**1985 Q6**

6. A ream of paper containing 500 sheets is 5 cm thick. Approximately how many sheets of this type of paper would there be in a stack 7.5 cm high?

A) 250 B) 550 C) 667 D) 750 E) 1250

6. (D) The 7.5 cm stack is "half again" as tall as the 5 cm stack, so it will contain $500 + \frac{1}{2}(500) = 500 + 250 = 750$ sheets.

OR

If n is the number of sheets of paper in the 7.5 cm stack, then $\frac{5}{500} = \frac{7.5}{n}$. Thus n = 750 sheets.



**1990 Q6**

6. Which of these five numbers is the largest?

A) $13579 + \frac{1}{2468}$ B) $13579 - \frac{1}{2468}$ C) $13579 \times \frac{1}{2468}$

D) $13579 \div \frac{1}{2468}$ E) 13579.2468

6. D All of the choices,except (C) and (D), are near 13,579. In (D), the result is the product (13579)(2468) while in (C) the result is much less than 13,579.

**3 / 13**

**1997 Q6**

6. In the number 74982.1035 the value of the *place* occupied by the digit 9 is how many times as great as the value of the *place* occupied by the digit 3?

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

6. **(C)** Each shift of one place represents a multiple of 10:

| 7 | 4 | 9 | 8 | 2 | 1 | 0 | 3 | 5 |
|---|---|---|---|---|---|---|---|---|
| | | 100 | 10 | 1 | 0.1 | 0.01 | 0.001 | |

Five shifts are needed and $10 \times 10 \times 10 \times 10 \times 10 = 10^5 = 100000$.

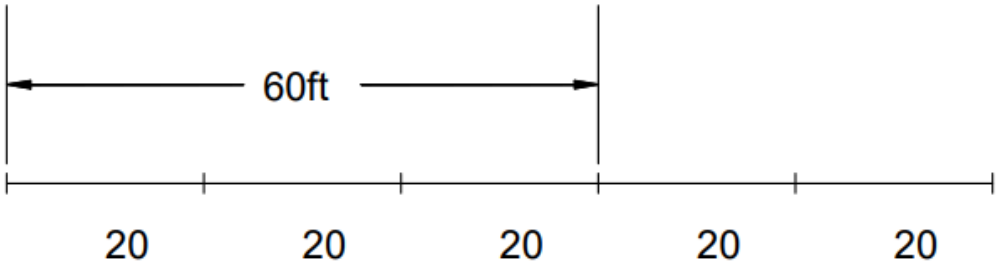
**4 / 13**

**2001 Q6**

6. Six trees are equally spaced along one side of a straight road. The distance from the first tree to the fourth is 60 feet. What is the distance in feet between the first and last trees?

(A) 90 (B) 100 (C) 105 (D) 120 (E) 140

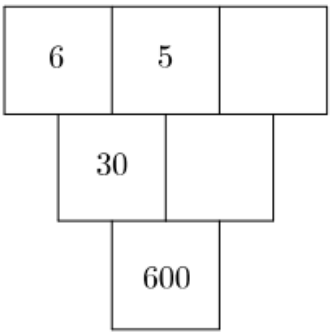
6. (B) There are three spaces between the first tree and the fourth tree, so the distance between adjacent trees is 20 feet. There are 6 trees with five of these 20-foot spaces, so the distance between the first and last trees is 100 feet.




**5 / 13**

**2013 Q6**

6. The number in each box below is the product of the numbers in the two boxes that touch it in the row above. For example, $30 = 6 \times 5$. What is the missing number in the top row?




**(A)** 2 **(B)** 3 **(C)** 4 **(D)** 5 **(E)** 6

6. **Answer (C):** The product of the two numbers in the second row is 600, so the missing number in that row is $\frac{600}{30} = 20$. The product of 5 with the missing number in the top row is 20, so the missing number in the top row is $\frac{20}{5} = 4$.

**6 / 13**

7. 2.46 x 8.163 x (5.17 + 4.829) is closest to

A) 100 B) 200 C) 300 D) 400 E) 500

**1988 Q7**

7. B The product is approximately (2.5)(8)(10) = (20)(10) = 200.

**7 / 13**

**1992 Q7**

7. The digit-sum of 998 is $9 + 9 + 8 = 26$. How many 3-digit whole numbers, whose digit-sum is 26, are even?

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

7. (A) The only 3-digit whole numbers with a digit-sum of 26 are 899, 989 and 998. Of these, only 998 is even. Thus there is only one such number.

7. $3^3 + 3^3 + 3^3 =$

(A) $3^4$ (B) $9^3$ (C) $3^9$ (D) $27^3$ (E) $3^{27}$

**1993 Q7**

7. **(A)** $3^3 + 3^3 + 3^3 = 3(3^3) = 3(3 \times 3 \times 3) = 3 \times 3 \times 3 \times 3 = 3^4$.

**OR**

$3^3 + 3^3 + 3^3 = 27 + 27 + 27 = 81 = 9 \times 9 = 3 \times 3 \times 3 \times 3 = 3^4$.



**1998 Q7**

7. $100 \times 19.98 \times 1.998 \times 1000 =$

(A) $(1.998)^2$ (B) $(19.98)^2$ (C) $(199.8)^2$ (D) $(1998)^2$ (E) $(19980)^2$

7. **Answer (D):** Use the associative property to group as follows: $(100 \times 19.98) \times (1.998 \times 1000) = 1998 \times 1998 = (1998)^2$.

**1986 Q8**

8. In the product shown, B is a digit. The value of B is

$$\begin{array}{r} B2 \\ \times 7B \\ \hline 6396 \end{array}$$

A) 3 B) 5 C) 6 D) 7 E) 8

8. (E) If B×2 ends in 6, then B is 3 or 8. Since the product exceeds 6000, B must be 8.



**1988 Q8**

8. Betty used a calculator to find the product 0.075 x 2.56. She forgot to enter the decimal points. The calculator showed 19200. If Betty had entered the decimal points correctly, the answer would have been

A) .0192 B) .192 C) 1.92 D) 19.2 E) 192

8. B Although one could solve this problem by counting decimal places in the product, it is more more insightful to realize that the answer is approximately .1(2) = .2, so (B) is correct.

**1991 Q9**

9. How many whole numbers from 1 through 46 are divisible by either 3 or 5 or both?

(A) 18 (B) 21 (C) 24 (D) 25 (E) 27

9. (B) A number is divisible by 3 if it is a multiple of 3, and it is divisible by 5 if it is a multiple of 5. There are 15 multiples of 3, and 9 multiples of 5 which are whole numbers less than 46. However, 3 numbers (15, 30 and 45) which are divisible by both 3 and 5 have been counted twice. Thus the total number which are divisible by either 3 or 5 or both is $15 + 9 - 3 = 21$.

OR

Using the Sieve of Eratosthenes and marking each $3^{rd}$ number, multiples of 3, and each $5^{th}$ number, multiples of 5, yields

$$1, 2, \underline{|3|}, 4, \underline{|5|}, \underline{|6|}, 7, 8, \underline{|9|}, \underline{|10|}, 11, \ldots, \underline{|45|}, 46.$$

Thus, the total number which are divisible by either 3 or 5 or both is 21.



10. $4(299) + 3(299) + 2(299) + 298 =$

A) 2889 B) 2989 C) 2991 D) 2999 E) 3009

**1987 Q10**

10. B The desired sum may be written as $299(4 + 3 + 2 + 1) - 1 = 299(10) - 1 = 2990 - 1 = 2989$.