance between numbers directly in line with each other on the board is 16cm (i.e. between 10 and 11, 2 and 13 etc.). The horizontal distance between numbers is 10cm (i.e. between 19 and 2, 5 and 6 etc.)

3. Shape

- The ringboard is usually shield-shaped.
- The rings are circular and are generally 6 - 9cm in diameter (not yet standardised).

Rings cont.

4. Scoring

- The first player or team to reach an agreed total plus 1 wins the set. This is generally 300 or 500 (singles) or up to 1,700 (teams of 5 a side).
- A player within 13 of the 300 or 500 must finish on a single throw before progressing to the 1s.
- There are 3 sets in every game.

5. Interesting Facts Other Forms of Ring Games

- Ring Competitions are organised for Under 15, Under 21 and Seniors. The All Ireland Competition takes place in Ennis, Co. Clare during the first week in March each year.
- Thirty One** - The aim of the game is to score 31 exactly with 5 rings. The first person to do so wins.
- Around the Clock** - Objective is to hang rings in order 1 to 13. First to do so wins.
- In another version of "Around the Clock", a player attempts to go around the board in doubles.

6. Development

Number

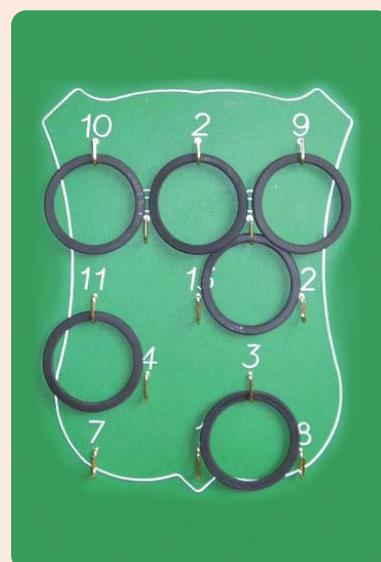
- What is the maximum score a player can get with 3, 4 and 5 rings? No doubles, trebles etc.
- I have a score of 273, what is the minimum number of rings I need to finish the set? (to 300 plus 1)
- I place 6 rings of 6cm in diameter side by side, what length do they cover?
- In Thirty One, give combinations that will make up 31 exactly, using 5 rings. Each ring has to score!!
- In Around the Clock, I scored 1 to 13 in 13 throws. What is my total score? What was my average score per throw?
- Mary reached 110 on her 22nd throw. How many visits did she make to the board? How many rings must she throw to complete this visit? What was her average score per visit?

Length

- I walked from the 'oche' to the ringboard and back 16 times during a set. How far did I walk?
- Calculate the distance from the 'throw line' to the No. 13 hook.

Shape

- How many squares can you find in the configuration of the hooks? e.g. 10, 2, 13, 11
- Use a compass to draw a ring with an inside diameter of 6cm and 0.5cm thick. Calculate the circumference of the ring.



34. Rounders

Rounders is a game played between two teams. The game-play centres around innings, where teams alternate at batting and fielding. Points ('rounders') are scored by the batting team by completing a circuit around the field through four bases or posts without being put 'out'. The team which scores the greater number of points or rounders are the winners.

1. Number

A maximum of nine players are allowed to field at one time. Three substitutes may be made during play to the list of field players. There is no limit to the number of batters a team may list.

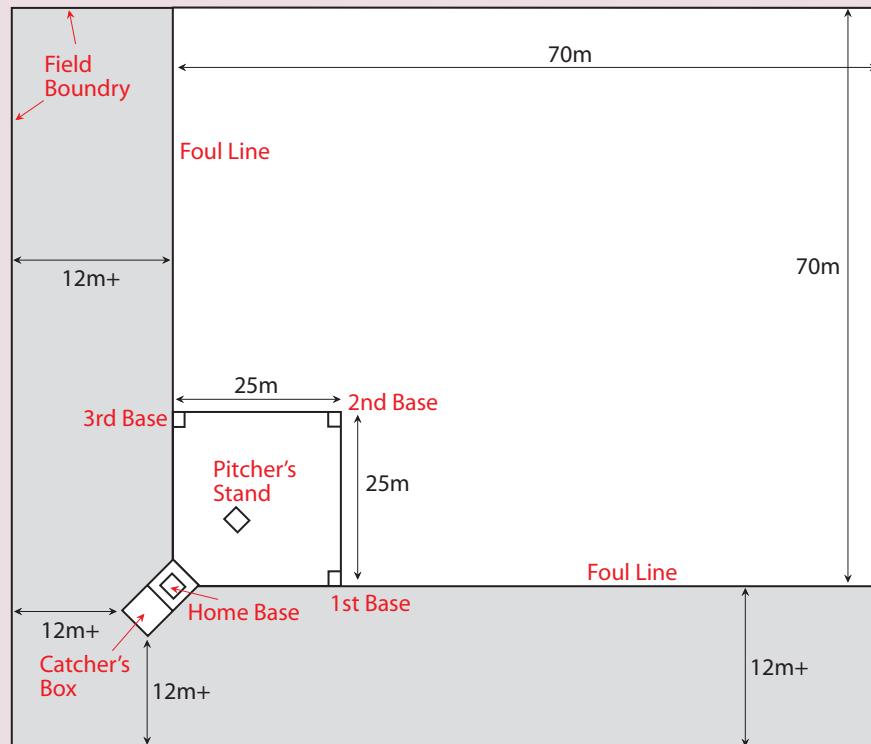
A batter must try to hit good balls bowled but need not run on a hit. Each batter is entitled to three good pitches from the pitcher. If a batter receives three bad balls then a 'walk-on' is called and all runners advance one base. A batter is out if

- a fielder catches the ball cleanly.
- a runner touches a base that had been 'stumped' by a fielder.
- the batter drops the bat while running.
- a runner leaves the base before the bowler has bowled the ball.

A rounder is scored if a member of the batting team completes a circuit without being declared out. The game lasts until each side has had five innings or bowling opportunities (seven innings in All Ireland Senior Championship semi-finals and finals). If at the end of a knock-out match the scores are level, two more innings must be played. If the sides are still drawn, then the team which has won more innings shall be declared the winner. If the 'innings won' method fails to decide, then the match must be refixed (replayed).

2. Area

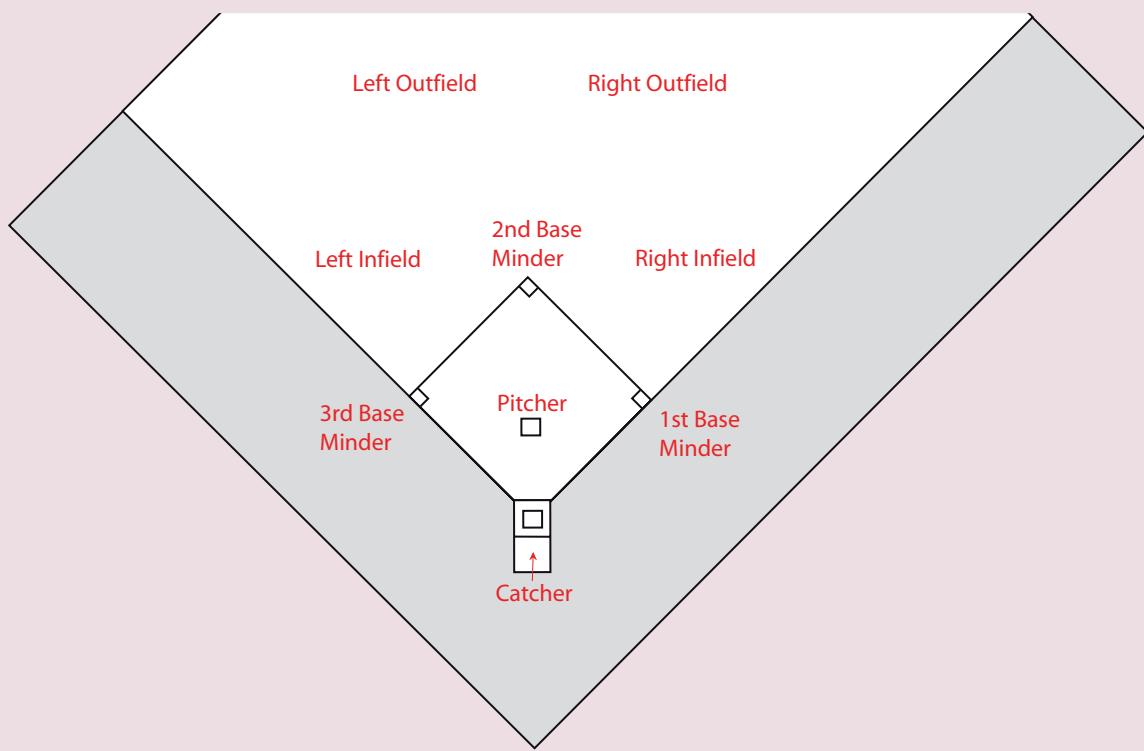
- Rounders is played on a square pitch 70m by 70m and bases are 25m apart.



3. Length

- The bat is not more than 70 mm in width and not more than 1.10 m or less than 70 cm in length.
- Bases are normally marked with temporary square mats; 64 cm by 64 cm for home-base and the pitcher's stand and 46cm by 46cm for all others.

Rounders cont.



4. Weight

- The ball shall be a hurling ball (a sliotar), 98 g to 130 g weight, and between 227 and 255 mm in circumference.

5. Interesting Facts

- The first nationally formalised rules were drawn up by the Gaelic Athletic Association (GAA) in Ireland in 1884.
- American baseball is historically linked to Rounders

6. Development

Number

- What is the ratio of the area inside the bases to the total playing area?

Shape

- What is the area of the square made by (a) the four bases (b) the playing area?
- What is the area of the foul ground?
- What is the area/perimeter of the mat at home base?
- What is the total area of the other three mats?

Length

- A player is on 3rd. Base. How far must he run to complete a 'run'?
- What is the distance from home base to the Third base?
- What is the maximum distance a batter can hit a ball without it going outside the playing area?
- What is the difference between the maximum and minimum length of a bat?
- What distance is covered by a player making a rounder?

Weight

- What is the minimum and maximum weight of 10 sliotars?

35. Rowing

Rowing is a water sport in which competitors using oars, row or race against opponents in boats. The sport can be recreational and competitive. It is one of the oldest Olympic Sports.

1. Number

In the Olympic style of rowing both the men's and women's sections are divided into two weight divisions; lightweight and heavyweight. In sculling events each competitor has two light, short oars called sculls. In rowing events each competitor has one long oar.

MEN

Heavyweight

- Single Scull, 1 rower, 2 oars
- Double Scull, 2 rowers, 4 oars
- Quad Scull, 4 rowers, 8 oars
- Pair, 2 rowers, 2 oars
- Four, 4 rowers, 4 oars
- Eight, 8 rowers, 1 Cox, 8 oars

Lightweight

- Lightweight Double Scull, 2 rowers, 4 oars
- Lightweight Four, 4 rowers, 4 oars

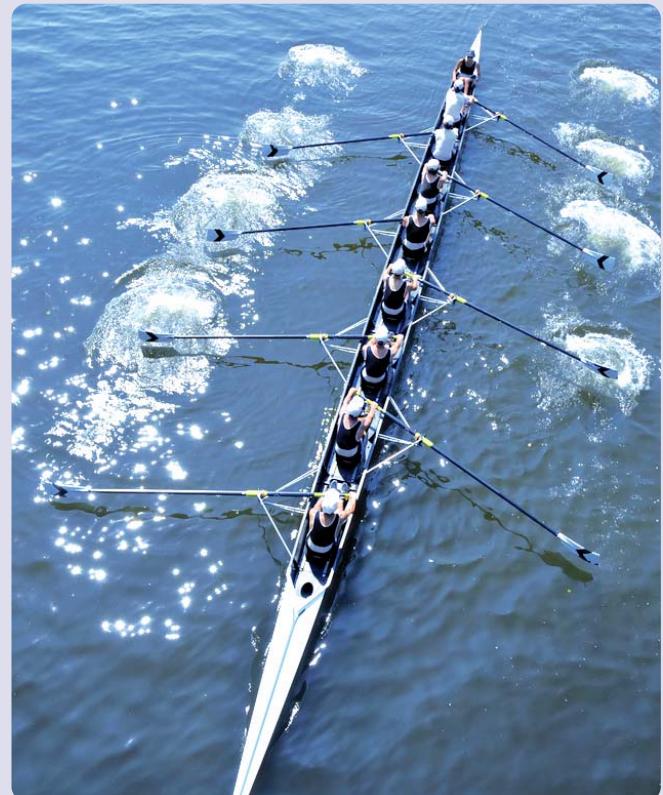
WOMEN

Heavyweight

- Single Scull, 1 rower, 2 oars
- Double Scull, 2 rowers, 4 oars
- Quad Scull, 4 rowers, 8 oars
- Pair, 2 rowers, 2 oars
- Eight, 8 rowers, 1 Cox, 8 oars

Lightweight

- Lightweight Double Scull, 2 rowers, 4 oars.



2. Shape

- The boats are long, thin and almost banana shaped. The boats are hollowed out to allow the rowers room to sit.

3. Length

- The boats (or shells) are 59.7 – 62.2cm wide. Lengths vary depending on the number of people in the boat. There are two types of oar, the sweep oar which is 12 feet 6inches long (3.81m) and the scull oar which is 9 feet 9 inches (2.97m).
- All Olympic rowing races are 2 000metres long. Physiologists claim that rowing 2000 metres (1.25miles) is the equivalent to playing two consecutive basketball games.

4. Weight

- The weight of the boat is determined by the number of people rowing in it. In rowing there are weight classes. Both male and female divisions have lightweight and heavyweight sections. Weight classes state that lightweight men must be less than 72.5kg (162 lb) and female lightweights must be less than 59kg (131 lb).

5. Time

- In rowing, the objective is to row the required distance and the team that does it in the fastest time is declared the winner. Times vary depending on the distance that the team is required to row.
- In Regattas 2-6 boats start together and the winner crosses the finishing line first.
- Head-races are time total races. Boats start at intervals of 10-20 secs and are timed over a set distance.

Rowing cont.

6. Interesting Facts

- The largest and strongest rowers are in the middle seats, seats 6, 5 and 4 to improve boat balance.
- The Cox sets the stroke pace for the rest of the boat. He/she is usually the smallest on the team and rarely over 5ft 4in (162.56 cm) in height.
- The Oxford-Cambridge Boat Race is one of the most famous in the world. It dates back to 1829 although the first race on the present course took place in 1845. The race length is 4 miles and 374 yards (6.78 km). Jack Kelly, originally from Co. Mayo, won three Olympic Gold medals in sculling between 1920 and 1924. Kelly's daughter was the famous actress, Grace Kelly, who later became Princess Grace of Monaco.
- The Gannon Cup (men) and Corcoran Cup (women) are awarded to the winners of the annual Trinity v. UCD boat race. The crews start at O'Connell Bridge and race upstream to James' Gate.
- The Ocean to City race takes place in Cork Harbour annually over a 24km course.
- Coastal All-Ireland Rowing Championships are held over the Summer months and involve up to 350 crews.

7. Development

Number

- Practise 2, 4, 8 times tables based on the number of rowers in one boat, two boats etc.

Length

- What is the difference in centimetres (correct to the nearest cm) between the narrowest and widest boats?
- If a rower rows 10 000 metres over 5 days it is the equivalent of how many basketball games played?
- What is the total length of the 8 oars used in a Quad Scull? (scull oars)

Weight

- What is the difference in weight between 4 lightweight men weighing 72.4kg each and 4 lightweight women weighing 58.4kg each?
- The average weight of the rowers in a Quad Scull is 71.5kg. If 3 of the rowers weigh 71.8kg, 70.9kg and 72.1kg, what is the weight of the 4th rower?

Time

- Research the fastest time for the winner of the Oxford-Cambridge Boat Race on the current course.

36. Rugby

Rugby is a contact field game played with an oval ball. The first Rugby club in Ireland was formed in 1854 in Dublin University. The first international, Ireland v England was played in 1875. The Irish Rugby Football Union (IRFU) was founded in 1879.

1. Number

- Rugby Union is a 15 aside game. Prior to 1877 it was a 20 aside game.
- Up to 7 substitutions may be made-2 in front row and 5 in other positions.
- Players 1-8 are forwards (often referred to as the pack), players 1-5 are sometimes called the tight-five, or front-five, (players 1-3 are the front row) and players 6-8 are the loose forwards. Players 9-15 are backs. No. 9 is the scrum half, 10 is the out-half, 11 & 14 are wingers, 12 & 13 are centres.

Scoring:

The present scoring system is:

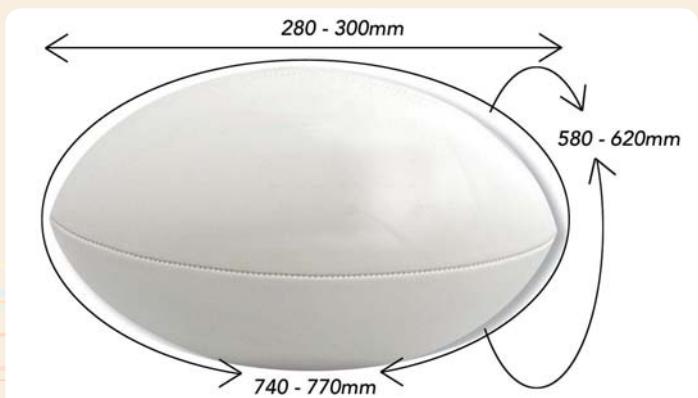
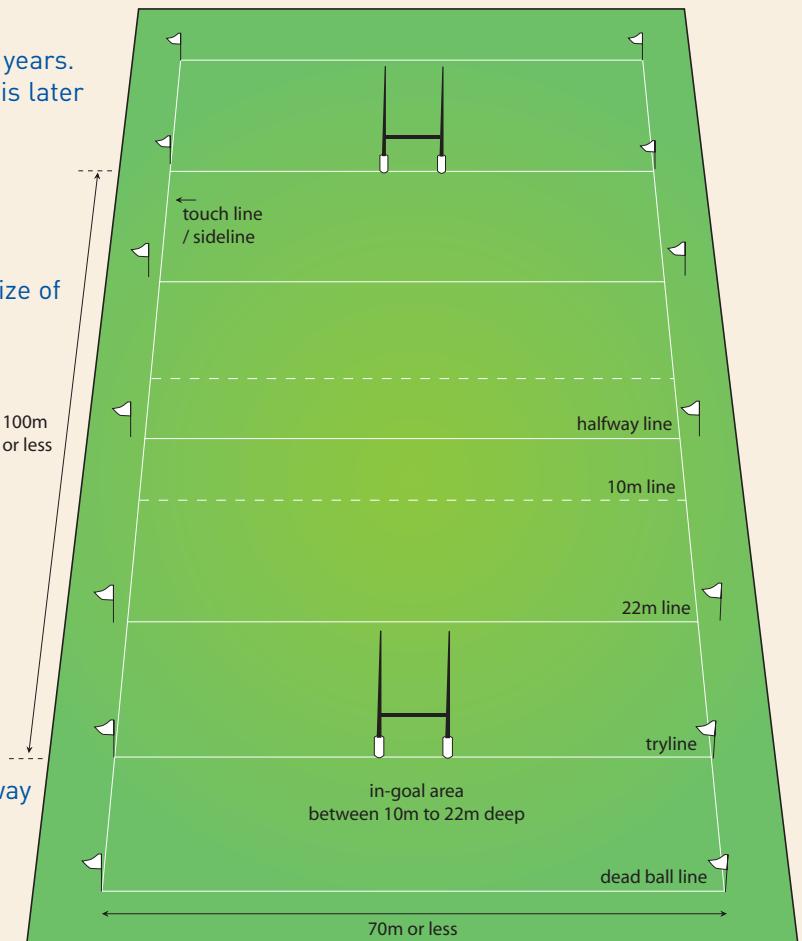
- 5 points for a try – a touchdown in the opponent's goal area.
- 2 points for a conversion – bonus points that can be kicked only when a try is scored.
- 3 points for a penalty kick.
- 3 points for a drop goal.
- The scoring in rugby changed a lot throughout the years. From 1886 to 1888 a try was only worth 1 point. This later changed to 3 points. Now it is worth 5 points.

2. Shape

- Rugby balls are oval and made of four panels.
- In 1892 the rugby football union standardised the size of the ball. It was reduced again in 1931 to present dimensions.
- Dimensions:
Length 280-300 millimetres.
Circumference (end to end) 740-770 millimetres.
Circumference (in width) 580-620 millimetres.

3. Length

- The field, called a pitch, is generally 100 metres by 70 metres.
- The 10m, 22m, goal and touch in goal lines are parallel to the half way line.
- The 10m lines are 10m on either side of the half way line.
- The 22m lines are 22m out from each try line.
- The distance between the two goal posts is 5.6 metres.
- The crossbar is 3.0 metres from the ground.
- Goal post pads are required to be at least 5cm thick.
- Flag Posts – there are 14 flag posts with flags, each with a minimum height of 1.2 metres above the ground.



Rugby cont.

4. Time

- A rugby match consists of two 40-minute halves and a 10-minute halftime.

5. Data

- See Triple Crown, 5 Nations and World Cup Winners. [Appendix L]
- Source statistics on the Internet from a rugby game.

6. Interesting Facts

- Rugby League is a separate game to Rugby Union. It has 13 players on each side and the pitch measures 100m x 68m.
- A 'try' is called so because originally if the team got the ball over the line they could 'try' kicking a goal (which is now called a conversion).
- The first World Cup was played in Australia and New Zealand in 1987. It takes place every 4 years. The winning team receives the Webb Ellis trophy.
- William Webb Ellis conceived the idea of rugby football in 1823.

7. Development

Number

- What is the minimum number of players needed to field 2, 3, 4, 5 teams etc ?
- What number would be required in order to have 7 substitutes on each team?
- Team A scores 12 points. Write down all the possible combinations of scores required by Team B to earn a draw.

Shape and Length

- What is the distance between the 10m and 22m line?
- Identify all the rectangles on the pitch. Find the area and perimeter of each of these.
- What is the perimeter of the maximum sized field?
- What distance would a person lining the field travel to mark all the lines for a game?
- A player picks up the ball on own 10m line. What is minimum distance to run to cross the other try line? Calculate distances from Halfway line, own 22, Opposition 10 metre line etc.
- We want to place 4 rugby balls side by side in a box. What are the minimum measurements [length, width and depth] of the box?

Weight

- The average weight of each of the 8 players in the pack is 103.4 Kg. Calculate the total weight of the players in the pack.
- The total weight of the pack is 787.2Kg. What is the average weight of each pack?
- Compare weights of individual players and packs from match programmes.

Time

- 15 mins gone in the first half of the Heineken Cup Final. How much time left (a) in first half, (b) in the rest of the game?

Money

- Calculate the cost of equipping a player to play Rugby.
- The Aviva Stadium was filled to 98% of capacity [See Appendix H]. What was the attendance? How much did the fixture generate if the average cost of a ticket was €28.

37. Sailing and Surfing

Sailing for recreation is one of the oldest forms of sport. The Royal Cork is the oldest Yacht Club in the world. Windsurfing and surfing are two recent developments in watersports. Many nautical terms are used in watersports. Port = left, starboard = right, fore = front, aft = rear.

Windsurfing

Windsurfing or sailboarding originated in the 1960s and became an Olympic Sport in 1984.

The board is between 2-4m long and the sail area is 3-12 sq. metres. Ideal wind speed for windsurfing is 15-25 Knots per hour.

Surfing

Surfing is a watersport where the surfer rides the waves on a board (longboard or shortboard). It is a very popular sport with over 20 clubs, 40 surf schools and an estimated 50,000 people engaged in the sport in Ireland.

1. Number

- Sailboats use the force of the wind on sails to change the direction and speed of the boat. The Beaufort Scale measures wind speed (See Appendix M).
- Sailing boats with one hull are monohulls, two hulls are catamarans, three hulls are trimarans.
- A sailboat with a single mast is a sloop. A boat with two masts can be a schooner, a ketch or a yawl.
- Racing yachts can have crews of one (single handed) and up to 15 or more.
- There will be ten events or sailing classes in the 2012 Olympics.

2. Shape

- Sailboats are traditionally built in the shape of trapezium. The most popular sail is triangular. A boat with one sail is said to be "uni-rigged".

3. Length

- Sailboats are different lengths. A Laser Dinghy is 4.23m long, weighs 56.7 kg and has a sail area of 7.06 square metres. A mega yacht is 100ft (30.5m) plus and super yachts are 200ft (61m) plus in length.
- Fathoms (fm) were traditionally used to measure depth of water in which boats sail. One fathom equals 2 yards or 1.8288 metres.

4. Time

- Speed on water was traditionally measured in knots (kn). A knot is one nautical mile per hour, equivalent to 1.852km per hour or 0.514 metres per second.
- Racing yachts can reach speeds of up to 35 knots per hour.

5. Data

- Research winners and times of famous yacht races.

6. Other

- The Round Ireland Yacht Race was inaugurated in 1980 and is held biannually in June. Yachts leave Wicklow Bay and sail the 704 nautical mile course "leaving Ireland and all her islands to starboard". The Fastnet Yacht Race is also held biannually over a course of 608 nautical miles. The race starts off Cowes, Isle of Wight, rounds the Fastnet Rock off the coast of Cork and finishes in Plymouth. Other famous yacht races include the America's Cup.

7. Interesting Facts

- The only Irish sailors to win Olympic medals were David Wilkins and James Wilkinson who won Silver medals in 'The Flying Dutchman' category at the 1980 Moscow Olympics.

Sailing and Surfing cont.



8. Development

Number

- Research the number of Category 1, 2 and 3 Sailing Clubs in Ireland.

Shape

- Identify all the shapes (equipment etc) of a sailboat.

Length

- Consult 'surfer sites' on the web. What do you think this means in a report on a surfing beach: 5ft - 7 secs- 5mph?

Time

- Calculate the time taken to circumnavigate Ireland (704 nautical miles) at an average speed of (a) 12 (b) 15 and (c) 20 knots per hour.
- Identify low and high tide times from newspaper. High tide is approximately 50 minutes later each day. If high tide is at 12 noon on Monday, when will high tide occur on Wednesday, Friday, etc.?

Money

- Estimate the price of equipping yourself fully for (a) windsurfing and (b) surfing.

38. Snooker

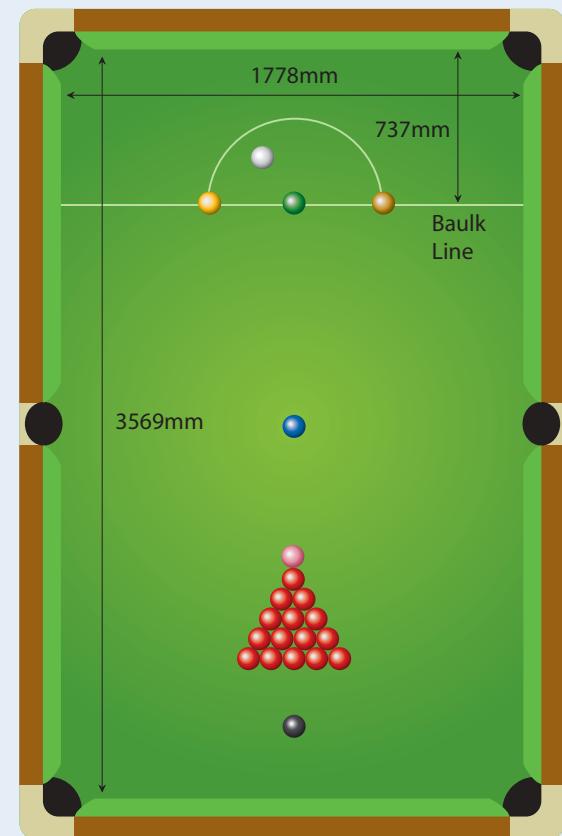
Snooker is a cue sport that is played on a large green baize-covered table with pockets in each of the four corners and in the middle of each of the long side cushions. The game originated in India.

1. Number

- In a game of snooker, the number of contestants is 2.
- There are 22 balls. 1 white ball, called the cue ball, 15 red balls, which are worth 1 point each.
- The remaining 6 balls are the colour balls with the following values: yellow (2), green (3), brown (4), blue (5), pink (6) and black (7).
- Players score points (make a break) by potting reds and colours alternately until all the reds are off the table and then the colours in the ascending order of their value - from yellow through to black. The person with the highest score wins the frame. 147 is the maximum break except in exceptional circumstances.
- Points can also be awarded for fouls, 4 points awarded to opponent if you miss a ball.
- Snooker matches are played to a best of an odd number of games; the best of 5, 7, 9 frames and so on.

2. Shape

- Play occurs on a large rectangular baize-covered table with pockets (90mm. in diameter) in each of the four corners and in the middle of each of the long side cushions.
- Snooker balls are spherical, typically 52.5mm in diameter.



3. Length

At the start of each frame the object balls are positioned on the table as follows:

- the Reds in the form of a tightly-packed equilateral triangle, with the Red at the apex standing on the centre line of the table,
- Yellow on the right-hand corner of the "D"
- Green on the left-hand corner of the "D"
- Brown on the Middle of the 'Baulk-line' – the line running across the table through the D,
- Blue on the Centre Spot, located midway between the faces of the top and bottom cushions.
- Pink on the Pyramid Spot, located midway between the Centre Spot and the face of the top cushion.
- Black on the Spot, 324mm from a point perpendicularly below the face of the top cushion.

Dimensions of the Standard Table

- The playing area within the cushion faces measures 3569mm x 1778mm with (+/- 13mm).
- The height of the table from the floor to the top of the cushion rail is between 851mm and 876mm.
- A straight line drawn 737mm from the face of the bottom cushion and parallel to it is called the Baulk-line.
- The "D" is a semi-circle with its centre at the middle of the Baulk-line and with a radius of 292mm
- A cue shall be not less than 3ft (914mm) in length. An ideal cue should be just under shoulder height.

4. Weight

- There is no standard weight to a snooker ball, but they must all be of equal weight, within a tolerance of 3g.
- A cue stick usually weighs in the region of 510 to 600g, with the majority of the weight at the butt of the cue.

Snooker cont.

5. Time

- There is no restriction on time, the game continues until a player concedes or is declared the winner. Matches often take up to two days, for example if intervals are taken every 8 frames in a best of 19-frame match. The intervals during a game can range from 5 mins to a few days.
- Most matches will usually be the best of 9 frames or 11 frames, with the final being the best of 17 or 19 frames. The World Snooker Semi-finals are the best of 33 frames with the final being the best of 35 frames.
- On the 21st April 1997 during the World Championship at the Crucible Theatre Sheffield, UK, Ronnie O Sullivan, with a time of 5 minutes and 20 seconds, recorded the fastest 147 in professional snooker to date and was the first to make this break in less than 6 minutes.

6. Interesting Facts

- The first world snooker championship was won by Joe Davis in 1927, beating Tom Dennis 20 frames to 11.
- Jimmy White is the only man to have appeared in more than one final without ever winning the title - losing on six occasions, including five in a row. This earned him the title of the greatest player never to win the World Title.
- Ken Doherty, an Irish professional snooker player, was born 17th September 1969. He turned professional at the age of 21 and 7 years later, in 1997, he won the World Championship when he beat Stephan Hendry 18-12.
- On the 26th August 1997, Ken Doherty potted all of the colours in sequence on a snooker table in 23.4 seconds at The Chase Centre, Staffordshire, UK, creating the world record at that time.
- The first player to make a televised 147 was Steve Davis in the 1982 Lada Classic.
- The highest break recorded in snooker to date is 151 scored by Wally West (UK) in London, October 1976. The break involved a free ball, creating an extra red when all 15 reds were still on the table. In these very exceptional circumstances the maximum break can be up to 155.
- The World Championship is held annually in The Crucible Theatre (Sheffield): Capacity 980.

7. Development

Number

- If a player sinks a black, a red, a pink, a red and a green, what is his score?
- A player has an opening break of 61, what is the minimum his opponent must score to win the frame? How can he achieve this score?
- How many pockets on a snooker table?
- If, after the first day's play in Word Championship Final, a player is losing 5 frames to 12, how many frames must he win in order to win the championship?
- How can you make a break of 147?
- If a player makes a break of 130, which balls could be left on the table?

Shape

- What is the area taken up by the red balls prior to the break?
- What is the playing area of a snooker table?
- What is the perimeter of the playing area of a snooker table?
- What is the area/perimeter of the 'D'?
- A wooden triangle is used to enclose the 15 red balls at the beginning of a game. What are the measurements of the sides of this triangle? What is the area of this triangle?

Length

- If a player placed a 905mm cue upright against the table 863mm high, how much of the cue would be visible above the table?
- If he placed it along the side cushion, how much of the cushion would be left uncovered?
- If he placed it along the top cushion, how much of the cushion would be left uncovered?
- What would be the ideal length of a snooker cue for you?

Time

- When Ronnie O Sullivan broke the speed record for a maximum break how much time, on average, did he take to pot each ball?

Data

- Draw a graph showing the values of each ball.

39. Soccer

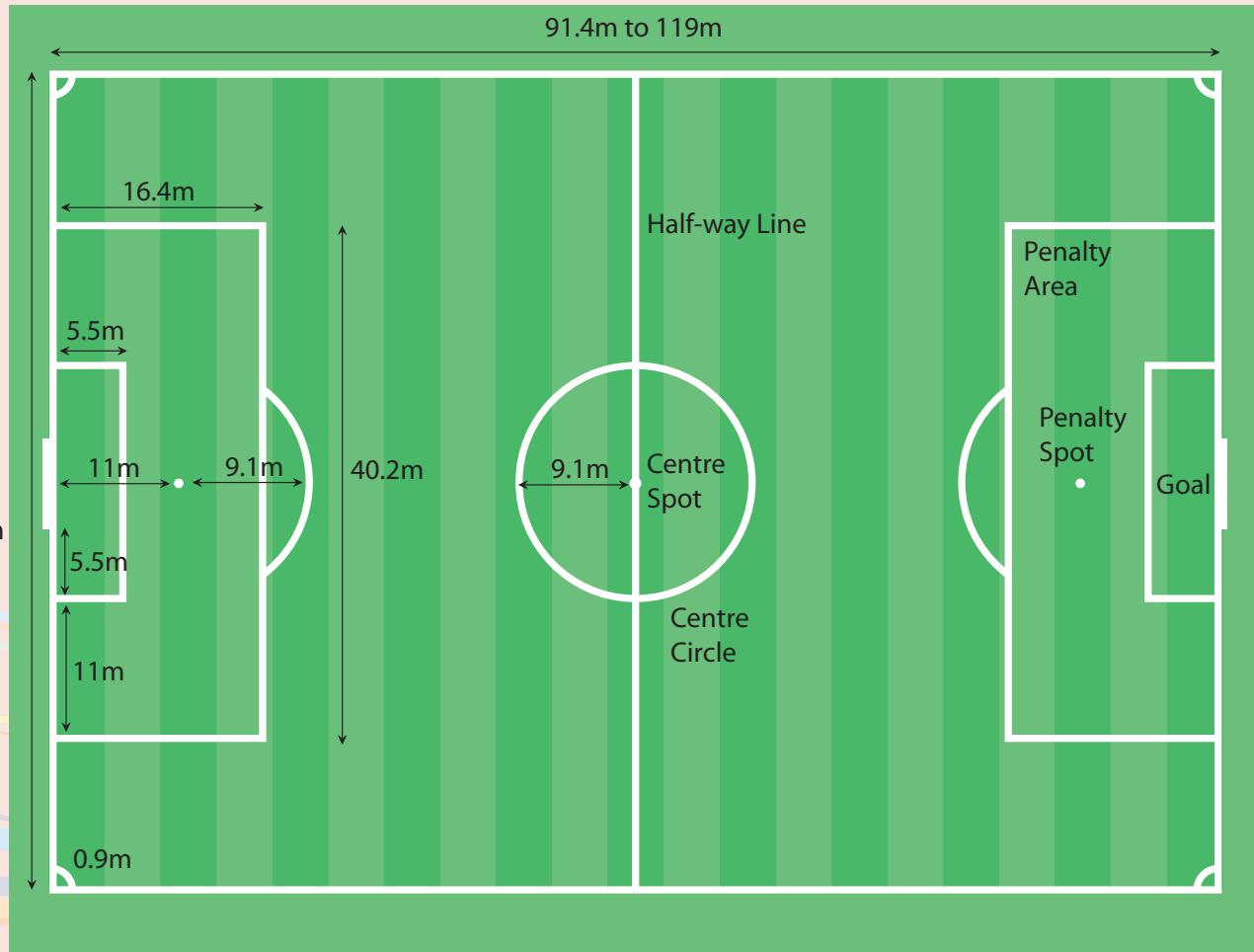
Soccer is considered to be the most popular sport in the world. The rules were codified in 1863, and the name association football was coined. The term soccer first appeared in the 1880s as a slang abbreviation of the word "association". Soccer is governed internationally by the Fédération Internationale de Football Association, (FIFA). 208 national teams compete in FIFA competitions.

1. Number

- Soccer is a team sport played between two teams, each of 11 players. Three subs are allowed.
- Players are cautioned for misconduct with a yellow card, and sent off if shown two yellows or a red card.
- The FIFA World Cup is held every four years. More than 190 national teams compete in qualifying tournaments for a place in the finals involving 32 national teams competing over a four-week period.
- The 2005–06 season of the English Premier League produced an average of 2.48 goals per match
- A game can have six officials, a referee, two assistant referees (linesman), a fourth official and two additional assistant referees.
- In competitions played over two legs, games are played on a 'home and away' basis. The aggregate score from the two matches decides the winner. Where aggregates are equal, the 'away goals' rule may be used to determine the winners, i.e. the team that scored the most goals in the leg they played away from home. If the result is still equal, a penalty shoot out may be used to decide the winner.
- Soccer has been part of the Olympic Games since 1900. Currently, the Olympic men's tournament is played at Under-23 level. A women's soccer tournament (no age limit) was added in 1996.
- In the League of Ireland in 2010 ten teams played in the Premier Division and eleven teams in the First Division. (see Appendix N)

2. Shape

- The ball is a sphere with a circumference of 68–70 cm.
- The field of play is a rectangle. Lines on the field also identify a small rectangle, a large rectangle, two semicircles, a circle and two rectangular goalposts. (see diagram)



Soccer cont.

3. Length

- The pitch for international adult matches is 100–110 m and the width is in the range 64–75m.
- Goal posts are 7.32 metres wide and 2.44 metres high.
- Other standard measures are used for penalty area or 'box', penalty spot, centre circle (see Diagram).

4. Weight

- A standard soccer ball (size 5) weighs 410–450 g. Smaller sizes are used for underage games.

5. Time

- A soccer match consists of two periods of 45 minutes each, known as halves. There is usually a 15-minute half-time break between halves. The end of the match is known as 'full time'.
- Extra time of two further 15-minute periods is played in cup ties (matches) that finish in a draw. If the score is still level a penalty shootout (5 penalties each) may be used to determine the winner.

6. Interesting Facts

- The oldest football competition is the FA Cup, first played in 1872.
- The first official international football match took place in 1872 between Scotland and England.
- Ireland has two international soccer teams. The Republic of Ireland plays its home games in the Aviva Stadium. Northern Ireland plays its home games in Windsor Park.

8. Development

Number

- What is the minimum number of players needed to field 2, 3, 4, 5 teams etc. with 3 substitutes on each team?
- 'Goal difference' is used to separate teams with the same number of league points. (see Appendix N)

Shape

- Identify all the shapes on the soccer field.
- What is the perimeter of the maximum-sized playing field?
- What distance would a person lining the field travel to mark all the lines for a soccer game?

Length

- A goalie can kick the ball approx. 55 metres. How far from the opposing goal will it drop?

Weight

- A football may increase in weight by up to 10% on a wet day. What weight of ball would result if this happened?

Time

- 20 minutes gone in the first half of the Word Cup. How much time left (a) in first half (b) in rest of game?

Money

- Calculate the cost of equipping a player to play soccer including a jersey, shorts, socks, footwear and shin guards.

Data

- Present a record of statistics for a game you attended or viewed.
- Research information on the following and present it in graphical form.
 - Roll of honour- Number of League and Cup titles won by selected clubs.
 - Capacity of club and international grounds

40. Squash

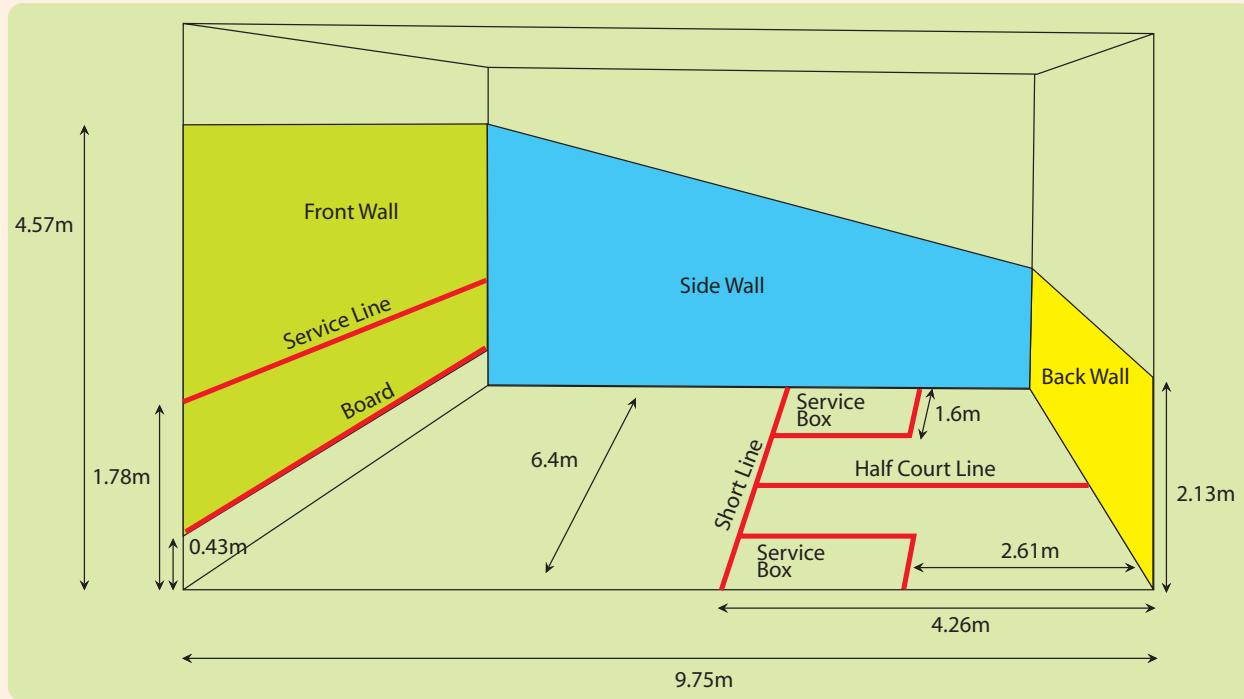
Squash is a sport played by two players (or four players for doubles) in a four-walled court with a small, hollow rubber ball. Squash is recognized by the IOC and remains in contention for inclusion in a future Olympic programme.

1. Number

- A match is best of five games, each game is to 9 points.
- In the event of an eight-all draw, the receiver must choose whether to play to 9 points known as set one or to 10 points known as set two.
- The ball itself must be warmed up. In the event that the ball is changed, players are given time to warm it up to match playing condition.

2. Shape

- Court size is 6.44m wide.
- The front wall line is 4.57m high.
- The front wall also has a service line, which is 178cm above the floor.
- The court is a rectangular box with 4 vertical walls.



3. Length

- Racquets have dimensions of 686mm long and 215mm wide.
- Squash balls are 39.5mm in diameter.
- Different balls are made for different temperatures and speeds.
- They are identified by coloured dots:
 - Double Yellow dot signifies an extra super slow speed with very low bounce.
 - Yellow dot signifies super slow with low bounce.
 - Green or white dot signifies a slow speed and average bounce.
 - Red dot signifies medium speed with a high bounce.
 - Blue dot signifies a fast speed and a very high bounce.

4. Weight

- The weight of the racquet can be between 110 and 200 grams.
- Squash Balls weigh between 23 and 25 grams.

Squash cont.

5. Time

- Players are given 5 minutes to warm themselves up.
- The fastest recorded speed a squash ball was 270km/h (170mph) hit by John White.

6. Interesting Facts

- Squash originated in Britain in the early 19th century.
- The first professional Squash tournament was held in 1930.

7. Development

Number

- What is the lowest possible total of points in a game? (9-0, 9-0, 9-0 = 27)
- What is the highest possible total? (10-9, 9-10, 10-9, 9-10, 10-9 = 95)

Shape

- On the diagram of a squash court identify:
 - Rectangles
 - Quadrilaterals
 - Triangles
 - Horizontal
 - Vertical
 - Cuboid, etc

Length

- What is the perimeter of the floor of a Squash Court?
- What is the perimeter of a service box? Quarter Court?
- If a ball travels from the service box to the front wall and then strikes the back wall, how far has it traveled?
- What is the area of each rectangle in a Court?
- What is the area of the four walls?

Weight

- What is (a) the maximum weight and (b) the minimum weight of a squash racquet and ball? What is the minimum weight?
- What is the least number of squash balls needed to make up one kilogram in weight?

Speed and Distance

- Work out how long it would take a ball hit at the fastest ever speed to:
 - Travel the length of a squash court-865cm.
 - Travel the length of a soccer field-100m.
 - Reach the top of Mount Everest-8848m.
 - Travel to Dublin-240kms.



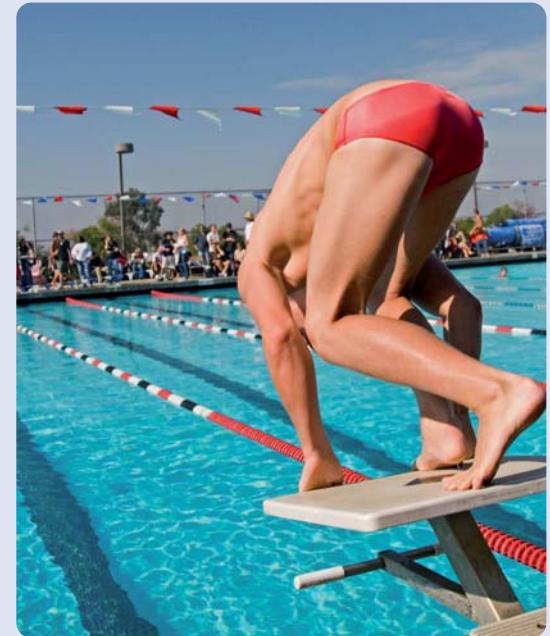
41. Swimming and Aquatics

Men's swimming was included in the first modern Olympics in 1896 and women's in the 1912 Olympics. Men and women compete separately but over the same distances and the same strokes-Freestyle (front crawl), Backstroke, Breaststroke and Butterfly.

Swim Ireland is the National Governing Body for Aquatic Sports in Ireland. Aquatics include water polo, synchronised swimming, diving, open water swimming and masters swimming.

1. Number

- There are 144 swim clubs registered in 4 regions in Ireland. Membership is almost 26,000.
- There are 14 individual swimming events for men and women plus 3 relays in the Olympic Games. These include:
- **Freestyle Distances:** 50m, 100m, 200m, 400m, 800m (women only), 1500m (men only) and 10k Marathon.
- **Backstroke, Breaststroke and Butterfly Distances:** 100m and 200m
- **Individual Medley** (all 4 strokes – front crawl as final stroke) 200m and 400m.
- **Relays:** Freestyle: 4 by 100m and 4 by 200m. Medley: 4 by 100m.
- World & European Championships also have 50m events in Backstroke, Breaststroke and Butterfly, 800m for men and 1500m for women, as well as a 5k Marathon.
- The 5k and 10k Marathon swims take place in Open Water (normally a lake or the sea).



2. Shape

- Swimming pools can vary in shape. For competition swimming they must be rectangular.

3. Length

- Most swimming pools in Ireland are 25 metres in length. However there are a range of teaching pools that vary from 12m-15m and leisure pools that vary from 18m-23m.
- An Olympic Pool is 50 metres long, 25 metres wide and at least 2m deep.
- An Olympic Pool has 10 lanes, each 2.5 m wide (only 8 are used in Olympic races)
- Starting blocks are in place for swimmers to dive off in Freestyle, Butterfly and Breaststroke, and for the swimmers to hold onto in Backstroke events.
- To help backstroke swimmers, a line of flags is extended across the pool 5 m from each end.
- In competitive swimming, the swimmer's head must break the surface at or before 15m from the start and finish of each length of the pool.

4. Weight

- Swim caps are very important in competitive swimming as they reduce the drag of loose hair. Swimsuits are manufactured from materials that provide very little resistance to the water.

5. Time

- Competitive swimmers are constantly trying to beat their personal best (PB) times.
- Reaction times are the times taken for the swimmer to leave the starting block after the starting signal.
- Split times are the times taken to swim each length of the pool.
- Breaststroke is the slowest stroke.
- Competitions generally include heats, semi-finals, and finals. The fastest 16 swimmers progressing from heats to semi-finals and the fastest 8 to the final.

Swimming and Aquatics cont.

6. Data

- Research national, world and Olympic records, Olympic medal winners, FINA, LEN and Swim Ireland, Senior and Junior rankings.

7. Other

- The capacity of a swimming pool is calculated in cubic metres by multiplying length by width by depth

8. Interesting Facts

- Noel Purcell from Dublin won a Gold medal in water polo for Britain in the 1920 Olympics but four years later was on the Irish water polo team, as we had by then become an independent country.
- In 1996, Ireland's Michelle Smith won three Gold medals and one Bronze medal in swimming at the Atlanta Olympic Games.
- Ireland have won a total of 10 medals at Senior European level; Gary O'Toole (Silver, Bonn 1989), Michelle Smith de Bruin (two Gold and one Silver, Vienna 1995, two Gold and two Silver Seville 1997), Andrew Bree (Silver, Dublin 2003) and Gráinne Murphy (Silver, 2010).

Other Aquatic Olympic Sports

Water polo

Water polo is a 7-a-side game. Playing time is four quarters of 7 mins. each. If the match finishes level, two periods of 3 mins. overtime are played and finally a penalty shootout may be held to decide a winner. Floating Goals, 3 metres wide and 0.9 metres high are placed in the pool so that the playing area for the men's game is 30m by 20m and 25m by 20 m for the womens game.

Synchronized Swimming

Synchro swimming or water ballet is a women's only sport at Olympic level. It is a team (8 swimmers) and duet event. Two five-judge panels award points on a 1-10 scale. One panel judges technical merit and the other artistic impression. The Technical Routine lasts no longer than 2min. 50 sec. and the Free Routine for 5 mins plus or minus 15 secs.

Diving

There are 4 similar diving events for men and women in the Olympic Games. These are the 10m platform, the 3m springboard, the synchronized 10m platform and the synchronized 3m springboard. 12 divers come through the heats to contest the final stages of each event. Each dive is marked by a panel of 5 judges. The cleanest dive shows the least amount of splash as the diver enters the water.

9. Development

Number

- Calculate the number of lengths to swim in all Olympic events in (a) 50 m and (b) 25 m pool.
- If 42 people enter an event, how many heats will be required? How many people will not progress to a semi-final?

Shape

- Draw the playing area (to scale) for men's and women's water polo.

Length

- A swimmer trains 5 mornings a week and swims 40 lengths of a 25 m. pool each morning. How long does he swim per week?

Time

- What is my overall time in the 200m breaststroke if my split times are 30 secs, 32 secs, 32 secs, 33 secs?
- What is the maximum time allowed for a synchronised swimming routine?

Data

- Present national, world and Olympic records, Olympic medal winners etc. in graphical form.

Other

- Find capacity (amount of water) of an Olympic Pool.

42. Table Tennis

The game originated in England as an after dinner entertainment, commonly known as "wiff-waff". In 1901 the celluloid ball and the modern bat were introduced. Table tennis was introduced as an Olympic sport at the Olympics in 1988. Men's and women's singles and doubles are the four table-tennis events scheduled at the Olympics.

1. Number

- Matches are best-of-five games. The serve alternates between players after every two points. The winner is the first to score 11 points or more with a two point advantage over his/her opponent.

2. Shape

- The table is rectangular. The game is played with a light ball; 2.7g, with a diameter of 40mm.

3. Time

- A 40 mm table tennis ball is slower and spins less than the older 38 mm one. It decreases the speed of the ball by 4% to 8%, and the spin by 10% to 13%. The purpose of the change was to produce longer rallies and to make the ball more visible on television, in the hope that this would make the game more interesting to spectators.
- The speed of the ball can vary from slow serves to smashes. New Zealander Lark Brandt won the inaugural "World Fastest Smash Competition" with a smash of 112.5 kilometres per hour.

4. Length

- Bounce: When dropped from a height of 30 cm onto a steel block, a table tennis ball must bounce at least 23 cm but not more than 25 cm. The ITTF has an interesting way of testing for a property they call "veer,". A ball is rolled 100 mm down a plane inclined 14° to the horizontal, onto a level surface. The ball is expected to continue to travel along a straight line perpendicular to the line where the planes join. If within 100 cm the ball rolls more than 175 mm away from the line, it fails. Each ball is tested twice, once rolling on the seam, and two times in any other position. If more than 1 out of 24 balls fails this test, the brand is not approved.
- The game is played on a 274cm x 152.5cm x 76cm high table. The table or playing surface is divided into two halves by a 15.25cm (6 inch) high net. The top edge of the net is 15.25cm above the playing surface along its entire length, and the bottom edge is as close as possible to the playing surface. The outside edge of the posts holding the net are 15.25cm from the outside edge of the table. White lines, 2cm wide, are painted along each edge, and a centre line, 3 mm wide and parallel to the side lines, divides the playing surface in half.
- The International Table Tennis Federation requires a total playing area not less than 14m long, 7m wide and 5m high for competitions.

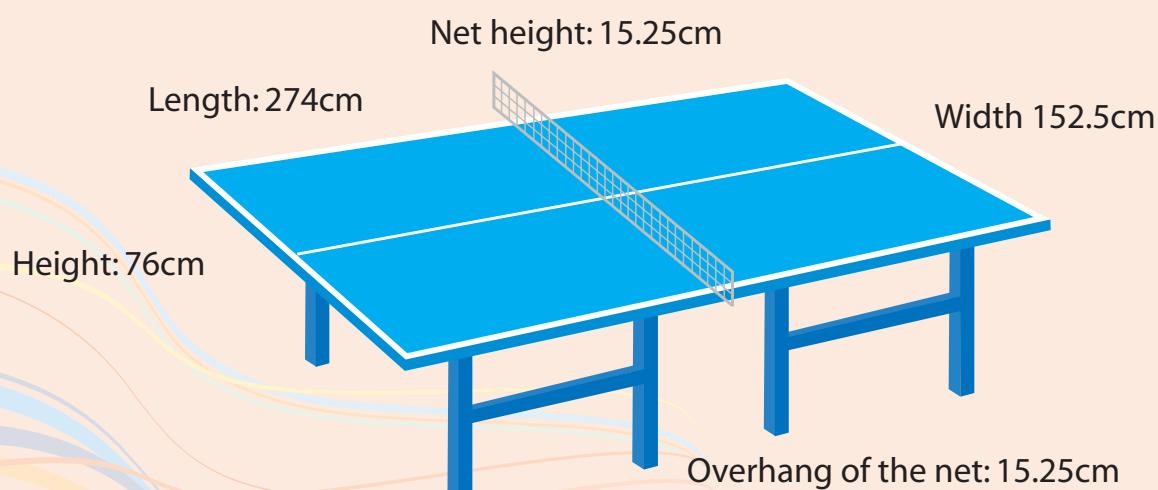


Table Tennis cont.

- The Racket may be any size, shape, or weight. Of the total thickness, 85% must be natural wood. In international play, one side must be black and the other bright red. If the surface of the racket is covered with dimpled rubber, the layer of rubber must be no more than 2mm thick. If a layer of foam rubber is used beneath the dimpled rubber, the combined thickness of both layers may be no more than 4mm.

5. Interesting Facts

- The highest-altitude Table Tennis match in history was held on Elbrus mountain in 2009. The leader of the expedition Sergey KORKIN (Vice President of Ukraine TT Association) conceived the bold idea of a table tennis match at the top of the highest mountain in Europe.

6. Development

Number

- The total number of points scored in a 5 game match was (a) 60, (b) 98 and (c) 103. Give example of possible scores.

Shape

- What is the area of an official table tennis table?
- What is its perimeter?
- If the playing area is 15m long and 8m wide, what is the area not taken up by the table?
- How many standard table Tennis Balls can be fitted into a box 4cm long 2cm wide and 2cm high?
- What volume of the box is empty? What percentage of the box is empty?
- 3 table tennis balls fit exactly into a package in the shape of a cylinder. Find the volume of the cylinder.
What fraction of the cylinder is empty?

Length

- If the bat had a thickness of 15mm and had both a foam and rubber coating of the maximum permitted thickness, what width was the actual wood?
- How long is the net?
- If a player is 1.5m tall, how much of his body will be above the table?
- A hall is 50m by 40 m. How many tables tennis matches can be held at the same time?
- What is the total length of all the lines on a table tennis table?
- What is the diagonal measurement across the board?

Weight

- How much would a box of 2 dozen tennis balls weigh, if the empty box weighed 50g.

Time

- Given a smash speed of 98.64 kmph, how long would it take a ball to travel the length of the table?
- If it takes a ball 0.5 of a second to travel the length of the board, what is its smash speed?

43. Tennis

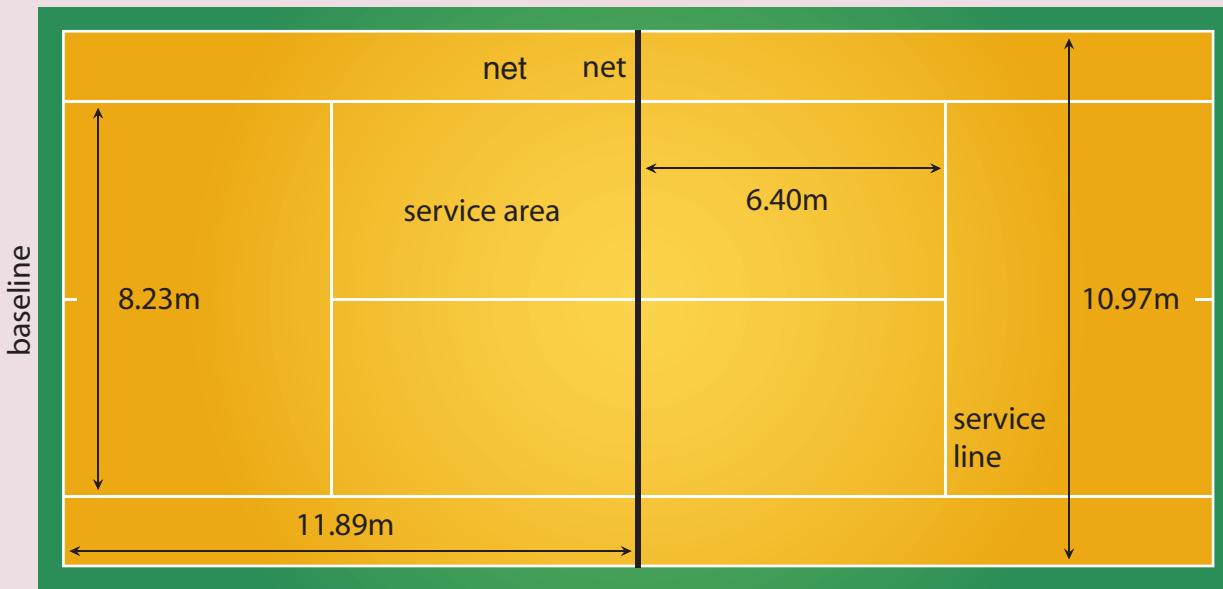
The modern game of tennis originated in the United Kingdom in the late 19th century as "lawn tennis". The rules of tennis have not changed much since the 1890s. Two exceptions are that from 1908 to 1960 the server had to keep one foot on the ground at all times, and then the adoption of the tie-break in the 1970s.

1. Number

- Tennis can be played in singles (one vs. one) or doubles. When playing in doubles the side lines are used. Tennis competitions are based on games, sets and matches.
- A game is won by the first player to win at least four points in total and at least two points more than the opponent. The running score of each game is described in a manner particular to tennis: scores from zero to three points are described as "love", "fifteen", "thirty", and "forty" respectively. If at least three points have been scored by each player, and the scores are equal, the score is "deuce". From then on the lead is described as 'advantage'.
- A set is won by winning six games and having won two more than one's opponent. If the players are tied at '6 all', a tie breaker is used to decide the winner.
- A match is usually the best of five sets for men and three sets for women.

2. Shape

- The tennis court is a rectangular box separated into two equal sides by a net. There are a number of different lines on the court which are used during the game and are identical on either side.



3. Length

Lines of the Tennis court on one side:

- Baseline 10.97m (for doubles) an 8.23m (for singles).
- Width between sidelines 1.37m.
- Base line to net (sidelines) 11.89m.
- Service line to net 6.40m.
- Net: 1.07m (height at sides) and 1 m (height at centre which is held down by a centre strap)

Rackets: The standard length of a tennis racket is 27 inches (69cm) and a long body racket is a $\frac{1}{2}$ to $1\frac{1}{2}$ inches (1.27 – 3.81cm) longer. Midsized rackets have an average head size of 600cm^2 and oversized heads have an average size of 790cm^2 .

Tennis cont.

4. Weight

- Each year approximately 300 million tennis balls are produced, which contributes roughly 14,700 metric tons of waste in the form of rubber which is not easily biodegradable.
- The weight of rackets range can from 227g – 354g (8 ounces - 12.5 ounces). The average weight is 284g (10 ounces). The lighter rackets are usually used by beginners or intermediate players.

5. Time

- There is no time length in a game of tennis. At the 2010 Wimbledon Championships, John Isner defeated Nicolas Mahut in a tennis match that lasted 11 hours, 5 minutes.

6. Interesting Facts

- At every multiple of six points the players change ends in order to share the benefits or disadvantages caused by the wind, sun etc.
- The four Grand Slam tournaments are, in chronological order, the Australian Open, the French Open, Wimbledon, and the US Open.

7. Development

Number

- What is the least number of points needed to win a set?
- What is the maximum number of games needed to win a set?
- What is the minimum number of times a player needs to break his/her opponent's serve to win a game/set?
- What is the minimum number of times players change ends in a match?

Shape

- What is the area of the Court for doubles?
- What is the area used in a single's match?
- What is the area of the service area?
- If a ballgirl ran around the perimeter of the court three times, what distance would she cover?

Length

- What is the maximum distance of a valid service?
- What is the width of the service area?
- While warming up, a player runs from the baseline to the net and back again, touching both the net and the baseline with his racquet. If he runs 148.62m, how often does he touch the net?

Weight

- Find out the average weight of a tennis ball?
- What is the weight of 300 tennis balls?

Data

- Graph the performance of the world ranking players over a six month period?
(You can find this information on the Internet)
- Which players improved their ranking over the year?
- Which players disimproved?
- Who was the most improved player?
- Which player disimproved the most?

44. Ten Pin Bowling

The aim is to roll the ball down a lane to knock as many pins or skittles as possible. The ten pins are arranged in a triangular shape.



There are four pins along the back of the ten-pin setup. In front of those four is a row of three, followed by two, then one (which is called the "head" pin). $4+3+2+1=10$. The numbers 1,3,6,10... are called triangular numbers.

1. Number

1. Ten Pin Bowling is split into 10 frames or games. Each frame consists of one or two throws. Each frame score is combined with the previous frames to give a points total. The scorecard gives a running total.
2. In general, one point is scored for each pin that is knocked down. If a player knocks three pins with the first throw and six with the second, the player scores a total of nine points for that frame. When a player fails to knock down the remaining pins with their second throw, it is known as an open frame.
3. A Spare (all of the pins down in 2 shots), scores 10 points plus the score in the first shot of the next frame. In frame 2 in the example below the player gets $10 + 9$. This is added to 9 to give a running total of 28.
4. A strike (all of the pins down in 1 shot) scores 10 points plus the points from the next two balls thrown.
 - a) In the example below in frame 4: the score is calculated as $10 + 8 + 0$ which is added to the running total of 48 to give 66.
 - b) In the example below in frame 6: the score is calculated as $10 + 10 + 10$ which is added to the running total of 74 to give 104.

5. The scoring continues until 10 frames have been played. In the 10th frame if a strike or spare is scored, a bonus roll is awarded.

6. The maximum that can be scored in any one game is 300. For this the player would have to strike 10 times for the 10 frames and then because the last frame strike allows two more bowls, these two could also be strikes making 12 in total.

In bowling leagues handicaps are often used. Unlike in golf the handicap is added to the score. The handicap is based on the player's average score in the league. If the bowler is new to the league a default score is used until an average can be established.

The handicap is calculated as follows $(200 - \text{average}) \times 0.8$. If the bowler has an average of 200 or more they are given a handicap of zero.

	8 1	7	9	X	8 -	X	X	7 F	X 9	35	
Frame	1	Frame	2	Frame	3	Frame	4	Frame	5	Frame	6
1	9	28	48	66	74	104	131	148	155	175	210

W

(- = miss) (f = foul)

2. Length

- The person bowling has an approach run of 4.57m to deliver a roll.
- The bowling lane is 18.29m long (to 1st pin) and 99cm wide.
- Pins are 15 inches (38cm) tall and 4.7 inches (12cm) wide at widest point.

3. Weight

- There is no minimum weight specified, but a bowling ball cannot weigh more than 7.26kgs.
- Each pin weighs between 1.53 - 1.64kg.

Ten Pin Bowling cont.

4. Shape

- The circumference of the ball must not be more than 0.69m. The ball must have a smooth surface over its entire circumference except for holes or indentations used for gripping the ball.

5. Development

Number

Plenty of scope in the scoring system e.g.

- A player scores a strike, and in the next two throws gets a 7 and a 2, what is the total score?
- A player scores a spare, and in the next throw gets a 7, what is his score?
- How would a player score 72 in 10 throws without strikes or spares? List the possible combinations.
- The pins are placed in a triangular pattern.
- List the 1st six triangular numbers. (1,3,6,10,15,21...) How does one predict the next one?
- Is there any other sport in which this pattern is used? (Snooker - 15 red balls).
- Numbers with shape: Square numbers, rectangular numbers, etc.
- A bowler's average is 155. What will his handicap be?

Length and Area

- How far does a ball travel in 10 throws?
- How many lanes would be as long as a soccer field?
- What is the perimeter of the lane from the throw line to the first pin?
- What is the area of this lane?
- Rounding of length : conversion to cm, mm, km, etc.

Shape

- Terms – sphere, radius, circumference, circle.

Weight

- What is the weight of two maximum sized bowling balls?
- A player brings a gear bag containing the following: 2 maximum sized bowling balls, a change of clothes and shoes (1.25kg). If the bag itself weighs 1kg, what is the weight if the bag and its contents?
- 2 bowling balls. One is the max weight. The other is 250g less. What weight is the 2nd ball?
- Convert weights to grams.
- Round weights to nearest kg., etc.



45. Throwing Events

Javelin

Javelin is a track and field throwing sport where the object to be thrown is a spear like pole (javelin). It is thrown into an open area from behind a defined mark. The javelin is held at the grip and thrown over the shoulder. The tip of the javelin (point) must break the ground and the distance from where this occurs from the throwing area is measured. The longest throw is declared the winner.

1. Number

- The javelin (men) was first competed for in the 1908 London Olympics. The javelin (women) was introduced in 1932 Olympics in Los Angeles.
- In major competitions the number of competitors that take part is narrowed down to 12 finalists. The 12 finalists have 3 throws each. The top 8 have three more attempts.

2. Shape

- The javelin takes place within the oval field area of the track.
- The trajectory of the throw takes the form of an arc.
- The open area into which the javelin is propelled is shaped in a sector with a measurement of 29°. Any javelin which lands beyond the sides of this sector is deemed illegal and doesn't score.

3. Length

- The distance the javelin is thrown is measured in m and cm
- The men's javelin must be between 2.6m and 2.7m long.
- The women's javelin is 2.2m long.
- Javelin throwers run up to the runway mark and this runway is between 30m and 36.5m long.
- The present mens world record is 98.48m (previous best was 93.01m)

4. Time

- Olympic games are held every 4 years (leap years)
- World championships are held every 2 years (odd years)

5. Data

- The various distances that won the Olympic games can be graphed.
- In men's javelin, of the 69 Olympic medals won since 1908, 32 have gone to Norway, Sweden and Finland.

6. Other

- The javelin has the greatest connection to warfare of all Olympic events. In ancient times it was a commonly used offensive weapon.

7. Interesting Facts

- In 1986 the men's javelin was re- designed to bring the nose down earlier in flight. This reduced the flight distance by about 10%. One reason for this was that the world record had crept up to 104.8m. This was potentially dangerous inside a stadium.
- When this new javelin was introduced, all previous records were scratched.

Discus

Discus is one of the world's oldest sports, dating back to the 8th century B.C. It was a part of the first modern Olympic Games in 1896. It was also the first women's throwing event beginning in 1928.

1. Number

- The competitor spins around one and a half times to gain momentum.
- The men's world record is 74.08 metres set by Jurgen Schult (GDR) in 1985.
- The women's record is 76.80 metres set by Gabrielle Reinsch (GDR) in 1988.

2. Shape

- The discus is a lenticular disc shape (like a Frisbee).
- A discus has a diameter of 22cm for men's competitions and 18.1cm for women's competitions.
- The competitor throws from a circle of 2.5meters in diameter.
- The discus must land within a 35 degree sector marked by lines on the landing zone.

3. Length

- The distances thrown are rounded to the nearest cm.

4. Weight

- A discus weighs 2kg for men's competitions and 1kg for women's competitions.

5. Time

- Discus competitors are organised from 11 years +. This is called the midget division.

6. Interesting Facts

- A right hand thrower spins around anti-clockwise.
- A left hand thrower spins around clockwise.
- Originally the thrower stood in one place and only moved his arms. The modern style was developed by Clarence Houser (USA) in 1926.

7. Other

- America once dominated the Olympic discus events, winning 14 of the first 19 Gold medals. However they have not won Gold since 1984.
- Martin Sheridan from Bohola, Co.Mayo, won nine Olympic medals for the USA, four of them in discus events. He is the greatest Irish-born Olympian of all time.

Throwing Events cont.

Shot Putt

The shot putt is a track and field event involving putting or throwing a heavy metal ball or shot as far as possible. The athlete rests the shot close to the neck when throwing.

1. Number

- It has been an Olympic event since 1896 for men and 1948 for women.
- In competition a thrower has typically three throws in the qualifying stage and three throws in the final.

2. Shape

- Competitors throw from inside a circle (2.135m in diameter) with a stopboard (10cm) high at the front of the circle.
- The thrower rotates like a discus thrower.
- The shot must land in a sector with a measurement of 34.92 degrees.

3. Length

- The current world records are 23.23m for men (1990) and 22.63m for women (1987)
- Distance is measured from the circle to nearest mark made by the falling shot.

4. Weight

- Men's shot weighs 7.260kg/ women's shot weighs 4kg.

5. Time

- Upon being called the athlete has 60 seconds to begin the throwing motion.

Hammer Throw

The hammer throw is an athletic throwing event where the object is to throw a heavy metal ball attached to a wire and handle. The name "hammer throw" is derived from older competitions where an actual sledge-hammer was thrown.. The event is conducted similarly to the shot putt and discus (throwing circle, stopboard etc)

1. Number

- Hammer Throw is an Olympic event since 1900 for men and 2000 for women.
- In competitions participants throw 3 or 4 times.

2. Shape

- Competitors gain maximum distance by swinging the hammer above their head to set up a circular motion.
- To increase velocity and force, the athlete competes 1 to 4 rotations in the circle.
- Factors which determine maximum length are the angle of release and speed of the hammer.

3. Length

- Men's hammer is 121.5cm long
- Women's hammer is 119.5cm long
- Current world records are men (86.74m) 1986, Women (78.30m) 2010

4. Weight

- Men's hammer weighs 7.257kg, Women's hammer weighs 4kg

5. Other

- Dr. Pat O'Callaghan of Ireland won the Gold medal in the Hammer Throw in the 1928 and 1932 Olympics.

Development

Number

- How many more medals have been won in men's Olympic Shot Putt competitions than in women's?
- How many throws take place in the actual final of an event?

Shape

- By how many degrees would the open area sector be increased to make a quadrant? (Javelin and Shot Putt)
- Assuming the javelin travels in a perfect arc from thrower to ground and the maximum height of the arc occurs at exactly half way, if a player throws a recorded distance of 80m and at the 40m distance the javelin was 30m above ground level

- What is the air distance traveled by the javelin?
- What is the area of the arc made by the javelin throw?

Length

- If thrower A achieves a distance of 87.48m and thrower B achieves a distance of 79.86m what is:
 - The difference between their throws?
 - The total length of the two throws?
 - The average distance thrown?

- If a javelin thrower's recorded distance is 90.78m and the distance from the start of the thrower's run up to the javelin measure is 121.4m how long was the run-up?
- What is the distance between the present world record and the previous world record?
- A javelin competition was won with a throw of 90.67mn. If 2nd place was 0.84m behind, what was that distance?

Weight

- What is the combined weight of a javelin thrower who weighs 79.38kg and a javelin weighing 850g?
- The weight of a men's javelin is 800g and a women's javelin is 600g. What is the total weight of 3 men's javelins and 2 women's javelins?

Time

- How many Olympic Games were held between 1950 and 2000?

Data

- Tabulate the winners of men's/women's Olympic medals.
- Draw a graph of the top ten throws of a particular Olympics?

46. Triathlon

A Triathlon is an endurance event consisting of swimming, cycling and running. The first triathlon was held in California in 1974. It is an Olympic event since 2000.

1. Number

- 20,000 participants took part in over 130 Triathlons in Ireland in 2010.
- The ratio of male to female participants was 3:2.
- Age groups for triathletes are defined in 5 year intervals



2. Length

- Triathlons for adults cover three distances
 - (a) Sprint distance: swim 750m, bike 20km, run 5km.
 - (b) Standard or Olympic distance: swim 1.5 km, bike 40km, run 10km.
 - (c) Long or Ironman distance: swim 3.8km, bike 180km, run 42.2km. (A half Ironman is swim 1.2 miles, bike 56 miles, run 13.1 miles.)
- Triathlons for children 7-15 years are called Ironkids. Swim 100-750km, Bike 5-15km, Run 1-5 km

3. Weight

- Triathletes are sometimes classified according to their weight. Clydesdale athletes are males over 200 lbs. Athena athletes are females over 150 lbs.

4. Weight

- Olympic records for the triathlon:
 - Men: Simon Whitfield (Canada) 1hr:48:24.02 set in Sydney 2000.
 - Women: Emma Snowsill (Australia) 1hr: 58:27.66 set in Beijing 2008.

5. Data

- Research Olympic Medal winners in triathlon.

6. Other

- Wetsuits are usually allowed in triathlons when the swim is in the ocean and the water temperature is below 79° F (26° C)

7. Interesting Facts

- The first Olympian from Ireland in a Triathlon was Emma Davis in 2008.
- A Duathlon omits the swim and involves a run /cycle/run. Distances are generally (a) run 3.5km/cycle 16km/run 3.5km or (b) run 10km/cycle 40km/run 5km.

8. Development

Number

- If the male:female ratio in a triathlon is generally 3:2, how many males and females would be anticipated from an entry of 500, 1,000, 1,200 etc?

Length

- What are overall distances covered in various triathlons?

Data

- Represent distances covered in swim/bike/run on a pie chart

Time

- A triathlete's time for a standard (Olympic) triathlon is: Swim: 43mins, Bike 52 mins and Run 57 mins. What was the total time for the triathlon?

Other

- Why, in your opinion, is the swim the first discipline in all triathlons?

47. Tug O' War

Introduction: Tug O' War has its origins in the work of seafarers hauling on ropes. Contests of strength between teams soon developed and Tug O' War was an Olympic sport between 1900 and 1920. In Ireland the sport is organised by ITOWA (Irish Tug of War Association) which is affiliated to the TWIF (Tug of War International Federation).

1. Number

- Each team consists of eight players.
- Each team attempts to pull the other a distance of 4 metres.
- Each contest is based on the best of three pulls.
- There are around 50 clubs in Ireland and 55 countries are members of TWIF, although only 25 – 30 participate at World championships.

2. Shape

- The circumference of the rope measures 10-12.5 cm (4-5inches).

3. Length

- The rope must be at least 33 metres in length. The rope is marked with a red centre line and two white markings, four metres either side of the centre line. Two further markings (blue) are 5metres from the centre line. The first team member must hold the rope within 30cm of this mark.
- The centre line on the rope is aligned with a mark on the ground. The judge directs the teams to take up the rope, take the slack and pull.
- The team that pulls the opposing team 4 metres wins that pull.

4. Weight

- The cumulative weight of 8 pullers determines the weight division of the team. In men's competition the weights are 560kg, 600kg, 640kg 680kg and 720kg.
- Women's competitions are in weight categories 480kg, 520kg and 560kg.



5. Time

- A contest lasts until one team pulls the other team across the centre line.

6. Data

- Great Britain won the most Gold medals between 1900 and 1920 when the sport was included in the Olympics.

7. Interesting Facts

- The team member at the end of the rope is called the anchor.
- Tug o' war is one of few sports where the aim is to travel backwards, the others are rowing and swimming (back stroke).
- World and European Championships take place every other year, usually in September.
- At the 2010 World Championships held in Pretoria, South Africa, Ireland won Bronze at 640kg and 700kg (senior men).
- Ireland has been ranked in the top five countries in the world over the last 25 years.

8. Development

- Practise 8 times tables: How many people on 1, 2, 3 ... tug o' war teams?
- What are possible diameters and radii for the ropes in tug o' war?
- Describe the pattern in the increases in the men's and women's weight divisions.
- What is the average weight of each person on a team, if the team is at the maximum weight for its category?

48. Volleyball

Volleyball is a team sport in which two teams of six players, separated by a net, attempt to score points by grounding the ball in the opposing team's court.

1. Number

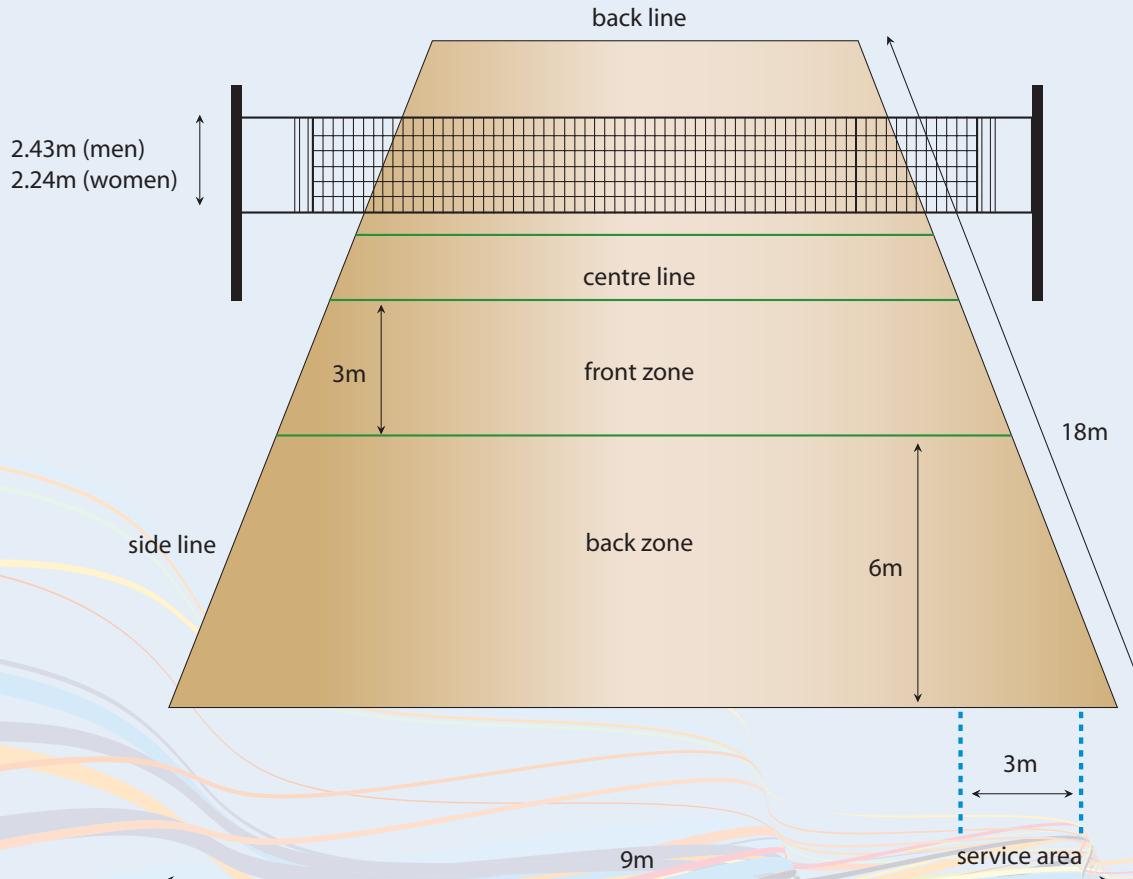
- Each team in volleyball consists of a maximum of 12 players of which 6 players are on court at any one time.
- First team to score 25 points with a clear lead of two points wins the set.
- First team to win 3 sets wins the game.
- Teams can only make a maximum of 3 contacts with the ball before it goes over the net.
- Volleyball is an Olympic team sport.
- Beach volleyball is also an Olympic team sport (2 persons per team with a slightly different court size and rules).

2. Shape

- The game of volleyball is played on a rectangular court. Lines on the court identify the playing areas. A net separates both teams. The court also is surrounded by an area called the free zone which players are allowed enter after each service.
- The ball is spherical, made of flexible leather or synthetic leather. Its circumference is 65-67cm and its weight is 260-280g.

3. Length

- The length of the court is 18 metres long and 9 metres wide. The court is divided into two 9 by 9 metre halves. The freezone is at least 3 metres wide. There is also a line 3 metres from and parallel to the net, this is called the front or attack zone.
- The net for men's volleyball is placed so that it is 2.43m above the centre of the court.
The height above the court for women's volleyball is 2.24m. The height of this net can differ for different categories like junior competitions.
- Lines on the court are 5cm wide.
- The net is 1m wide and 9.50 to 10 metres long, made of 10cm square black mesh.



Volleyball cont.

4. Time

- Unlike most other sports, there is no time limit on volleyball. It is played like a league. First team to 25 point, with a lead of at least 2 points, wins the set. First team to 3 sets out of 5 wins the game. The last set is played to 15 points.

5. Interesting Facts

- Volleyball was originally called *Mintonette*. Volleyball was developed in 1895 in Massachusetts and the first exhibition game was played in Springfield College in 1896, after which it was called Volleyball.
- In 1919, with America fighting the First World War, the American expeditionary force sent 16,000 volleyballs to its troops and allies in foreign lands.
- In 1947, the Volleyball Federation was founded. It was called the Federation International de Volley Ball (FIVB).
- The game was brought to Ireland in the 1960s by Irish soldiers returning from duty in the Congo.
- In 1968, the Volleyball Association of Ireland (VAI) was formed.

6. Development

Number

- There are 8 teams in a tournament. How many players is this?
- What is the highest score possible in a game of 5 sets? Remember the team must win by 2 and the last set is to 15 (25-23; 23-25; 25-23; 23-25; 15-13).
- What is the lowest score in a game? (25-0) x 3.

Shape and Length

- Length of court, net, etc.
- How many rectangles on the court? Squares?
- Perimeter of court? Each separate rectangle? Perimeter of net?
- Area of each of these?
- Terms: sphere, radius, circumference, circle etc.



49. Weightlifting

Weightlifting traces its history back to the beginning of recorded history. Originally, the weights were stones, but later gave way to dumb-bells. The origin of the word dumb-bells comes from the practice of removing clappers from bells, rendering them soundless during lifting.

The first modern day Olympics were held in 1896 and weightlifting was included as an official sport. The first World Championships in this sport, however, had been staged five years earlier: on 28th March 1891, in London, with 7 athletes representing 6 countries.

1. Number

- Each lifter can have a maximum of three lifts. The order depends on the lifters themselves – the competitor who chooses to attempt the lowest weight goes first. If unsuccessful at that weight, he has the option of reattempting the lift or trying a heavier weight later (after any other competitors have made attempts at that weight or any intermediate weights).
- The 3 referees pass their decision about each lift by pressing white (valid lift) or red (invalid lift) buttons. Two or three white lights = Good Lift; Two or three red lights = No Lift.

2. Length

- A weightlifting area can be either a square or a rectangle platform of 4mx 4m meters made of wood and coated with non-slippery material.
- A weightlifting belt, if worn, can only be a maximum of 120mm wide.

3. Weight

- Competitors compete in one of eight (seven for women) divisions determined by their body mass. These classes are:
Men's: 56kg, 62kg, 69kg, 77kg, 85kg, 94kg, 105kg, and over 105kg;
Women's: 48kg, 53kg, 58kg, 63kg, 69kg, 75kg, and over 75kg.
- In each weight division, competitors compete in both the 'Snatch' and 'Clean and Jerk', and prizes are usually given for the heaviest weights lifted in each separately, and for the two combined. In the 'Clean and Jerk' the weight is lifted from the platform to shoulder height and held there before being lifted cleanly over the lifter's head, while the 'Snatch' consists of a single, more fluid movement.
- In local competitions, lifters often compete against other classes. In order to allow a valid comparison between the weights lifted by competitors of different classes, each weight is multiplied by the Sinclair Coefficients. This work like a handicap in Golf. The Sinclair Coefficients are re-calculated each year.
- Competitors have to lift a weight called the barbell, which consists of a steel bar (weighing 20kg for men, 15kg for women) onto which differently coloured weight discs (with a weight of 0.5 to 25kg) are loaded and fastened with the help of collars (weighing 2.5kg each). In competition the barbells' weight is progressively loaded by 1kg increments (2kg after first attempt).



Weightlifting cont.

5. Time

- A maximum of three attempts is allowed for each lift. There is 1 minute to start the attempt, or 2 mins if the lifter is attempting consecutive lifts.

6. Data

- There are two official techniques for weightlifting, the Clean & Jerk and the Snatch. Research world records for these.

7. Interesting Facts

- Vasily Ivanovich Alekseyev from the former USSR set 81 Soviet weightlifting records and 80 world records from 1960 to 1980.

8. Development

- A Weightlifter lifts a weight of 81kg. If the bar and collars weigh 25kg, what weight of discs are on each side?
- A weightlifter lifts 215kg on his second lift. This puts him in third place behind 225kg and 250kg. What weight must he put on each side of the bar to win the competition on his third and final lift?
- In a mixed competition the Sinclair coefficients are as follows:

Weight Class (kg)	Sinclair Coefficient
56	1.5
62	1.4
69	1.3
77	1.2
85	1.18
94	1.1
105	1.08
+105	1.0

- There are five lifters in a competition; Billy, who weighs 60kg, lifts 210kg; Frank, who weighs 50kg, lifts 200kg; Brian, who weighs 73kg, lifts 225kg; Colin, weighs 97kg, lifts 230kg and Joe, who weighs 110kg, lifts 233kg. Who gets First, Second and Third Place?
- If a weightlifter is called to make his lift at 4.15pm and it takes him 32 seconds to reach the stage, how much time has he left to make a valid lift?
- A woman plans to compete in a competition in France. She decides to fly to this competition. On the airline web site, she reads – ‘A maximum of 20kgs (44lbs) in total checked baggage weight per passenger’. If she carries the bar and the two collars, how many barbells can she carry? (Hint: she should probably go by sea!)

50. Wrestling

Wrestling was introduced to the 18th Olympiad about 704BC. Two distinct forms of competitive wrestling have developed. In Freestyle the wrestlers attack the whole body of the opponent. In Greco-Roman, the legs may not be used in any way to obtain a fall and no hold may be taken below the waist.

Professional Wrestling regularly appears on TV. It is well rehearsed, choreographed and acted.

1. Number

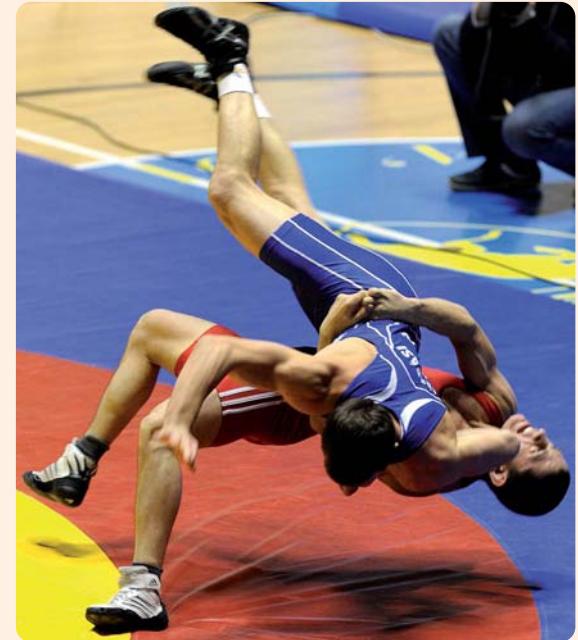
- In Freestyle points are awarded for a takedown when the opponent is wrestled to the ground. 1, 2, 3 or 5 points are awarded for different takedowns. There is no action or hold with a value of 4 points.

2. Shape

- The wrestling area is a circle 9 metres in diameter. It is surrounded by a 1.5 m border known as protection area. The Red Zone inside the circle is 1m wide and is known as passive zone. Beach wrestling is another form of wrestling which takes place inside a sand-filled circle 6m (20 feet) in diameter. There are only two weight categories; heavy & light. The objective is to throw the opponent or to get them on their back.

3. Weight

- International men's freestyle wrestling is divided into 4 categories:
 - Schoolboys: 14-15 years: Wrestle in 10 weight classes from 29-85kg.
 - Cadets wrestle in 10 weight classes from 39kg to 100kg.
 - Juniors wrestle in 8 classes from 46kg to 120kg.
 - Seniors (20 years +) wrestle in 7 classes from 50kg to 120kg.



4. Time

- A Freestyle contest consists of three two-minute periods. If the contest is a draw, an overtime period, known as *the clinch*, lasts for 30 seconds.

5. Development

- How many years is it since wrestling was introduced at the 18th Olympiad?
- Practise 2, 3 and 5 times tables on the number of takedowns in a wrestling bout.
- What is the area of the wrestling circle with/without the protection area?
- What is the area of the sand-filled circle in beach wrestling?
- What is the minimum/maximum weight for a team of 4 wishing to compete in all 4 categories?

Appendices

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[Appendix B: Archery](#)

[Appendix C: Cycling](#)

[Appendix D: Darts](#)

[Appendix E: Dog Racing](#)

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[Appendix I: Gaelic and Ladies Football](#)

[Appendix J: Hurling and Camogie](#)

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[Appendix M: Sailing](#)

[Appendix N: Soccer](#)

A: Measures Used in Sport

Furlong

A furlong is a measure of distance . It is equal to one-eighth of a mile, 220 yards, 660 feet, 201.168 metres, or 10 chains*. Five furlongs are approximately 1 kilometer (1.00584 km to be exact).

Today the unit enjoys very limited use, with the notable exception of horse racing measurements. Distances for thoroughbred horse races in the United Kingdom, Ireland, Canada, and the United States are still given in miles and furlongs (see Appendix G for Grade 1 horse races in Ireland).

*A chain or 1/10 of a furlong (22 yards) is also the length of a cricket field and 5 chains is the approximate length of an American Football field.

Guinea

Is a term used in the sale of horses, equivalent to £1.05 sterling. The prize money in horseracing was traditionally expressed in guineas. The 1,000 Guineas and 2,000 Guineas are 'classic' flat races.

Hand

A hand is a unit of measurement equal to 4 inches. It is used to measure the height of horses. A horse measured at 15hh is 15 hands high or 60inches high.

Length

The winner in horse and dog racing is deemed to have beaten opponents in lengths (length of horse or dog) or parts of a length (nose, short head, head, neck, $\frac{1}{2}$ or $\frac{3}{4}$ of a length).

Conversion Chart

Length:

Inches to cm. (X 2.54)
Feet to metres (X 0.30)
Yards to Metres (X 0.91)
Miles to Km (X 1.61)

Mass

Pounds to Kg (X 0.45)
Stone to Kg (X 6.35)

Speed

Knots to Kmph (X 1.85)
Mph to Kmph (X 1.61)

Volume

Pints to litres (X 0.47)
Gallons to litres (X 3.79)

Temperature

Fahrenheit to Celsius 5/9 (F-32)

B: Archery

Estimating the correct length of a bow and arrow.

A. Correct arrow length.

Stretch your arms out in front of you with your palms together and your finger tips fully extended.

Measure from the centre of your chest to the tips of your fingers.

Add ONE INCH to this measurement and this will give your correct arrow length.

B. Correct bow length

Use the arrow length and the chart below to help you pick the right bow length.

Your arrow Length	Bow Length
14-18	48"
18-20	54"
20-22	58"
22-24	62"
24-26	64"
26-28	66"
28-30	68"
30+	70"

C. Draw Length:

Draw length is the optimum distance you will pull back the string before releasing the arrow. To measure your draw length, determine the length of your arm-span in inches. Stand with your arms out and palms facing forward. Measure from the tip of one middle finger to the other. Then simply divide that number by 2.5. Answer is the correct draw length (in inches) for your body size.

C: Cycling

2011 An Post Rás:

- Stage 1, Sunday May 22: Dunboyne – Portumna, 148 kms
- Stage 2, Monday May 23: Portumna – Kilrush, 164kms
- Stage 3, Tuesday May 24: Kilrush – Castleisland, 175kms
- Stage 4, Wednesday May 25: Castleisland – Castletownbere, 142kms
- Stage 5, Thursday May 26: Castletownbere – Blarney, 156kms
- Stage 6, Friday May 27: Blarney – Tramore, 172kms
- Stage 7, Saturday May 28: Tramore – Kildare, 157kms
- Stage 8, Sunday May 29: Kildare – Skerries, 133kms



D: Darts

	1st Dart	2nd Dart	3rd Dart		1st Dart	2nd Dart	3rd Dart
170	Treble 20	Treble 20	Bull	131	Treble 20	Treble 13	Double 16
167	Treble 19	Treble 20	Bull	130	Treble 20	20	Bull
164	Treble 20	Treble 18	Bull	129	Treble 19	Treble 16	Double 12
161	Treble 17	Treble 20	Bull	128	Treble 20	Treble 20	Double 4
160	Treble 20	Treble 20	Double 20	127	Treble 20	Treble 17	Double 8
158	Treble 20	Treble 20	Double 19	126	Treble 19	19	Bull
157	Treble 19	Treble 20	Double 20	125	Treble 20	25	Double 20
156	Treble 20	Treble 20	Double 18	124	Treble 20	Treble 16	Double 8
155	Treble 20	Treble 19	Double 19	123	Treble 19	Treble 10	Double 18
154	Treble 18	Treble 20	Double 20	122	Treble 18	Treble 20	Double 4
153	Treble 20	Treble 19	Double 18	121	Treble 17	Treble 18	Double 8
152	Treble 20	Treble 20	Double 16	120	Treble 20	20	Double 20
151	Treble 17	Treble 20	Double 20	119	Treble 19	Treble 10	Double 16
150	Treble 20	Treble 18	Double 18	118	Treble 18	Treble 16	Double 8
149	Treble 19	Treble 20	Double 16	117	Treble 19	20	Double 20
148	Treble 16	Treble 20	Double 20	116	Treble 20	20	Double 18
147	Treble 20	Treble 17	Double 18	115	Treble 19	18	Double 20
146	Treble 20	Treble 18	Double 16	114	Treble 20	18	Double 18
145	Treble 20	Treble 15	Double 20	113	Treble 19	16	Double 20
144	Treble 20	Treble 20	Double 12	112	Treble 20	20	Double 16
143	Treble 20	Treble 17	Double 16	111	Treble 17	20	Double 20
142	Treble 20	Treble 14	Double 20	110	Treble 20	18	Double 16
141	Treble 20	Treble 15	Double 18	109	Treble 19	20	Double 16
140	Treble 20	Treble 16	Double 16	108	Treble 20	16	Double 16
139	Treble 19	Treble 14	Double 20	107	Treble 19	18	Double 16
138	Treble 20	Treble 18	Double 12	106	Treble 20	14	Double 16
137	Treble 19	Treble 16	Double 16	105	Treble 19	16	Double 16
136	Treble 20	Treble 20	Double 8	104	Treble 18	18	Double 16
135	Treble 20	Treble 15	Double 15	103	Treble 17	20	Double 16
134	Treble 20	Treble 14	Double 16	102	Treble 20	10	Double 16
133	Treble 20	Treble 19	Double 8	101	Treble 17	18	Double 16
132	Treble 20	Treble 14	Double 12	99	Treble 19	10	Double 16

D: Darts (2 Dart Finish)

	1st Dart	2nd Dart		1st Dart	2nd Dart	
110	Treble 20	Bull		71	Treble 13	Double 16
107	Treble 19	Bull		70	Treble 10	Double 20
104	Treble 18	Bull		69	Treble 19	Double 6
101	Treble 17	Bull		68	Treble 20	Double 4
100	Treble 20	Double 20		67	Treble 17	Double 8
98	Treble 20	Double 19		66	Treble 10	Double 18
97	Treble 19	Double 20		65	25	Double 20
96	Treble 20	Double 18		64	Treble 16	Double 8
95	Treble 19	Double 19		63	Treble 17	Double 6
94	Treble 18	Double 20		62	Treble 10	Double 16
93	Treble 19	Double 18		61	25	Double 18
92	Treble 20	Double 16		60	20	Double 20
91	Treble 17	Double 20		59	19	Double 20
90	Treble 18	Double 18		58	18	Double 20
89	Treble 19	Double 16		57	17	Double 20
88	Treble 16	Double 20		56	16	Double 20
87	Treble 17	Double 18		55	15	Double 20
86	Treble 18	Double 16		54	18	Double 18
85	Treble 15	Double 20		53	13	Double 20
84	Treble 20	Double 12		52	20	Double 16
83	Treble 17	Double 16		51	19	Double 16
82	Treble 14	Double 20		50	18	Double 16
81	Treble 15	Double 18		49	17	Double 16
80	Treble 16	Double 16		48	16	Double 16
79	Treble 17	Double 14		47	15	Double 16
78	Treble 18	Double 12		46	14	Double 16
77	Treble 19	Double 10		45	13	Double 16
76	Treble 20	Double 8		44	12	Double 16
75	Treble 15	Double 15		43	11	Double 16
74	Treble 14	Double 16		42	10	Double 16
73	Treble 19	Double 8		41	9	Double 16
72	Treble 16	Double 12				

E: Dog Racing

Irish Greyhound Racing Tracks and Distances

Track	Sprint	Middle	Stayers	Marathon
Clonmel	300y	525y - 550y - 575y	750y - 790y	1015y
Cork	330y	525y - 550y - 575y	750y	810y
Derry	300y	500y - 525y	600y - 720y	920y
Drumbo Park - Belfast	335y	525y - 550y - 575y	xxx	836y
Dundalk	350y - 400y	525y - 550y - 575y	600y - 620y - 670y	900y
Enniscorthy	350y	525y - 550y	600y	830y - 1005y
Galway	325y - 350y	525y - 550y - 575y	700y	810y - 1010y
Harolds Cross	324y	525y - 550y - 575y	750y	810y - 1011y
Kilkenny	300y	525y	700y	970y
Lifford	325y - 350y	525y - 550y - 575y	600y - 750	820y
Limerick	300y	525y - 550y	700y - 750y	1000y
Longford	330y	525y - 550y - 570y	xxx	805y
Mullingar	325y - 350y - 400y	525y - 550y	600y	805y
Newbridge	325y	525y - 550y - 575y	600y - 750y	845y
Shelbourne Park	350y	525y - 550y - 575y	600y - 750y	1025y
Thurles	330y - 360y	525y - 550y - 570y	600y - 750y	840y
Tralee	325y	500y - 525y - 550y - 570y	xxx	750y
Waterford	300y	500y - 525y - 550y	730y	790y
Youghal	325y	525y - 550y	700y	790y

F: Probability of Victory

The probability of victory in sport is usually expressed in betting terms. For instance 50:50 is written as 'even money' or odds of 1/1. Fractional odds*, for example 1/2, 6/4, 3/1, 11/2 are used in Ireland and the UK and are expressed by two numbers separated by a slash. To understand odds of 2/1 in a horse race, add the two numbers (2+1 =3). If the race were run 3 times, then the second number (1) is the number of times that horse would be expected to win. Similarly odds of 11/4 suggest that the selection would be expected to win four times out of 15.

Examples of odds and payout for €2 win stake

Odds	Probability of success	Payout if successful (on €2 win stake)
1/2	2 out of 3	€3 (profit of €1 plus €2 stake)
1/1	1 out of 2	€4 (profit of €2 plus €2 stake)
6/4 (or 3/2)	4 out of 10	€5 (profit of €3 plus €2 stake)
5/1	1 out of 6	€12 (profit of €10 plus €2 stake)

- Fractional odds as used in Ireland can be expressed as Decimal odds as used in Europe and Australia, using the formula 'divide numerator by denominator and add 1' Thus 5/2 becomes 3.50 in Decimal odds (5 divided by 2=2.5 , +1=3.50)

Place Betting

An 'each way' bet is two separate wagers, a win bet and a bet that the horse will finish 2nd ,3rd or 4th depending on the number of runners. Generally 1/5 or 1/4 of the win odds are paid for a place. For instance you wager ?2 euro each way on a horse in a 13 horse race. The horse finishes second at 20/1. You will get paid one quarter of 20/1 = 5/1 on the place bet.

Betting on a Sporting Event

(a) Bookmakers

In legalised betting on sports events the bookmaker, sometimes called turf accountant, opens a 'book' on the event. The bookmaker will include a profit margin which means that the payout on the successful bet is less than that represented by the 'true chance' of the event occurring. For example in a three horse race the true chances of each of the horses winning based on their relative abilities may be expressed as odds of 1/1 (50%), 3/2 (40%) and 9/1 (10%). The total of these percentages is 100%, representing a 'fair book'.

However the actual odds offered by the bookmaker will include a legitimate profit margin and based on above example could be 4/6 (60%), 1/1 (50%), and 4/1 (20%). These odds now total 130%, meaning that if the bookmaker accepts bets in the correct proportion a profit or 'over-round' of 30% should be made

(b) Tote

Tote or 'Totalisator betting' is similar to the Lotto. All the bets on a race are pooled and a deduction is made to cover costs and profit margin. The remainder is divided by the number of winning units to give a dividend.

The Tote generally offers a greater variety of bets including forecast or exacta (picking first and second) and trios (picking first, second and third).

'Forecast All Ways' in a greyhound race involves selecting three dogs {a,b,c}, two of the dogs must finish 1st and 2nd . This bet involves 6 combinations, ab, ba, ac, ca. bc, cb.

'Trio All Ways' similarly involves 6 separate bets for 3 dogs {a,b,c} to finish 1st, 2nd and 3rd. ie abc, acb, bac, bca, cab and cba.

G: Equestrian

List of Irish flat horse races Grade 1

Month	Race Name	Racecourse	Distance †	Age/Sex
May	Irish 2,000 Guineas	Curragh	1m	3yo c&f
May	Tattersalls Gold Cup	Curragh	1m 2f 110y	4yo+
May	Irish 1,000 Guineas	Curragh	1m	3yo f
June / July	Pretty Polly Stakes	Curragh	1m 2f	3yo+ f
June / July	Irish Derby	Curragh	1m 4f	3yo c&f
July	Irish Oaks	Curragh	1m 4f	3yo f
July / Aug	Phoenix Stakes	Curragh	6f	2yo c&f
Aug / Sept	Moyglare Stud Stakes	Curragh	7f	2yo f
September	Matron Stakes	Leopardstown	1m	3yo+ f
September	Irish Champion Stakes	Leopardstown	1m 2f	3yo+
September	Irish St. Leger	Curragh	1m 6f	3yo+
September	Vincent O'Brien National Stakes	Curragh	7f	2yo c&f

List of Irish National Hunt Races Grade 1

Month	Race Name	Type	Racecourse	Distance †	Age/Sex
November	JNwine.com Champion Chase	Chase	Down Royal	3m	5yo +
November	Maplewood Developments Hurdle	Hurdle	Punchestown	2m	4yo +
Nov / Dec	Royal Bond Novice Hurdle	Hurdle	Fairyhouse	2m	4yo +
Nov / Dec	Hatton's Grace Hurdle	Hurdle	Fairyhouse	2m 4f	4yo +
Nov / Dec	Drinmore Novice Chase	Chase	Fairyhouse	2m 4f	5yo +
December	John Durkan Memorial Chase	Chase	Punchestown	2m 4f	5yo +
December	Barry & Sandra Kelly Memorial Hurdle	Hurdle	Navan	2m 4f	4yo +
December	Durkan New Homes Juvenile Hurdle	Hurdle	Leopardstown	2m	3yo
December	Durkan New Homes Novice Chase	Chase	Leopardstown	2m 1f	4yo +
December	Paddy Power Dial-A-Bet Chase	Chase	Leopardstown	2m 1f	5yo +
December	Future Champions Novice Hurdle	Hurdle	Leopardstown	2m	4yo +
December	Knight Frank Novice Chase	Chase	Leopardstown	3m	4yo +
December	Lexus Chase	Chase	Leopardstown	3m	5yo +
December	December Festival Hurdle	Hurdle	Leopardstown	2m	4yo +
January	Arkle Perpetual Challenge Cup	Chase	Leopardstown	2m 1f	5yo +
January	Irish Champion Hurdle	Hurdle	Leopardstown	2m	4yo +
February	Deloitte Novice Hurdle	Hurdle	Leopardstown	2m 2f	5yo +
February	Dr P. J. Moriarty Novice Chase	Chase	Leopardstown	2m 5f	5yo +
February	Hennessy Cognac Gold Cup	Chase	Leopardstown	3m	5yo +
April	Powers Gold Cup	Chase	Fairyhouse	2m 4f	5yo +
April / May	Punchestown Champion Novice Hurdle	Hurdle	Punchestown	2m	5yo +
April / May	Kerrygold Champion Chase	Chase	Punchestown	2m	5yo +
April / May	Punchestown Champion Novice Chase	Chase	Punchestown	3m 1f	5yo +
April / May	Punchestown Gold Cup	Chase	Punchestown	3m 1f	5yo +
April / May	Champion INH Flat Race	Flat	Punchestown	2m	4-7yo
April / May	Swordlestown Cup Novice Chase	Chase	Punchestown	2m	5yo +
April / May	World Series Hurdle	Hurdle	Punchestown	3m	4yo +
April / May	Rabobank Champion Hurdle	Hurdle	Punchestown	2m	5yo +
April / May	Land Rover Champion Novice Hurdle	Hurdle	Punchestown	2m 4f	4yo +
April / May	Champion 4-Y-O Hurdle	Hurdle	Punchestown	2m	4yo

H: Capacity of Stadia

Sport	Venue	Stadium	Capacity
GAA	Dublin	Croke Park	82 300
GAA	Thurles	Semple Stadium	55 000
GAA	Limerick	Gaelic Grounds	50 000
Soccer and Rugby	Dublin	Aviva Stadium	50 000
GAA	Cork	Páirc Uí Chaoimh	43 500
GAA	Killarney	Fitzgerald Stadium	43 000
GAA	Clones	St. Tiernach's Park	36 000
GAA	Castlebar	McHale Park	35 000
GAA	Galway	Pearse Stadium	34 000
GAA	Belfast	Casement Park	32,500
GAA	Cavan	Breffni Park	32 000
GAA	Roscommon	Hyde Park	30 000
GAA	Navan	Páirc Tailteann	30 000
GAA	Portlaoise	O'Moore Park	27 000
Rugby	Limerick	Thomond Park	26 500
GAA	Omagh	Healy Park	25,000
GAA	Tuam	St. Jarlaths Park	25 000
GAA	Kilkenny	Nowlan Park	24 000
GAA	Ennis	Cusack Park	24 000
GAA	Castleblayney	St. Mary's Park	23 000
GAA	Carlow	Dr. Cullen Park	21 000
GAA	Derry	Celtic Park	22,000
GAA	Wexford	Wexford Park	20 000
GAA	Newry	Páirc Esler	20,000
GAA	Enniskillen	Brewster Park	20,000
Rugby	Dublin	RDS Stadium	18 500
GAA	Armagh	Athletic Park	18,000
GAA	Waterford	Walsh Park	17 000
GAA	Sligo	Markievicz Park	17 000
GAA	Tullamore	Pairc Ui Conchuir	16 000
GAA	Newbridge	St. Conleth's Park	15 000
GAA	Dungarvan	Fraher Field	15 000
GAA	Ballybofey	McCumhaill Park	15 000
Rugby	Cork	Musgrave Park	14 500
GAA	Carrick	McDiarmuid Park	12 000
GAA	Drogheda	Drogheda Park	12 000
GAA	Mullingar	Cusack Park	11 000
GAA	Birr	St. Brendan's Park	11 000
Soccer	Dublin	Tolka Park	10 100
GAA	Dublin	Parnell Park	10 000
GAA	Longford	Pearse Park	10 000
GAA	Aughrim	Aughrim Park	10 000
Soccer	Limerick	Hogan Park	9 000
Athletics	Dublin	Morton Stadium	8 800
Soccer	Dublin	Morton Stadium	8 800
Soccer	Dublin	Dalymount Park	7 955
Soccer	Ballybofey	Finn Park	7 500
Soccer	Cork	Turners Cross	7 485
Soccer	Dublin	Tallaght Stadium	6 500
Soccer	Dundalk	Oriel Park	6 000
Soccer	Athlone	Lissywoolen Stadium	6 000
Soccer	Kilkenny	Buckley Park	6 000

I: Football All-Irelands

Gaelic Football

All-Ireland Senior Titles : Trophy Sam Maguire Cup (To 2011)

Kerry:	36
Dublin:	23
Galway:	9
Meath:	7
Cork:	7
Wexford:	5
Cavan:	5
Down:	5
Kildare:	4
Tipperary:	4
Mayo:	3
Offaly:	3
Tyrone:	3
Louth:	3
Limerick:	2
Roscommon:	2
Derry:	1
Donegal:	1
Armagh:	1

Ladies Football

Trophy: Brendan Martin Cup

Kerry - 11

1976, 1982, 1983, 1984, 1985, 1986, 1987, 1988, 1989, 1990, 1993

Cork - 6

2005, 2006, 2007, 2008, 2009, 2011

Waterford - 5

1991, 1992, 1994, 1995, 1998

Mayo - 4

1999, 2000, 2002, 2003

Tipperary - 3

1974, 1975, 1980

Monaghan - 2

1996, 1997

Offaly - 2

1979, 1981

J: Hurling and Camogie All-Irelands

Hurling: All Ireland Senior Titles (To 2011)

Kilkenny:	33
Cork:	30
Tipperary:	26
Limerick:	7
Wexford:	6
Dublin:	6
Galway:	4
Offaly:	4
Clare:	3
Waterford:	2
Kerry:	1
Laois:	1
London:	1

Note: The Liam MacCarthy Cup is for Tier 1 or stronger Hurling counties. Other counties play in Tier 2, 3 and 4 competitions for the Christy Ring, Nicky Rackard and Lory Meagher Cups.

All Irelands are also awarded for Minor (U18) and U21 competitions in Hurling and Football and for Intermediate hurling and Junior football competitions. Undertake research to find whether your county has won All-Irelands in various grades.

Camogie: All Ireland Senior Titles (To 2011)

Team	Winner	Last win	Last losing final
1 Dublin	26	1984	1986
2 Cork	24	2009	2007
3 Kilkenny	12	1994	2009
4 Antrim	6	1979	1973
5 Tipperary	5	2004	2006
6 Wexford	6	2011	1994
7 Galway	1	1996	2011
8 Louth	0	-	1936
- Limerick	0	-	1980
- Mayo	0	-	1959
- Derry	0	-	1954
- Waterford	0	-	1945
- Down	0	-	1948

All Irelands are also awarded in Camogie for Intermediate, Premier Junior, Junior A and B, Minor A,B and C and Under 16 A,B and C. Undertake research to find whether your county has won All-Irelands in various grades.

K: Mountaineering

Name of Mountain	Height	Location
Carrauntoohil	1041 metres	Co. Kerry
Beenkeragh	1010 metres	Co. Kerry
Mount Brandon	952 metres	Co. Kerry
Lugnaquilla	926 metres	Co. Wicklow
Galtymore	920 metres	Co. Tipperary / Limerick
Nephin Beg	806 metres	Co. Mayo
Mount Leinster	796 metres	Co. Wexford / Carlow
Croagh Patrick	765 metres	Co. Mayo
Errigal	752 metres	Co. Donegal
Slievenamon	722 metres	Co. Tipperary
Knockboy	706 metres	Co. Cork / Kerry
Silvermines	695 metres	Co. Tipperary
Trostan	554 metres	Co. Antrim

L: Rugby

Triple Crown Winners

Two teams have achieved the Triple Crown 4 years consecutively: Wales 1976 - 1979, and England 1995 - 1998. No other teams have won the triple crown more than twice in a row.

England 23

(1883, 1884, 1892, 1913, 1914, 1921, 1923, 1924, 1928, 1934, 1937, 1954, 1957, 1960, 1980, 1991, 1992, 1995, 1996, 1997, 1998, 2002, 2003)

Wales 19

(1893, 1900, 1902, 1905, 1908, 1909, 1911, 1950, 1952, 1965, 1969, 1971, 1976, 1977, 1978, 1979, 1988, 2005, 2008)

Ireland 10

(1894, 1899, 1948, 1949, 1982, 1985, 2004, 2006, 2007, 2009)

Scotland 10

(1891, 1895, 1901, 1903, 1907, 1925, 1933, 1938, 1984, 1990)

Grand Slam Winners

Nation	Grand Slams Won	Last Grand Slam Season
France	9	2010
Ireland	2	2009
Wales	10	2008
England	12	2003
Scotland	3	1990
Italy	0	Never Achieved

Heineken Cup Winners

Season	Winners	Runners-up	Score	
1995-96	Toulouse	Cardiff	21-18 aet	21,800
1996-97	Brive	Leicester	28-9	41,664
1997-98	Bath	Brive	19-18	36,500
1998-99	Ulster	Colomiers	21-6	49,000
1999-00	Northampton	Munster	9-8	68,441
2000-01	Leicester	Stade Francais	34-30	44,000
2001-02	Leicester	Munster	15-9	74,000
2002-03	Toulouse	Perpignan	22-17	28,600
2003-04	Wasps	Toulouse	27-20	73,057
2004-05	Toulouse	Stade Francais	18-12 aet	51,326
2005-06	Munster	Biarritz	23-19	74,534
2006-07	Wasps	Leicester	25-9	81,076
2007-08	Munster	Toulouse	16-13	74,417
2008-09	Leinster	Leicester Tigers	19-16	66,523
2009-2010	Toulouse	Biarritz	21-19	78,962
2010-2011	Leinster	North Hampton	33-22	72,456

M: Sailing

Beaufort Scale and Sailing

Beaufort No.	Wind Speed MPH	Wind Speed Knots	Wind Description	Effect of Wind on Sea	Approx. Height of Waves (in feet)
Force 0	< 1	< 1	Calm	Sea like glass	No waves
Force 1	1-3	1-3	Light air	Ripples	No waves
Force 2	4-7	4-6	Light breeze	Small wavelets	1
Force 3	8-12	7-10	Gentle breeze	Large wavelets; occasional white horses.	3
Force 4	13-18	11-16	Moderate breeze	Small waves, frequent white horses	5
Force 5	19-24	17-21	Fresh breeze	Moderate waves, constant white horses, some spray	8
Force 6	25-31	22-27	Strong breeze	Large waves, foam and spray	13
Force 7	32-38	28-33	Moderate gale	Sea heaps up; white foam from crests blows in streaks	19
Force 8	39-46	34-40	Fresh gale	Moderately high waves; heavier streaks of foam	25
Force 9	47-54	41-47	Strong gale	High waves; dense streaks of foam; spray may affect visibility	32
Force 10	55-63	48-55	Whole gale	Very high waves, sea has white appearance, great foam patches; much spray	41
Force 11	64-72	56-63	Storm	Exceptionally high waves; foam patches cover sea; visibility affected	52
Force 12	73 +	64 +	Hurricane (Atlantic) Typhoon (Pacific)	Air filled with foam and spray; sea completely white with driving spray, little visibility	Enormous waves.

N: Soccer

Airtricity League of Ireland Tables 2011

Premier Table 2011

Team	P	W	D	L	F	A	GD	PTS
Shamrock Rovers	36	23	8	5	69	24	45	77
Sligo Rovers	36	22	7	7	73	19	54	73
Derry City	36	18	14	4	63	23	40	68
St. Patrick's Athletic	36	17	12	7	62	35	27	63
Bohemians	36	17	9	10	39	27	12	60
Bray Wanderers	36	15	6	15	53	50	3	51
Dundalk	36	11	11	14	50	53	-3	44
U.C.D.	36	10	4	22	42	80	-38	34
Drogheda United	36	7	4	25	32	77	-45	25
Galway United	36	1	3	32	20	115	-95	6

Division 1 Table 2011

Team	P	W	D	L	F	A	GD	PTS
Cork City	30	20	9	1	73	26	47	69
Shelbourne	30	22	2	6	62	24	38	68
Limerick	30	20	6	4	49	22	27	66
Monaghan United	30	20	5	5	57	27	30	65
Waterford United	30	13	3	14	37	31	6	42
Longford Town	30	12	4	14	38	41	-3	40
Mervue United	30	10	4	16	37	45	-8	34
Athlone Town	30	9	5	16	25	53	-28	32
Finn Harps	30	8	5	17	29	42	-13	29
Wexford Youths	30	4	2	24	29	69	-40	14
Salthill Devon	30	2	5	23	18	74	-56	11



Providing support for the Education Community in Cork

Providing continuous professional development for primary and post-primary teachers in Cork city and county



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