Arithmetic

	Quantity A	**Quantity B**
1.	$39 - (25 - 17)$	$39 - 25 - 17$

	Quantity A	**Quantity B**
2.	$14 - 3(4 - 6)$	$(4)(-3)(2)(-1)$

	Quantity A	**Quantity B**
3.	$-5 \times 1 \div 5$	$-6 \times 1 \div 6$

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

[   ]

	Quantity A	**Quantity B**
5.	$-\dfrac{2^3}{2}$	$(-2)^2$

	Quantity A	**Quantity B**
6.	$5^3 - 5^2$	5

	Quantity A	**Quantity B**
7.	$-10 - (-3)^2$	$-[10 + (-3)^2]$

Quantity A | **Quantity B**

8.

(30,000,000)(2,000,000)   (15,000,000)(4,000,000)

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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

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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 A

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

12.

Quantity B

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

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	**Quantity B**
The number of children in the group	The number of adults in the group

13.

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

    (A) 1

    (B) 5

    (C) 6

    (D) 7

    (E) 9

Quantity A	**Quantity B**
The number of days between May 30, 1917, and May 15, 1996, inclusive	The number of days between May 15, 1912, and May 30, 1991, inclusive

15.

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	**Quantity B**
The total cost for one order of seven single cups of coffee from Alfred's	The total cost for one order of seven single cups of coffee from Boris's

16.

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 $\dfrac{3}{10}$ of its capacity? (1 gallon = 8 pints)

[   ] gallons

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1 kilogram = 2.2 pounds

	Quantity A	**Quantity B**
20.	The number of kilograms in 44 pounds	The number of pounds in 44 kilograms

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21. If the formula for converting degrees Fahrenheit to degrees Celsius is $C = \dfrac{5}{9}(F - 32)$, what is the value of F when C is 30?

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

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

(C) 86

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

(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

Child A ate $\dfrac{3}{5}$ of a kilogram of chocolate and Child B ate 300 grams of chocolate. (1 kilogram = 1,000 grams)

	Quantity A	**Quantity B**
24.	The weight, in grams, of the chocolate that Child A ate	Twice the weight, in grams, of the chocolate that Child B ate

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 <u>all</u> such times.

☐ 36 minutes
☐ 48 minutes
☐ 60 minutes
☐ 75 minutes
☐ 90 minutes
☐ 120 minutes