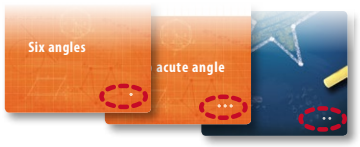
Players: **2–5**
Age: **10+ Years**
Time: **20–30 Minutes**

Video manual:
www.thebrainyband.com

GameMetrix MASTER is an extension of the popular game GameMetrix with a broader scope of geometric concepts and an additional set of figures. This extension is intended to be used along with the basic, original game.

The attributes cards from the extension are recommended to be introduced into the game gradually, starting with the simple ones – the cards that are marked by three stripes indicating three difficulty levels. The figure cards may be introduced into the game right away.



Indicated in the lower left-hand corner of the cards are their card numbers (the extension cards beginning at 37). Links to the card numbers are used in the text below in brackets [#].

Extension Rules

The game mechanics remains unchanged, but there is something new added in the game.

1. Special Cards

The special cards are mixed in and shuffled along with the rest of the attributes cards. When a player finds one of them during his turn, he is to fulfill whatever instructions are written on it.

"Replace All the Figures!"

In drawing this attributes card out of the deck, the player must remove all of the figure cards and discard them. Then he must place five new cards in their place.

If he has already collected attributes cards at this moment and none of the new figures match them, then his turn is over and the attributes cards are discarded.

If any of the new figure cards (or special card if he draws it first) match one of the player's attributes cards, the player will continue his move normally.

"Restart Collection!"

All of the attributes cards that the player has managed to collect before drawing this card are discarded and the player begins collecting them over again. If any of the new figure cards (or special card if he draws it first) match one of the player's attributes cards, then the player will continue his move normally.

"Take Two!"

After drawing this card, the player will have to take two attributes cards at once.

In the case that the player doesn't bust and decides to continue his move, then in the course of this move he will only be able to draw cards in pairs.

2. Cards with Dashed Lines

What dashes denote may only be interpreted in the context of or relative to objects denoted by solid lines. Dashed objects are not considered to be figures or parts of figures themselves.

Consider for example that what matches a particular card is an "inscribed angle", "diameter", or "chord" (they are denoted by solid lines), but attributes, such as a "circle", "ellipse", or "segment" do not go with them (they are entirely or partially denoted by a dashed line).

There are some attributes in which dashes are particularly emphasized like "bisector denoted by a line" for example.

Meanwhile, the line denoted by dashes may not be considered the side of any figure or anything else other than a bisector and it doesn't affect the other properties of the figure (for instance, it's not taken into account when evaluating symmetry).

3. Combined Segment Figures and Curved Lines

In avoidance of any discrepancies in interpreting attributes referring to angles and sides, the following interpretations are used in such combined figures:

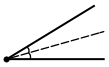
- Referred to as "sides" (the sides of a polygon) are exclusively straight lines (in other words, segments).
- The only object referred to as an "angle" is the junction of two segments (the sides of the angle must be straight lines).
- The only object referred to as a "polygon" is a closed broken line the sides of which are straight line segments. A segment, sector, circle, or ellipse are not considered polygons.

Consequently, it is accepted that sector [66] contains two sides and one angle and segment [63, 64] has one side and no angle.

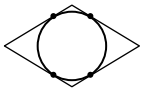
Sector

Segment

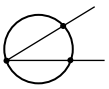
Featured in the Game GameMetrix MASTER:



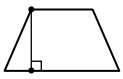
Bisector — a ray that begins at the vertex of an angle, dividing the angle into two equal angles.



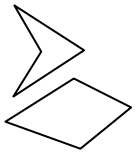
Incircle — an incircle is the circumference inscribed into a polygon if it lies inside it and touches all of the sides.



Inscribed angle — an angle the vertex of which lies on the circumference, whereby both of the sides intersect the circumference.



Height of a polygon — a segment of a perpendicular that is omitted from the vertex of the polygon for its base.



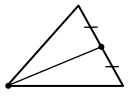
Deltoid — a quadrilateral that possesses two pairs of sides, which are identical in length. Unlike a parallelogram, it's not the opposite sides that are equal, but two pairs of adjacent sides. A rhombus and a square are two common cases of a deltoid. A deltoid may be convex [43] or nonconvex [44].

Diagonal line — a segment connecting two vertices without colliding with any of the sides.

Diameter — a segment connecting two points on a circumference and crossing through the middle of it [40].

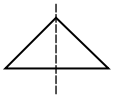
Tangent — a line that shares a common point with a curved line [41].

Circular segment — a portion of a circle limited by an arc of the circumference and its chord or section [63, 64].

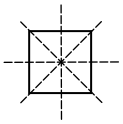


Median — a segment inside a triangle connecting the vertex of the triangle with the middle of the opposite side.

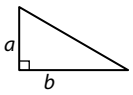
Circumscribed circle — a circumference containing all of the polygon's vertices.



Rotational symmetry — the same thing as reflexive symmetry.

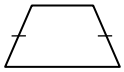


Line of symmetry — a line that can be drawn to obtain reflexive, identical halves of a figure to the left and to the right.



Perpendicular sides — sides whose common angle is equal to 90°.

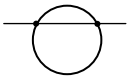
Rectangular trapezoid — a trapezoid that has a lateral side that is perpendicular to the bases [45].



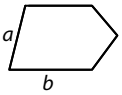
Isosceles trapezoid — the lateral sizes are equal.

Radius — a segment connecting the center of a circumference with a point located on the circumference [37, 38].

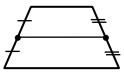
Sector — a part of a circle limited by two radii and an arc between them [63, 66].



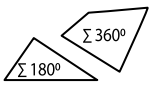
Straight section line — a line intersecting the circumference at two different points [39].



Adjacent sides — sides that are adjacent to each other.

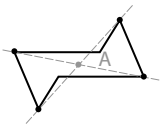


Median line — a segment connecting the middle of two sides of a figure (applies to a triangle or a quadrilateral).



The sum of a triangle's angles is equal to 180°, while the sum of a quadrilateral's angles is equal to 360°.

Chord — a segment connecting two points on a circumference [39, 40].



Central symmetry (or "point symmetry") — a figure is called symmetrical relative to a point A if for each point of the figure the point symmetrical to it relative to the point A also belongs to this figure.

Central angle — an angle with a vertex in the center of a circumference [38].

Other educational games on the website **www.thebrainyband.com**

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