

eracy

1 / 14

1988 Q1

1. The diagram shows part of a scale of a measuring device. The arrow indicates an approximate reading of

- A) 10.05 B) 10.15 C) 10.25
D) 10.3 E) 10.6



1. D The scale is divided into fourths and the needle is just past the $\frac{1}{4}$ mark, so the reading must be between 10.25 and 10.5.

2 / 14

1991 Q1

1. $1,000,000,000,000 - 777,777,777,777 =$

- (A) 222,222,222,222 (B) 222,222,222,223 (C) 233,333,333,333
(D) 322,222,222,223 (E) 333,333,333,333

1. (B) Write the problem vertically and compute the difference:

$$\begin{array}{r} 1,000,000,000,000 \\ - 777,777,777,777 \\ \hline 222,222,222,223 \end{array}$$

OR

What must be added to 777,777,777,777 to get 1,000,000,000,000? From the right, one adds a final digit of 3 and then eleven 2's.

3 / 14

1990 Q1

1. What is the smallest sum of two 3-digit numbers that can be obtained by placing each of the six digits 4,5,6,7,8,9 in one of the six boxes in this addition problem?

A) 947 B) 1037 C) 1047 D) 1056 E) 1245

$$\begin{array}{r} \square \quad \square \quad \square \\ + \quad \square \quad \square \quad \square \\ \hline \end{array}$$

1. C In the smallest such sum, the two smallest digits are in the hundred's places, the next two digits in the ten's places and the two largest digits are in the one's places. One example is $468 + 579 = 1047$.

Query: In how many ways can this sum of 1047 be achieved?

4 / 14

1993 Q1

1. Which pair of numbers does NOT have a product equal to 36?

(A) $\{-4, -9\}$ (B) $\{-3, -12\}$ (C) $\left\{\frac{1}{2}, -72\right\}$

(D) $\{1, 36\}$ (E) $\left\{\frac{3}{2}, 24\right\}$

1. (C) $\frac{1}{2} \times (-72) = -36.$

5 / 14

1999 Q1

1. $(6 ? 3) + 4 - (2 - 1) = 5$. To make this statement true, the question mark between the 6 and the 3 should be replaced by

(A) \div (B) \times (C) $+$ (D) $-$ (E) None of these

1. Answer (A):

$$(6 ? 3) + 4 - (2 - 1) = 5$$

$$(6 ? 3) + 4 - 1 = 5$$

$$\text{(subtract: } 2 - 1 = 1)$$

$$(6 ? 3) + 3 = 5$$

$$\text{(subtract: } 4 - 1 = 3)$$

$$(6 ? 3) = 2$$

$$\text{(subtract 3 from both sides)}$$

$$(6 \div 3) = 2$$

The other operations produce the following result:

$$(6 + 3) + 4 - (2 - 1) = 9 + 4 - 1 = 12$$

$$(6 - 3) + 4 - (2 - 1) = 3 + 4 - 1 = 6$$

$$(6 \times 3) + 4 - (2 - 1) = 18 + 4 - 1 = 21$$

6 / 14

2017 Q1

1. Which of the following values is largest?

(A) $2 + 0 + 1 + 7$

(B) $2 \times 0 + 1 + 7$

(C) $2 + 0 \times 1 + 7$

(D) $2 + 0 + 1 \times 7$

(E) $2 \times 0 \times 1 \times 7$

1. **Answer (A):** The values of the expressions are, in order, 10, 8, 9, 9, and 0.

7 / 14

1990 Q2

2. Which digit of .12345, when changed to 9, gives the largest number?

- A) 1 B) 2 C) 3 D) 4 E) 5

2. A An increase in the tenth's place gives a larger value than an increase in any of the other decimal places. Since 1 is in the tenth's place of .12345, (A) is correct.

8 / 14

3. $\frac{10^7}{5 \times 10^4} =$

- A) .002 B) .2 C) 20 D) 200 E) 2000

1985 Q3

3. (D) $\frac{10^7}{5 \times 10^4} = \frac{10 \times 10^6}{5 \times 10^4} = 2 \times 10^2 = 200.$

OR

$$\frac{10^7}{5 \times 10^4} = \frac{10^3}{5} = \frac{1000}{5} = 200$$

1991 Q3

3. Two hundred thousand times two hundred thousand equals
- (A) four hundred thousand
 - (B) four million
 - (C) forty thousand
 - (D) four hundred million
 - (E) forty billion

3. (E) Using arithmetic notation

$$\begin{array}{r} 200,000 \\ \times 200,000 \\ \hline 40,000,000,000 \end{array}$$

OR

Using scientific notation $(2 \times 10^5)(2 \times 10^5) = 4 \times 10^{10} = 40 \times 10^9 = 40$ billion.

OR

Two hundred times two hundred is forty thousand. A thousand thousands is a million. The answer is forty thousand millions, or forty billion.

3. What is the value of the expression $\sqrt{16\sqrt{8\sqrt{4}}}$?

- (A) 4 (B) $4\sqrt{2}$ (C) 8 (D) $8\sqrt{2}$ (E) 16

3. **Answer (C):** Simplifying yields

$$\sqrt{16\sqrt{8\sqrt{4}}} = \sqrt{16\sqrt{16}} = \sqrt{64} = 8$$

11 / 14

2017 Q4

4. When 0.000315 is multiplied by 7,928,564 the product is closest to which of the following?

- (A) 210 (B) 240 (C) 2,100 (D) 2,400 (E) 24,000

4. **Answer (D):** The product may be estimated as

$$(3 \cdot 10^{-4}) (8 \cdot 10^6) = 24 \cdot 10^2 = 2400.$$

The exact value of the product is 2497.498.

12 / 14

4. $1000 \times 1993 \times 0.1993 \times 10 =$

- (A) 1.993×10^3 (B) 1993.1993 (C) $(199.3)^2$
 (D) 1,993,001.993 (E) $(1993)^2$

1993 Q4

4. (E) $1000 \times 1993 \times 0.1993 \times 10 = ((1000 \times 10) \times 0.1993) \times 1993$
 $= (10,000 \times 0.1993) \times 1993$
 $= 1993 \times 1993 = (1993)^2.$

13 / 14

1989 Q5

5. $-15 + 9 \times (6 \div 3) =$

- A) -48 B) -12 C) -3 D) 3 E) 12

5. D Using the standard order of operations,
 $-15 + 9 \times (6 \div 3) = -15 + 9 \times 2$ [operate inside parentheses]
 $= -15 + 18$ [multiplication precedes addition]
 $= 3.$

14 / 14

1998 Q5

5. Which of the following numbers is largest?

- (A) 9.12344 (B) $9.123\bar{4}$ (C) $9.12\bar{34}$ (D) $9.1\bar{234}$ (E) $9.\bar{1234}$

5. Answer (B):

$$(A) 9.12344 = 9.12344000\dots,$$

$$(B) 9.12\overline{34} = 9.12344444\dots,$$

$$(C) 9.12\overline{34} = 9.12343434\dots,$$

$$(D) 9.1\overline{234} = 9.12342342\dots,$$

$$(E) 9.\overline{1234} = 9.12341234\dots$$