

Algebra

For questions in the Quantitative Comparison format (“Quantity A” and “Quantity B” given), the answer choices are always as follows:

- (A) Quantity A is greater.
- (B) Quantity B is greater.
- (C) The two quantities are equal.
- (D) The relationship cannot be determined from the information given.

Where answer choices do not appear on Quantitative Comparison questions in this book, you should choose A, B, C or D based on the above.

For questions followed by a numeric entry box , you are to enter your own answer in the

box. For questions followed by a fraction-style numeric entry box

, you are to enter

your answer in the form of a fraction. You are not required to reduce fractions. For example, if the

answer is $\frac{1}{4}$, you may enter $\frac{25}{100}$ or any equivalent fraction.

All numbers used are real numbers. All figures are assumed to lie in a plane unless otherwise indicated. Geometric figures are not necessarily drawn to scale. You should assume, however, that lines that appear to be straight are actually straight, points on a line are in the order shown, and all geometric objects are in the relative positions shown. Coordinate systems, such as xy -planes and number lines, as well as graphical data presentations, such as bar charts, circle graphs, and line graphs, are drawn to scale. A symbol that appears more than once in a question has the same meaning throughout the question.

1. If $4(-3x - 8) = 8(-x + 9)$, what is the value of x^2 ?

2. If $2x(4 - 6) = -2x + 12$, what is the value of x ?

3. If $x \neq 0$ and $\frac{3(6 - x)}{2x} = -6$, what is the value of x ?

4. If $x \neq 2$ and $\frac{8 - 2(-4 + 10x)}{2 - x} = 17$, what is the value of x ?

-5 is 7 more than $-z$.

Quantity A

Quantity B

5.

z

-12

6. If $(x + 3)^2 = 225$, which of the following could be the value of $x - 1$?

- (A) 13
- (B) 12
- (C) -12
- (D) -16
- (E) -19

$$x = 2$$

	<u>Quantity A</u>	<u>Quantity B</u>
7.	$x^2 - 4x + 3$	1

$$p = 300c^2 - c$$
$$c = 100$$

	<u>Quantity A</u>	<u>Quantity B</u>
8.	p	$29,000c$

$$-(x)^3 = 64$$

	<u>Quantity A</u>	<u>Quantity B</u>
9.	x^4	x^5

10. If $3t^3 - 7 = 74$, what is the value of $t^2 - t$?

- (A) -3
- (B) 3
- (C) 6
- (D) 9
- (E) 18

11. If $x - y = 4$ and $2x + y = 5$, what is the value of x ?

$$12. 4x + y + 3z = 34$$

$$4x + 3z = 21$$

What is the value of y ?

	<u>Quantity A</u>	<u>Quantity B</u>
13.	$(x + 2)(x - 3)$	$x^2 - x - 6$

$$xy > 0$$

	<u>Quantity A</u>	<u>Quantity B</u>
14.	$(2x - y)(x + 4y)$	$2x^2 + 8xy - 4y^2$

$$x^2 - 2x = 0$$

	<u>Quantity A</u>	<u>Quantity B</u>
15.	x	2

	<u>Quantity A</u>	<u>Quantity B</u>
16.	$d(d^2 - 2d + 1)$	$d(d^2 - 2d) + 1$

	<u>Quantity A</u>	<u>Quantity B</u>
17.	$xy^2z(x^2z + yz^2 - xy^2)$	$x^3y^2z^2 + xy^3z^3 - x^2y^4z$

$$a = 2b = 4c \text{ and } a, b, \text{ and } c \text{ are integers.}$$

	<u>Quantity A</u>	<u>Quantity B</u>
18.	$a + b$	$a + c$

$$k = 2m = 4n \text{ and } k, m, \text{ and } n \text{ are non-negative integers.}$$

	<u>Quantity A</u>	<u>Quantity B</u>
19.	km	kn

For the positive integers a , b , c , and d , a is half of b , which is one-third of c . The value of d is three times the value of c .

	<u>Quantity A</u>	<u>Quantity B</u>
	$\frac{a+b}{c}$	$\frac{a+b+c}{d}$
20.		

$$\begin{aligned}3x + 6y &= 27 \\ x + 2y + z &= 11\end{aligned}$$

	<u>Quantity A</u>	<u>Quantity B</u>
	$z + 5$	$x + 2y - 2$
21.		

22. If $(x - y) = \sqrt{12}$ and $(x + y) = \sqrt{3}$, what is the value of $x^2 - y^2$?

- (A) 3
 - (B) 6
 - (C) 9
 - (D) 36
 - (E) It cannot be determined from the information given.
-
-

$$a \neq b$$

	<u>Quantity A</u>	<u>Quantity B</u>
	$\frac{a-b}{b-a}$	1
23.		

$$a = \frac{b}{2}$$

$$c = 3b$$

	<u>Quantity A</u>	<u>Quantity B</u>
24.	a	c

25. If $xy \neq 0$ and $x \neq -y$,

$$\frac{x^{36} - y^{36}}{(x^{18} + y^{18})(x^9 + y^9)}$$

- (A) 1
 - (B) $x^2 - y^2$
 - (C) $x^9 - y^9$
 - (D) $x^{18} - y^{18}$
 - (E) $\frac{1}{x^9 - y^9}$
-

$$x > y$$

$$xy \neq 0$$

	<u>Quantity A</u>	<u>Quantity B</u>
26.	$\frac{x^2}{y + \frac{1}{y}}$	$\frac{y^2}{x + \frac{1}{x}}$

27. If $x + y = -3$ and $x^2 + y^2 = 12$, what is the value of $2xy$?

28. If $x - y = \frac{1}{2}$ and $x^2 - y^2 = 3$, what is the value of $x + y$?

29. If $x^2 - 2xy = 84$ and $x - y = -10$, what is the value of $|y|$?

30. Which of the following is equal to $(x - 2)^2 + (x - 1)^2 + x^2 + (x + 1)^2 + (x + 2)^2$?

- (A) $5x^2$
- (B) $5x^2 + 10$
- (C) $x^2 + 10$
- (D) $5x^2 + 6x + 10$
- (E) $5x^2 - 6x + 10$

31. If $a = (x + y)^2$ and $b = x^2 + y^2$ and $xy > 0$, which of the following must be true?

Indicate all such statements.

- $a = b$
- $a > b$
- a is positive

32. a is directly proportional to b . If $a = 8$ when $b = 2$, what is a when $b = 4$?

- (A) 10
- (B) 16
- (C) 32
- (D) 64
- (E) 128