Arithmetic

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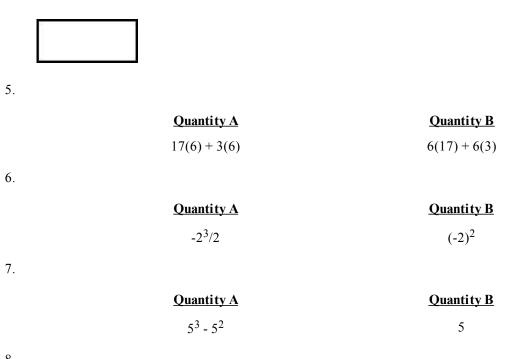(B) Quantity B is greater.
(C) The two quantities are equal.
(D) The relationship cannot be determined from the information given.

For questions followed by a numeric entry box [   ], you are to enter your own answer in the box. For questions followed by fraction-style numeric entry boxes [   ], 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 1/4, you may enter 25/100 or any equivalent fraction.

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1.

Quantity A	Quantity B
39 - (25 - 17)	39 - 25 - 17

2.

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

3.

Quantity A	Quantity B
-5 × 1 ÷ 5	-6 × 1 ÷ 6

4. 5 - (4 - (3 - (2 - 1))) =

5.

Quantity A	**Quantity B**
17(6) + 3(6)	6(17) + 6(3)

6.

Quantity A	**Quantity B**
$-2^3/2$	$(-2)^2$

7.

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

8.

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

9. $32/(4 + 6 \times 2) =$

   (A) 8/5
   (B) 16/5
   (C) 2
   (D) 20
   (E) 28

10.

Quantity A	**Quantity B**
(30,000,000)(2,000,000)	(15,000,000)(4,000,000)

11. 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

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12. Mitchell plans to work at a day camp over the summer. Each week, he will be paid according to the following schedule: at the end of the first week, he will receive $1. At the end of each subsequent week, he will receive $1, plus an additional amount equal to the sum of all payments he's received in previous weeks. How much money will Mitchell be paid in total during the summer, if he works for the entire duration of the 8-week-long camp?

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13.

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

Quantity A   **Quantity B**

Price per word of the book   Price per word of the short story

14. A taxi driver makes $50 an hour, but pays $100 a day rent for his taxi and has other costs that amount to $0.50 per mile. If he works three 7-hour days and one 9-hour day and drives a total of 600 miles in one week, what is his profit?

(A) $700
(B) $800
(C) $1,100
(D) $1,200
(E) $1,500

15.

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		

Mr. and Mrs. Gonzales, ages 42 and 39, wish to visit the Natural History Museum with their three children (ages 4, 6, and 10), and Mr. Gonzales's 69-year-old father.

Quantity A	**Quantity B**
The cost of admission for the group on a weekday	The cost of admission for the group on a weekend after applying a coupon offering $10 off the total purchase

16.

On a certain train, children's tickets cost $6 and adult tickets cost $9. Six people are charged between $44 and $50, total, for their tickets.

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

17. If twice 4,632 is divided by 100, what is the <u>tenths</u> digit?

[   ]

18. If 617 is divided by 49, the sum of the <u>tens</u> digit and the <u>tenths</u> digit is equal to

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

19.

Quantity A	**Quantity B**
The age at death, in years and days, of a person who lived from January 31, 1817 to January 15, 1901	The age at death, in years and days, of a person who lived from January 15, 1904 to January 31, 1988

20. For the month of May, Ali's Coffee Shop is offering a "buy five drinks get one free" special, and Bob's Coffee Shop is offering 20% off all drinks. At both shops, the regular price of a coffee is $2.25.

Quantity A	Quantity B
The total cost of one coffee per day from Ali's for every day of May	The total cost of one coffee per day from Bob's for every day of May

21. In a certain ancient kingdom, the length of a foot was the length of the current king's foot. If the newly crowned monarch had a 12 inch foot as opposed to the 10 inch foot of his predecessor, a formerly 300 foot fence would now have a length of how many feet? (Assume that the length of an inch remains constant.)

(A) 250
(B) 302
(C) 350
(D) 360
(E) 400

22. Mary has six more tapes than Pedro. If Pedro gives two tapes to John and then Pedro buys 5 new tapes, how many more tapes does Mary have than Pedro?

(A) 3
(B) 4
(C) 5
(D) 6
(E) 7

23. 25 employees donated a total of $450 to charity. If 15 employees donated at least $12 and 9 employees donated at least $19, what is the maximum amount, in dollars, that the last employee could have donated?

$ [   ]

24. Maribel must divide 60 candies among herself and her 12 cousins, although there is no requirement that the candies be divided equally. If Maribel is to have more candies than everyone else, what is the least number of candies she could have?

[   ]

25.

Softies Facial Tissues come 84 to a box for $2.99.
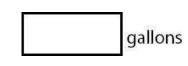Enviro Facial Tissues come 56 to a box for $1.89.

Quantity A	Quantity B
The positive difference between the per-tissue cost of Softies tissues and the per-tissue cost of Enviro tissues	0.2 cents

26. A tank has a capacity of 200 pints. How many gallons of water would it take to fill the tank to 3/10 of its capacity? (1 gallon = 8 pints) gallons

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27.

(1 kilogram = 2.2 pounds)

Quantity A   **Quantity B**

The number of kilograms in 44 pounds   The number of pounds in 44 kilograms

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

  (A) -10/9
  (B) 338/9
  (C) 86
  (D) 558/5
  (E) 112

29.

Quantity A   **Quantity B**

The number of seconds in 12 hours   The number of minutes in 720 hours

30. Joe's car can travel 36 miles per gallon of fuel. Approximately how many kilometers can the car travel on 10 liters of fuel? (5 miles = approximately 8 kilometers; 1 gallon = approximately 4 liters)

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31. 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

32. A pool has sprung a leak and is losing water at a rate of 5 milliliters per second. How many liters of water is this pool losing per hour? (1 liter = 1,000 milliliters)

  (A) 3
  (B) 6
  (C) 12
  (D) 18
  (E) 24

33.

6

Child A ate 3/5 of a kilogram of chocolate and Child B ate 300 grams of chocolate. (1 kilogram = 1000 grams)

Quantity A

The weight, in grams, of the chocolate that Child A ate

Quantity B

Twice the weight, in grams, of the chocolate that Child B ate

34. It takes $4\frac{2}{3}$ feet of wood to make a frame for a lithograph. If wood is sold at $5 a yard and only by the yard, and a collector needs to make 4 frames, how much will the wood cost? (1 yard = 3 feet)

(A) $23.33
(B) $25
(C) $33.33
(D) $35
(E) $100

35. 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

36. 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

37. 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 is the global GDP per person?

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

38. The distance between Mercury and Earth changes due to the orbits of the planets. When Mercury is at its closest point to Earth, it is 48 million miles away. When Mercury is at its furthest point from Earth, it is 138 million miles away. For a science project, Ruby calculates the maximum and minimum amount of time it would take to travel from Earth to Mercury in a spacecraft traveling 55 miles per hour. Approximately what are the times, in days?

(A) 3,636 and 10,454
(B) 14,545 and 41,818

(C) 36,364 and 104,545
(D) 87,272 and 250,909
(E) 872,727 and 2,509,091

Word Problems

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1. If a taxi charges $8.00 for the first mile, and $1.00 for each additional quarter mile, how much does the taxi charge for a 4.5 mile ride?

   (A) $16.00
   (B) $18.00
   (C) $22.00
   (D) $24.00
   (E) $26.00

2. If Nash had 12 grandchildren and three times as many granddaughters as grandsons, how many granddaughters did he have?

   (A) 3
   (B) 4
   (C) 6
   (D) 8
   (E) 9

3. If Deepak pays 30% of his income in taxes and his take-home pay after taxes is $2,800 per month, how much does Deepak make per month?

$ [   ]

4. Movie theater X charges $6 per ticket, and each movie showing costs the theatre $1,750. How many people need to see a movie so that the theater makes $1 of profit per customer?

(A) 300
(B) 325
(C) 350
(D) 375
(E) 400

5. Arnaldo earns $11 for each ticket that he sells, and a bonus of $2 per ticket for each ticket he sells over 100. If Arnaldo was paid $2,400, how many tickets did he sell?

(A) 120
(B) 160
(C) 180
(D) 200
(E) 250

6. Attendees at a charity dinner each gave at least $85 to the charity. If $6,450 was collected, what is the maximum number of people who could have attended?

(A) 73
(B) 74
(C) 75
(D) 76
(E) 77

7. Eva meditates for 20 minutes at a time, with a 5-minute break in between sessions. If she begins meditating at 10:10, what time will it be when she completes her third session?

(A) 11:20
(B) 11:25
(C) 11:50
(D) 11:55
(E) 12:25

8. A washing machine takes 35 minutes to wash one load of laundry, and in between washing different loads of laundry it takes Derek 2 minutes to unload and another 4 minutes to reload the machine. If the washing machine begins washing one load of laundry at 12:30pm, how many loads of laundry can Derek wash and unload before 6:35pm?

(A) 8
(B) 9
(C) 10
(D) 14
(E) 15

9.

Kendra is more than 5 years old.

Quantity A	Quantity B
Five years less than twice Kendra's age	Twice what Kendra's age was five years ago

10.

Six years ago, Billy was twice as old as Allie.

Quantity A	Quantity B
The difference between their ages today	2 years

11. Every day the drama club has a car wash, the club pays a fixed amount for supplies. If the club charges $12 for a car wash and earned a total profit of $190 in one day by giving 20 car washes, how much did the club pay for supplies, assuming that there are no other expenses?

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12. A store owner pays her assistant $22 per hour for every hour the store is open. If all other expenses for the store work out to $160 per day, and the store is open for 8 hours on Monday and sells $720 worth of merchandise on that day, what is the store's profit for the day?

(A) 384
(B) 396
(C) 530
(D) 538
(E) 560

13. Regular gas costs $3.00 a gallon and is consumed at a rate of 25 miles per gallon. Premium costs $4.00 a gallon and is consumed at a rate of 30 miles per gallon. How much more will it cost to use premium rather than regular for a 300-mile trip?

(A) $1
(B) $4
(C) $5
(D) $36
(E) $40

14. A toy retailer buys toys from the toy company and marks the price up 25% to sell to customers. If the retailer has a sale of 80% off retail price, what is its percent loss in terms of the original amount it paid for the toys?

(A) 25%
(B) 30%
(C) 40%
(D) 75%
(E) 80%

15. Mr. Choudury's fourth-grade class consists of 20 students: 12 boys and 8 girls. If the boys weigh an average of 80 pounds each, and the girls weigh an average of 70 pounds each, what is the average weight in pounds of all 20 students?

(A) 71
(B) 74
(C) 75
(D) 76
(E) 79

16. It costs a certain bicycle factory $11,000 to operate for one month, plus $300 for each bicycle produced during the month. Each of the bicycles sells for a retail price of $700. What is the minimum number of bicycles that the factory must sell in one month to make a profit?

(A) 26
(B) 27
(C) 28
(D) 29
(E) 30

17. The yoga company Yoga for Life offers 45-minute classes at $12 per class. If the number of minutes Randolf spent doing yoga this month was 132 greater than the number of dollars he paid, how many classes did he attend?

(A) 3
(B) 4
(C) 5
(D) 6
(E) 8

18. When Mark fills his car with regular gasoline, he gets 20 miles/gallon. When he fills his car with premium gasoline, he gets 25 miles/gallon. If the price of regular gasoline is $4.00 per gallon and the price of premium gas is $6.25 per gallon, then the cost efficiency of regular gasoline, in miles/dollar, is what percent greater than the cost efficiency of premium gasoline?

(A) 4%
(B) 10%
(C) 20%
(D) 25%
(E) 50%

19. An online merchant sells wine for $20 a bottle or $220 for a case of 12. Either way, his cost for the wine is $10 per bottle. Shipping costs him $5 for a bottle and $40 for a case. If, in a month, he sells 12 cases and 60 bottles and has no other revenue or expenses, his profit is equal to which of the following?

(A) $780
(B) $1,020
(C) $2,160
(D) $2,640
(E) $3,840

20. If everyone who contributed to a charity drive paid at least $14 and $237 was collected, what is the maximum number of people who could have contributed?

(A) 13
(B) 14
(C) 15
(D) 16
(E) 17

21.

In a certain barter system, one sack of rice can be traded for two and a half chickens or a third of a medallion.

Quantity A | **Quantity B**

The value of a chicken in sacks of rice | The value of a medallion in sacks of rice

22. A hunting lodge has enough fuel to keep 20 rooms heated for fourteen days. If the lodge decides to save fuel by turning off the heat in 5 unoccupied rooms, and each room requires the same amount of fuel to heat it, how many extra FULL days will the fuel supply last?

(A) 3
(B) 4
(C) 5
(D) 18
(E) 19

23. Last year, a magazine charged a $50 subscription fee. This year, the price will be increased by $10. If the magazine could lose 4 subscribers this year and still collect the same revenue as it did last year, how many subscribers did the magazine have last year?

(A) 20
(B) 21
(C) 22
(D) 23
(E) 24

24. Store Y sells two brands of socks, one at $3 a pair and the other at $4 a pair. If Janine must spend exactly $29 on socks and there is no sales tax, how many pairs of socks can she buy?

Indicate all such values:

☐ 6
☐ 7
☐ 8
☐ 9
☐ 10

		Answer Key Arithmetic		
1	A		20	A
2	B		21	A
3	C		22	A
4	3		23	99
5	C		24	6
6	B		25	B
7	A		26	7.5 gallons
8	C		27	B
9	C		28	C
10	C		29	C
11	147		30	144 kilometers
12	255		31	E
13	B		32	D
14	B		33	C
15	C		34	D
16	D		35	B
17	6		36	D
18	C		37	D
19	B		38	C

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	Answer Key Word Problems			
1	C		13	B
2	E		14	D
3	4000		15	D
4	C		16	C
5	D		17	B
6	C		18	D
7	A		19	B
8	B		20	D
9	A		21	B
10	D		22	D
11	50		23	E
12	A		24	III and IV only

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