

Roller sports equipment — Skateboards — Safety requirements and test methods

The European Standard EN 13613:2001 has the status of a British Standard.

ICS 97.220.40

National foreword

This British Standard is the official English language version of EN 13613:2001. It supersedes BS 5715:1993 which is withdrawn.

The UK participation in its preparation was entrusted by Technical Committee SW/14, Gymnasium and sports equipment, to Subcommittee SW/56, Skateboards, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this subcommittee can be obtained on request to its secretary.

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This British Standard, having been prepared under the direction of the Consumer Products and Services Sector Committee, was published under the authority of the Standards Committee and comes into effect on 15 March 2001

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English version

Roller sports equipment — Skateboards — Safety requirements and test methods

Équipement de sports à roulettes — Planches à roulettes
— Exigences de sécurité et méthodes d'essais

Rollsportgeräte — Skateboards — Sicherheitstechnische
Anforderungen und Prüfverfahren

This European Standard was approved by CEN on 1 January 2001.

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 136, Sports, playground and other recreational equipment, the Secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2001, and conflicting national standards shall be withdrawn at the latest by July 2001.

Annex A is informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies requirements for non-motorized skateboards which are supplied for use by one rider at a time.

The skateboards covered by this standard are graded by performance criteria for different categories of body weight.

Skateboards for use by a rider up to 20 kg does not belong to the scope of this European Standard. They are covered by EN 71-1.

2 Normative references

This European Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies (including amendments).

EN 71-1, *Safety of toys — Part 1: Mechanical and physical properties*.

EN 22768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications (ISO 2768-1:1989)*.

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply:

3.1

skateboard

vehicle consisting of one or more connecting decks on two trucks and wheels on which the rider may propel him/herself and which can be steered by shifting his/her body weight

3.2

mid-steering setting

setting between the positions of the softest and hardest steering settings

3.3

softest steering setting

setting achieved when for example an action bolt is unscrewed so that the cushion is just relieved of any pressure from it

3.4

hardest steering setting

setting achieved when for example an action bolt is fully tightened so that the cushion is subjected to maximum pressure from it

4 Classification

4.1 Class A

Skateboards intended for use by a rider of more than 50 kg up to 100 kg mass.

4.2 Class B

Skateboards intended for use by a rider of more than 20 kg up to 50 kg.

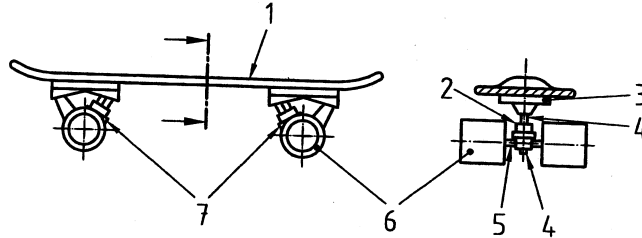
5 Construction

5.1 General

Typical components of a skateboard are illustrated in Figure 1.

NOTE: Figure 1 is only an example for reference.

General tolerances: EN 22768-v



Key

- 1 Deck
- 2 Cushion
- 3 Riser pad
- 4 Action bolt
- 5 Axle
- 6 Wheels
- 7 Trucks

Figure 1 — Components of a skateboard

5.2 Requirements

5.2.1 There shall be no projections above the upper surface of the deck with the exception of the:

- domed headed bolts under class A and B;
- retaining straps for connection of the feet to the bolt only for class A.

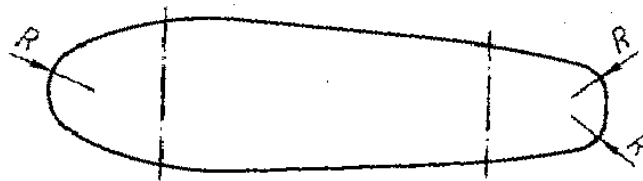
5.2.2 When tested in accordance with 6.8, it shall not be possible to touch, with the test cylinder (see 6.8.2), any projection which has a length greater than 10 mm and less than 100 mm² in area.

5.2.3 When the action bolt of the truck is fully tightened, no part of the action bolt shall be in contact with the underside of the deck.

5.2.4 If a part of the axles and means of securing the wheels shall project beyond the outer edge of the wheels then the axle and means of securing the wheels shall not project beyond the deck.

All edges on the skateboard which can come into contact with parts of the body during normal use shall be rendered safe, or shaped so that injuries cannot occur.

5.2.5 The corners and edges of the deck shall be rounded off and free from burr and sharp or protruding edges. The ends of the deck shall be rounded off with a minimum radius of 10 mm as shown in Figure 2.



Key

R = minimum 10 mm

Figure 2 — Radius of the ends of the deck

5.2.6 Where self-locking nuts are used, the entire thread, including the locking section, shall be in contact with the bolt. Self-locking nuts and other self-locking fixings that are loosened several times for the purpose of modification or servicing, shall be suitable for this purpose. The information supplied by the manufacturer shall indicate when self-locking nuts and other self-locking elements can lose their effectiveness.

5.2.7 When tested in accordance with 6.5, the coefficient of adhesion (μ_0) of the wheels shall be a minimum of 0,3.

5.2.8 When tested in accordance with 6.6, the wheel bearings shall not seize up or disintegrate.

5.2.9 When tested in accordance with 6.7, 6.9 and 6.10 no part of the skateboard shall break, there shall be no signs of functional damage and no fastening devices shall have worked loose.

6 Test methods

6.1 General

All tests shall be carried out on fully assembled skateboards at the mid-steering setting.

6.2 Test specimens

Two test specimens (two skateboards) of the same type shall be tested in accordance with the order described in 6.3.

6.3 Order of testing

6.3.1 Specimen A

The specimen shall be subjected to the test in the following order:

- a) wheel adhesion test (see 6.5);
- b) speed test (see 6.6);
- c) endurance test (see 6.7).

6.3.2 Specimen B

The specimen shall be subjected to the test in the following order:

- a) test of external design (see 6.8);
- b) drop test (see 6.9);
- c) impact test (see 6.10).

6.4 Conditioning and testing temperatures

Unless otherwise specified the skateboards shall be conditioned and tested either at a temperature of (23 ± 2) °C and a relative humidity of (50 ± 5) % or at a temperature of (20 ± 2) °C and a relative humidity of (65 ± 5) %.

6.5 Wheel adhesion test

6.5.1 Principle

The wheel adhesion is tested by pulling a wheel along a steel plate with a fine brushed and degreased surface of arithmetical mean roughness R_a 1,5 µm to 2,0 µm.

6.5.2 Apparatus

Steel plate, with a parallel lay and surface texture between $R_a = 1,5$ µm and $R_a = 2,0$ µm and two weights, each of 20 kg mass.

6.5.3 Procedure

Degrease the tyre surface of the wheels of the skateboard and the steel plate. Measure the mass of the skateboard. Load the skateboard with a mass of 20 kg over each axle and place it on the steel plate so that the lay is perpendicular to the force F to be applied. Apply force without shock to the trucks (see Figure 3) and when the wheels are at the point of slipping, measure the applied force F .

6.5.4 Calculation of results

Calculate the coefficient of adhesion of the wheels μ_0 from equation (1):

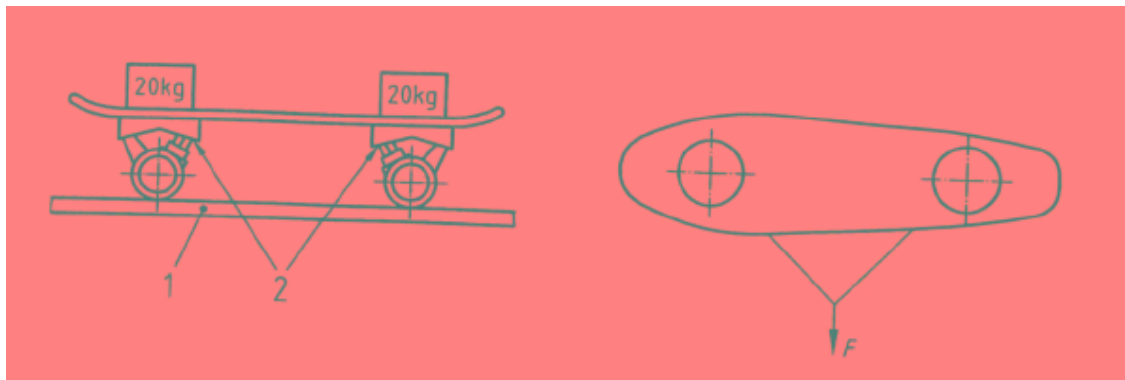
$$\mu_0 = \frac{F}{(40 + m)g} \quad (1)$$

where:

F is the force applied, in Newtons;

m is the mass of the skateboard, in kilograms;

g is the acceleration due to gravity, i.e. 9,81 m/s².



Key

- 1 Steel plate
- 2 Point of application of force

Figure 3 — Adhesion test apparatus

6.6 Speed test

6.6.1 Principle

A loaded skateboard is driven at speed and the wheel bearings are examined for signs of damage.

6.6.2 Procedure

For skateboards class A, place a mass of 50 kg over the one axle set of wheels under test. Run the skateboard continuously at a speed of 20 km/h for 6 min.

For skateboards class B, place a mass of 40 kg over the one axle set of wheels under test. Run the skateboard continuously at a speed of 20 km/h for 3 min.

Note whether or not the wheel bearings seize up or disintegrate.

6.7 Endurance test

6.7.1 Principle

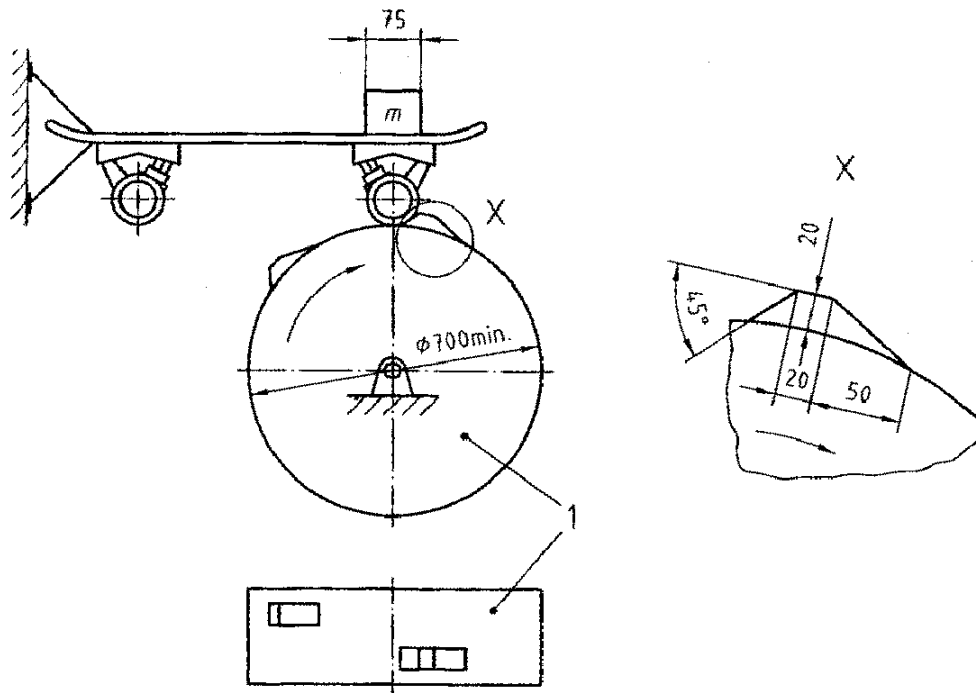
One set of wheels of a skateboard not tested in accordance with 6.6 is subjected to a simulation of normal wear and tear using a cylindrical ramp apparatus. The skateboard is then examined for any damage to its functionality.

6.7.2 Apparatus

The test is carried out on a drum rotating at a circumferential speed of 0,5 m/s.

The drum is fitted with ramps offset one to another and evenly spaced.

The distance between these ramps shall be such that the skateboard passes over one ramp in 1,5 s (see Figure 4).



Key
1 Drum

Figure 4 — Diagram of endurance test apparatus

6.7.3 Procedure

Test the set of wheels of the skateboard referred to in 6.7.1 while the skateboard is allowed only to move vertically on the tested end and is fixed horizontally and vertically on the other end of the skateboard (see Figure 4).

Place a mass $m = 40$ kg for skateboards of class A and $m = 25$ kg for class B over a length of 75 mm centrally over the deck axle.

For skateboards class A and B set the cylinder in motion and run it until the distance covered by the wheels under test is 25 km.

Note whether or not there is any breakage, signs of functional damage, or any fastening devices have worked loose.

6.8 External design

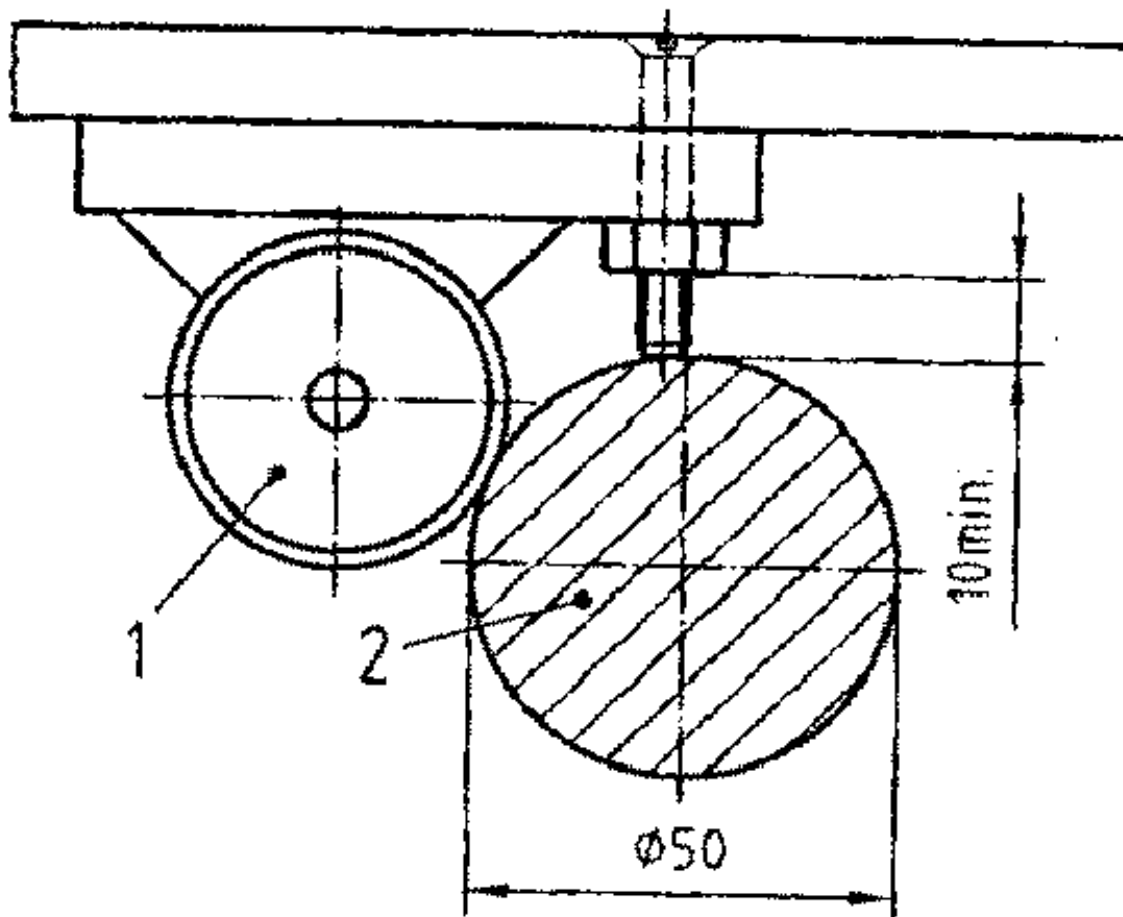
6.8.1 Principle

A test cylinder is used to assess protruding parts.

6.8.2 Apparatus

Test cylinder, of diameter 50 mm and minimum length 150 mm (see Figure 5).

Dimensions in millimetres



Key

- 1 Wheel
- 2 Test cylinder

Figure 5 — Example of use of test cylinder

6.8.3 Procedure

Using the cylinder (see 6.8.2), test any projecting parts such as screws and levers that project by more than 10 mm and less than 100 mm² in area.

Present the cylinder at any angle to the part under test.

Note whether or not the part under test touches the outer surface, excluding the ends, of the cylinder.

6.9 Drop test

6.9.1 Principle

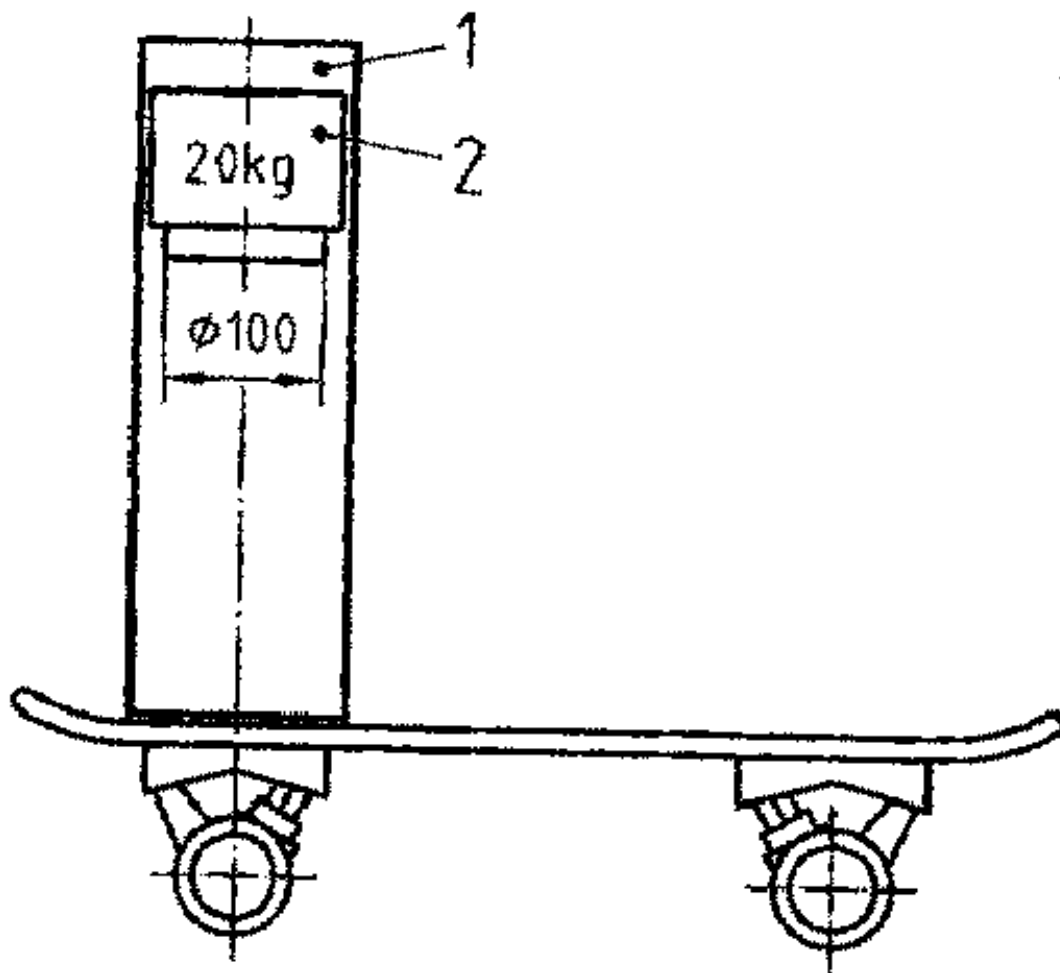
A cylindrical mass is dropped freely on to various points on a skateboard, which is then examined for any damage to its integrity.

6.9.2 Apparatus

The test apparatus shall consist of:

- a) cylindrical weight, of mass 20 kg and diameter 100 mm (see Figure 6);
- b) sheet of rubber, fitted to the weight, of thickness of 17 mm and 70 Shore A;
- c) guide tube (see Figure 6).

Dimensions in millimetres



Key

- 1 Guide tube
- 2 Test weight

Figure 6 — Apparatus for drop test

6.9.3 Procedure

Drop the cylindrical weight, in free fall, down the guide tube on to the centre of the skateboard three times, then three times on to the central area of one axle, and finally three times on to the central area of the other axle. During the test, hold the skateboard to prevent it from rolling away.

For skateboards class A, drop the weight through 300 mm on to the centre of the board and through 200 mm on to the centre of the axles.

For skateboards class B, drop the weight through 200 mm on to the centre of the board and through 200 mm on to the centre of the axles.

Carry out the test after the skateboard has been conditioned for 24 h at conditions specified in 6.4. If plastic material is used for decks or trucks the skateboard has to be conditioned for at least 6 h at a temperature of $(-5 \pm 1) ^\circ\text{C}$. Start the test within 1 min of removing the skateboard from the conditioning environment and complete it within 5 min.

Note whether or not there is any breakage, signs of functional damage or any fastening devices have worked loose.

6.10 Impact test

6.10.1 Principle

A skateboard is driven against a kerb and is examined for damage to its integrity.

6.10.2 Apparatus

Dynamic impact test rig, comprising the following:

- a) skateboard, accelerated in a controlled fashion up to 5 m/s;
- b) a kerb, with a height equal to the diameter of the wheel, held rigidly in position.

6.10.3 Procedure

Drive the skateboard three times against the kerb.

Note whether or not there is any breakage, signs of functional damage, or any fastening devices have worked loose.

7 Marking

Each skateboard shall be legibly and durably marked with the following information:

- a) the number of this European Standard;
- b) the name, trademark or other means of identification of the manufacturer or retailer;
- c) means of identification of the model;
- d) information regarding the weight limit of skateboards;
- e) a warning that protective equipment should always be worn.

8 Information supplied by the manufacturer

All skateboards shall be supplied with information supplied by the manufacturer.

This document shall contain, in text or picture form, at least the information in accordance with 8.1 to 8.4

8.1 Information about the construction of the skateboard

The following notes shall be included:

- a) a note to the effect that no modifications shall be made that can impair safety;
- b) a note indicating when self-locking nuts and other self-locking fixings may lose their effectiveness.

8.2 Instructions for use

The following notes shall be included.

- a) Notes concerning limitations of use according to regulations of road safety and recommendations regarding, or descriptions of, suitable surfaces (flat, clean, dry and where possible away from other road users).
- b) Use of the following protective equipment: hand/wrist protection, knee protection, head protection and elbow protection.
- c) Instruction to check that the skateboard steering mechanism, if present, is correctly adjusted and that the connective components are firmly secured.
- d) Description of the correct techniques for use and for braking.

8.3 Servicing and maintenance instructions

Clear note stating that regular maintenance enhances the safety of the equipment.

This includes:

- a) note regarding the different properties of the various bearing constructions and their maintenance;
- b) replacement of wheels and buffers (where possible or present);
- c) lubrication of the bearings;
- d) steering adjustment;
- e) note to remove any sharp edges created through use;
- f) running checks;
- g) note to look for splinters and cracks in the deck and to replace when needed.

8.4 Skateboards safety code

WARNING Running or jumping onto skateboards can be dangerous.

For details see annex A.

Annex A
(informative)

Skateboard safety code

- a) Choose to skateboard in places which allow you to improve your skills, not on pavements or streets, where serious accidents have happened to skateboarders and other people.
- b) Children under eight years of age should be supervised at all times when skateboarding.
- c) Learn everything slowly, including new tricks. When losing balance don't wait until you fall, step off and start again. Ride down gentle slopes at first. Then ride slopes where your speed is only as fast as you can run off the board without falling.
- d) Most serious skateboard injuries are broken bones so learn to fall (by rolling if possible) without the skateboard first.
- e) Skateboarders starting to learn should try with a friend or parent. Most bad accidents happen in the first month.
- f) Before you jump off a skateboard watch where it may go; it could injure someone else.
- g) Avoid skateboarding on wet or uneven surfaces.
- h) Join a club in your area and learn more. Prove you are a good skateboarder and care about yourself and others.

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