

# Arithmetic

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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.

	<u>Quantity A</u>	<u>Quantity B</u>
1.	$39 - (25 - 17)$	$39 - 25 - 17$

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	<u>Quantity A</u>	<u>Quantity B</u>
2.	$14 - 3(4 - 6)$	$(4)(-3)(2)(-1)$

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	<u>Quantity A</u>	<u>Quantity B</u>
3.	$-5 \times 1 \div 5$	$-6 \times 1 \div 6$

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4. What is the value of  $5 - (4 - (3 - (2 - 1)))$  ?

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	<b><u>Quantity A</u></b>	<b><u>Quantity B</u></b>
5.	$-\frac{2^3}{2}$	$(-2)^2$
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	<b><u>Quantity A</u></b>	<b><u>Quantity B</u></b>
6.	$5^3 - 5^2$	5
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	<b><u>Quantity A</u></b>	<b><u>Quantity B</u></b>
7.	$-10 - (-3)^2$	$-[10 + (-3)^2]$
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8. **Quantity A** **Quantity B**  
 (30,000,000)(2,000,000) (15,000,000)(4,000,000)

9. What is the sum of the numbers in the grid below?

-2	-1	1	2	3	4
-4	-2	2	4	6	8
-6	-3	3	6	9	12
-8	-4	4	8	12	16
-10	-5	5	10	15	20
-12	-6	6	12	18	24

10. Molly worked at an amusement park over the summer. Every two weeks, she was paid according to the following schedule: at the end of the first 2 weeks, she received \$160. At the end of each subsequent 2-week period, she received \$1, plus an additional amount equal to the sum of all payments she had received in previous weeks. How much money was Molly paid during the full 10 weeks of summer?

\$

A book with 80,000 words costs \$24 and a short story with 1,000 words costs \$1.

- Quantity A** **Quantity B**  
 11. Cost per word of the book Cost per word of the short story

**Ticket Prices at the Natural History Museum**

	Weekdays	Weekends & Holidays
Child (ages 5–18)	\$7	\$9

Adult (ages 19–64)	\$14	\$16
Senior (ages 65+)	\$8	\$10
*Children under age 5 attend free		

**Quantity B**

**Quantity A**

The price for tickets at the Natural History Museum on a weekday for one 12-year-old and one 39-year-old

The price for tickets at the Natural History Museum on a weekend for one 4-yearold, two 8-year-olds, and one senior over 65 years old, after applying a coupon for \$10 off the total cost

12.

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On a certain train, tickets cost \$6 each for children and \$9 each for adults. The total train ticket cost for a certain group of six passengers was between \$44 and \$50.

**Quantity A**

The number of children in the  
group

**Quantity B**

The number of adults in the  
group

13.

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14. If 617 is divided by 49, the sum of the tens digit and the tenths digit of the resulting number is what value?

- (A) 1
- (B) 5
- (C) 6
- (D) 7
- (E) 9

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**Quantity A**

The number of days between May  
30, 1917, and May 15, 1996,  
inclusive

**Quantity B**

The number of days between May  
15, 1912, and May 30, 1991,  
inclusive

15.

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Alfred's Coffee Shop offers a "buy six cups of coffee, get one free" discount, and Boris's Coffee Shop offers 15% off all orders of six or more cups of coffee. At both shops, the regular price of a single cup of coffee is \$2.60.

**Quantity A**

The total cost for one order of  
seven single cups of coffee from  
Alfred's

**Quantity B**

The total cost for one order of  
seven single cups of coffee from  
Boris's

16.

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17. In a certain ancient kingdom, the standard unit of measure was the "crown," equal to 10 standard modern inches. An alternative unit of measure was the "scepter," equal to 14 standard modern inches. If a tower measured 70 crowns tall, how many scepters tall was it?

- (A) 35
- (B) 49
- (C) 50
- (D) 75
- (E) 98

18. A total of \$450 was donated to charity by 25 employees. If 15 employees donated at least \$12 but less than \$19 and 9 employees donated at least \$19, what is the maximum amount, in dollars, that the last employee could have donated?

\$

19. A tank has a capacity of 200 pints. How many gallons of water would it take to fill the tank to  $\frac{3}{10}$  of its capacity? (1 gallon = 8 pints)

gallons

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1 kilogram = 2.2 pounds

**Quantity A**

The number of kilograms in 44  
pounds

**Quantity B**

The number of pounds in 44  
kilograms

20.

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21. If the formula for converting degrees Fahrenheit to degrees Celsius is

$$C = \frac{5}{9}(F - 32),$$
 what is the value of  $F$  when  $C$  is 30?

(A)  $-\frac{10}{9}$

(B)  $\frac{338}{9}$

(C) 86

(D)  $\frac{558}{5}$

(E) 112

22. On a trip, Joe's car traveled an average of 36 miles per gallon of fuel. Approximately how many kilometers did the car travel on 10 liters of fuel?

(5 miles = approximately 8 kilometers; 1 gallon = approximately 4 liters)

kilometers

23. How many 1-inch square tiles would it take to cover the floor of a closet that has dimensions 5 feet by 4 feet? (1 foot = 12 inches)

- (A) 20
  - (B) 240
  - (C) 1,440
  - (D) 2,160
  - (E) 2,880
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Child A ate  $\frac{3}{5}$  of a kilogram of chocolate and Child B ate 300 grams of chocolate. (1 kilogram = 1,000 grams)

	<u>Quantity A</u>	<u>Quantity B</u>
24.	The weight, in grams, of the chocolate that Child A ate	Twice the weight, in grams, of the chocolate that Child B ate

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25. Out of 5.5 billion bacteria grown for an experiment, 1 in 75 million has a particular mutation. Approximately how many of the bacteria have the mutation?

- (A) 7
- (B) 73
- (C) 733
- (D) 7,333
- (E) 73,333

26. A particular nation's GDP (Gross Domestic Product) is \$4.5 billion. If the population of the nation is 1.75 million, what is the per capita (per person) GDP, rounded to the nearest dollar?

- (A) \$3
- (B) \$25
- (C) \$257
- (D) \$2,571
- (E) \$25,714

27. Global GDP (Gross Domestic Product) was \$69.97 trillion in 2011. If the world population for 2011 was best estimated at 6,973,738,433, approximately what was the global GDP per person?

- (A) \$10
- (B) \$100
- (C) \$1,000
- (D) \$10,000
- (E) \$100,000

28. The runners on a cross country team ran a 5-mile race at average (arithmetic mean) speeds ranging from 4 miles per hour to 7 miles per hour, inclusive. Which of the following are possible race completion times for individual members of the team?

Indicate all such times.

- 36 minutes
- 48 minutes
- 60 minutes
- 75 minutes
- 90 minutes
- 120 minutes