Kinds and techniques of definition:

Lexical definition is the meaning of the term in common usage
Contextual definition a word's meaning is different in different contexts, and thus it is only in context, or use, that we can understand the meaning.
Intensional definition gives the meaning of a term by giving all the properties required of something that falls under that definition; the necessary and sufficient conditions for belonging to the set being defined.
 Extensional definition gives the meaning of a term by listing everything in its extension - that is, everything that falls under that definition.
Ostensive definition conveys the meaning of a term by pointing out examples of what is defined by it.
Operational definition details the precise procedure through which we can recognize an entity; of a quantity is a specific process whereby it is measured.
Theoretical definition gives the meaning of a word in terms of the theories of a specific discipline.
Definition by genus and difference is one in which a word or concept that indicates a species -- a specific type of item, not necessarily a biological category -- is described first by a broader category, the genus, then distinguished from other items in that category by differentia.
Circular definition A circular definition is one that assumes a prior understanding of the term being defined. For instance, we can define "oak" as a tree which has catkins and grows from an acorn, and then define "acorn" as the nut produced by an oak tree. To someone not knowing either which trees are oaks or which nuts are acorns, the definition is fairly useless. BUT IF YOU DEFINE ACORN OSTENSIVELY, THEN IT'S NOT CIRCULAR – THAT IS, TO THE DEGREE THAT WE RELY ENTIRELY ON THE DEFINITION IT'S USELESS.
Recursive definition is one which defines a word in terms of itself, albeit in a useful way. For that to work, the definition in any given case must be well founded, avoiding an infinite regress. For instance, we could define natural number as "1 or the successor of a natural number.
Stipulative definition occurs when a new or currently-existing term is given a new meaning for the purposes of argument or discussion in a given context.
Precising definition is a definition that extends the dictionary definition (lexical definition) of a term for a specific purpose by including additional criteria that narrow down the set of things meeting the definition.
Persuasive definition is a type of definition in which a term is defined in such a way as to be an argument for a particular position (as opposed to a lexical definition, which aims to be neutral to all usages), and is deceptive in that it has the surface form of a dictionary definition. Example: renaming the study of politics 'political science'.

Definitions of a point:

-That which has no part
-A unit that has position (Pythagoreans) [Aristotle, *De Anima* 409a6]
-Beginning of a line (Plato, according to Aristotle, *Metaphysics* 992a20)
-The indivisible beginning of all magnitudes (Herundes, reported by an-Nairizi)
-A point may be a beginning or an end, or division of a line, but it is no part of it. (Aristotle, *De Caelo* 300a14, *Physics* 220a1-21)
-An extremity which has no dimension, or an extremity of a line (Posidonius)

- The intersection of two lines is a point (Posidonius)
-The point is the limit of localization...the content of space vanishes; relative position remains (Max Simon, 19th Century)
- …the extremest limit of…spatial presentation (Thomas Heath)
- A point is the extremity of a line, the smallest possible mark (Apollonius, reported by Diogenes Laertius, 7.135)

Definitions of a line

- The path of a point in motion (Aristotle, *De Anima* 409a4, implied)
- Magnitude in one direction (Proclus)
- A magnitude divisible one way only (Aristotle *Metaphysics* 1016b25-27)
- distance (Apollonius)
- the flowing of a point (Proclus: "This definition is a perfect one as showing the essence of the line…to define it from its genetic cause…only the immaterial line, for it is this that is produced by the point which, though indivisible, is the cause of the existence of things divisible") (also attributed to Eratosthenes)
- A line is the extremity of a surface, or length without breadth, or that which has length alone (Apollonius, *Physics*)
- One can say that a line is what divides the sunlight from the shadow. (Hero, *Definitions*)

Definitions of a straight line:

1] a straight line is whatever has its middle in front of both its ends (Plato, *Parmenides* 137e)
2] …the limit of a finite plane, such that its centre is in a line with its extremes (Aristotle, *Topics* VI)
3] The shortest distance between two points.
4] A homeomeric line in a plane which can be extended as far as one pleases without meeting itself." Lee Perlman
5] A line in a plane which has the same shape on both sides, OR a line which has the same shape on all sides. OR a line with only one shape (Eidos) (Heath, Perlman)[1]
6] A line in three dimensional space which produces a plane in every direction. (Perlman)
7] A straight line is that which lies equally with respect to its straight points; circular, whose path will be different from the arrangement of its points. [Balbus the surveyor]
8] A line which, when its ends remain fixed, it remains fixed when turned around in the same plane. (Heron)
9] "…as the straight is in length, so is the level in surface…the odd in number[2], and the white in color." [Aristotle *Metaphysics* 1093b19, a 'definition by analogy']

10] A straight line is a line with a constant, unchanging slope, that, when extended infinitely in both directions, never meets itself

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[1] Draw a squiggly line. If I know detach the plane on the right from the plane on the left, would you say that the two planes have the same shape?
[2] Could this be expressing what I expressed in definition [5] above: An odd number cannot be divided into two equivalent numbers. A non-straight line does not divide a plane into two equivalent

11] A straight line is a line which never changes direction.

12] A straight line is a line such that, if one looks at any two points, and finds the direction that points from one to another, this direction, or its reverse, can be used to point to any point on the line from any other point on the line.

13] A straight line is a homeomeric line in a plane, which is homeomeric across all scales of drawing. A segment of one circle will not be homeomeric with that of a circle of another size, but a segment of one straight line will be homeomeric with one of any line of any size. In that sense, there is only one straight line, while there are many circles. (Perlman)

14] THE ONLY HOMEOMERIC LINE IN A PLANE THAT IS HOMEOMERIC ACROSS ALL SCALES OF DRAWING. A CIRCLE OF 1 IN. DIAMETER WILL NOT BE HOMEOMERIC WITH ONE OF 12 FT. DIAMETER. BUT A STRAIGHT LINE OF ANY SIZE WILL BE HOMEOMERIC WITH ANY OTHER STRAIGHT LINE OF ANY SIZE. THAT IS, WHEN WE 'SHRINK' THE CIRCLE, THE TRANSFORMED CIRCLE IS NO LONGER HOMEOMERIC WITH THE ORIGINAL, BUT WHEN WE SHRINK A STRAIGHT LINE, IT REMAINS HOMEOMERIC. All straight lines are homeomeric with respect to each other, but no circle is homeomeric with a circle of a different size. This is what makes a straight line unique. (Perlman)

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