

Data Sufficiency

Directions: Each data sufficiency problem consists of a question and two statements, labeled (1) and (2), which contain certain data. Using these data and your knowledge of mathematics and everyday facts (such as the number of days in July or the meaning of the word counterclockwise), decide whether the data given are sufficient for answering the question and then indicate one of the following answer choices:

- A. Statement (1) ALONE is sufficient, but statement (2) alone is not sufficient.
- B. Statement (2) ALONE is sufficient, but statement (1) alone is not sufficient.
- C. BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient.
- D. EACH statement ALONE is sufficient.
- E. Statements (1) and (2) TOGETHER are not sufficient.

Note: In data sufficiency problems that ask for the value of a quantity, the data given in the statements are sufficient only when it is possible to determine exactly one numerical value for the quantity.

Numbers: All numbers used are real numbers.

Figures:

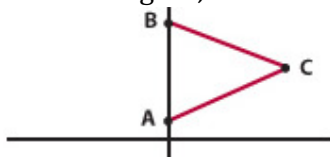
- (1) Figures conform to the information given in the question, but will not necessarily conform to the additional information given in statements (1) and (2).
- (2) Lines shown as straight are straight, and lines that appear jagged are also straight.
- (3) The positions of points, angles, regions, etc., exist in the order shown, and angle measures are greater than zero.
- (4) All figures lie in a plane unless otherwise indicated.

DS Traps:

- Simplify the question to the absolute basics... translate information as to what the question seeks to ask. Most of the DS questions can be simplified.
- Do not assume anything. For example, if a number is not mentioned to be an integer, don't assume it to be so.
- In geometrical figures, do not assume that a figure is what it looks like. If it is not mentioned that two lines are parallel, don't assume so. If a figure looks like a square but is not mentioned to be so, please do not assume it to be so.
- While evaluating Statement (2), don't "mentally" carry forward the information from Statement (1) to Statement (2). Statement (2) is independent of Statement (1) and vice-versa.
- In "WHAT" questions, a unique numerical value is required. There should be NO AMBIGUITY.
- In "IS" or "Does" type of questions, you must get a unique YES or a unique NO. There should be NO AMBIGUITY.
- An unambiguous "NO" is as acceptable as an unambiguous "YES".
- **Intentionally try to create a yes / no situation: don't try to prove or disprove alone... you should try both.**
- There is no need to calculate the answer in most cases. Avoid calculations, wherever possible.
- In a "WHAT" question, if two statements are not independently sufficient, but, on combining, result in a unique common value, then the common value will be the answer.
- The two statements never contradict each other.
- In questions involving the solving of two simultaneous equations, usually only one statement will be sufficient

Sample questions

1. What is the value of x ?
 (1) X^3 is a 2-digit positive odd integer. (2) X^4 is a 2-digit positive odd integer.
2. Is x negative? (1) X^2 is positive. (2) X^3 is non-positive.
3. Is z even? (1) $5z$ is even. (2) $3z$ is even.
4. If a and b are both positive integers, is $b^{a+1} - ba^b$ odd?
 (1) $a + (a + 4) + (a - 8) + (a + 6) + (a - 10)$ is odd (2) $b^3 + 3b^2 + 5b + 7$ is odd
5. Is $n/18$ an integer? (1) $5n/18$ is an integer. (2) $3n/18$ is an integer.
6. The sum of n consecutive positive integers is 45. What is the value of n ?
 (1) n is even (2) $n < 9$
7. Is $x > 10^{10}$? (1) $x > 2^{34}$ (2) $x = 2^{35}$
8. Is $XY > 0$? (1) $X - Y > -2$ (2) $X - 2Y < -6$
9. Is x a negative number?
 (1) x^2 is a positive number. (2) $x \cdot |y|$ is not a positive number.
10. What is x ? (1) $|x| < 2$ (2) $|x| = 3x - 2$
11. If x is not equal to 0, is $|x|$ less than 1? (1) $x / |x| < x$ (2) $|x| > x$
12. If $r + s > 2t$, is $r > t$? (1) $t > s$ (2) $r > s$
13. What is the value of y ? (1) $3|x^2 - 4| = y - 2$ (2) $|3 - y| = 11$
14. If y is an integer and $y = x + |x|$, is $y = 0$? (1) $x < 0$ (2) $y < 1$
15. Is $2X - 3Y < X^2$? (1) $2X - 3Y = -2$ (2) $X > 2$ and $Y > 0$
16. Is $m + z > 0$ (1) $m - 3z > 0$ (2) $4z - m > 0$
17. At a certain bookstore, each notepad costs x dollars and each markers costs y dollars. If \$10 is enough to buy 5 notepads and 3 markers, is \$10 enough to buy 4 notepads and 4 markers instead?
 (1) Each notepad cost less than \$1 (2) \$10 is enough to buy 11 notepads
18. One kilogram of a certain coffee blend consists of X kilogram of type I and Y kilogram of type II. The cost of the blend is C dollars per kilogram, where $C = 6.5X + 8.5Y$. Is $X < 0.8$?
 (1) $Y > 0.15$ (2) $C \geq 7.30$
19. Marta bought several pencils. If each pencil was either a 23-cent pencil or a 21-cent pencil, how many 23-cent pencils did Marta buy?
 (1) Marta bought a total of 6 pencils.
 (2) The total value of the pencils Marta bought was 130 cents.
20. Is the measure of one of the interior angles of quadrilateral ABCD equal to 60 degrees?
 (1) Two of the interior angles of ABCD are right angles
 (2) The degree measure of angle ABC is twice the degree measure of angle BCD
21. What is the perimeter of isosceles triangle ABC?
 (1) The length of side AB is 9 (2) The length of side BC is 4
22. For a circle with center point P, cord XY is the perpendicular bisector of radius AP (A is a point on the edge of the circle). What is the length of cord XY?
 (1) The circumference of circle P is twice the area of circle P. (2) The length of Arc XAY = $2\pi/3$.
23. If $ab \neq 0$ and points $(-a, b)$ and $(-b, a)$ are in the same quadrant of the xy -plane, is point $(-x, y)$ in this same quadrant? (1) $xy > 0$ (2) $ax > 0$
24. If points A and B are on the y -axis in the figure, what is the area of equilateral triangle ABC?



- (1) Coordinates of point B are $(0, 5\sqrt{3})$. (2) Coordinates of point C are $(6, 3\sqrt{3})$.
25. $a_1, a_2, a_3, \dots, a_{15}$.
 In the sequence shown above, $a_n = a_{n-1} + k$, where $2 \leq n \leq 15$ and k is a non-zero constant. How many terms in the sequence are greater than 10?
 (1) $a_1 = 24$ (2) $a_8 = 10$