6. The smallest product one could obtain by multiplying two numbers in the set { -7, -5, -1, 1, 3 } is

A) -35 B) -21 C) -15 D) -1 E) 3

1987 Q6

2 / 13

1990 Q7

7. When three different numbers from the set { –3, –2, –1, 4, 5 } are multiplied, the largest possible product is

A) 10 B) 20 C) 30 D) 40 E) 60

7. C For the product of three numbers to be positive, either all three of the numbers must be positive or one must be positive and two must be negative. Since there are only two positive numbers, only the latter case is possible. Thus the largest such product is $(-3)(-2)(5) = 30$.

3 / 13

2016 Q7

7. Which of the following numbers is **not** a perfect square?

(A) 1^{2016} **(B)** 2^{2017} **(C)** 3^{2018} **(D)** 4^{2019} **(E)** 5^{2020}

2017 Q7

7. Let Z be a 6-digit positive integer, such as 247247, whose first three digits are the same as its last three digits taken in the same order. Which of the following numbers must be a factor of Z ?

(A) 11 **(B)** 19 **(C)** 101 **(D)** 111 **(E)** 1111

1987 Q8

8. 9876
A32
B1

If A and B are nonzero digits, then the number of digits (not necessarily different) in the sum of the three whole numbers is

A) 4 B) 5 C) 6 D) 9 E) depends on the values of A and B

2005 Q8

8. Suppose m and n are positive odd integers. Which of the following must also be an odd integer?

(A) $m+3n$ **(B)** $3m-n$ **(C)** $3m^2+3n^2$ **(D)** $(nm+3)^2$ **(E)** $3mn$

7 / 13

2014 Q8

8. Eleven members of the Middle School Math Club each paid the same amount for a guest speaker to talk about problem solving at their math club meeting. They paid their guest speaker $\$\underline{1}\,\underline{A}\,\underline{2}$. What is the missing digit A of this 3-digit number?

(A) 0 **(B)** 1 **(C)** 2 **(D)** 3 **(E)** 4

8 / 13

2017 Q8

8. Malcolm wants to visit Isabella after school today and knows the street where she lives but doesn't know her house number. She tells him, "My house number has two digits, and exactly three of the following four statements about it are true."

(1) It is prime.

(2) It is even.

(3) It is divisible by 7.

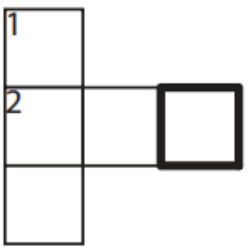
(4) One of its digits is 9.

This information allows Malcolm to determine Isabella's house number. What is its units digit?

(A) 4 **(B)** 6 **(C)** 7 **(D)** 8 **(E)** 9

2000 Q9

9. Three-digit powers of 2 and 5 are used in this *cross-number* puzzle. What is the only possible digit for the outlined square?



ACROSS	DOWN
2. 2^m	**1.** 5^n

(A) 0 **(B)** 2 **(C)** 4 **(D)** 6 **(E)** 8

10 / 13

2006 Q9

9. What is the product of $\frac{3}{2} \times \frac{4}{3} \times \frac{5}{4} \ldots \times \frac{2006}{2005}$?

(A) 1 **(B)** 1002 **(C)** 1003 **(D)** 2005 **(E)** 2006

11 / 13

2016 Q9

9. What is the sum of the distinct prime integer divisors of 2016?

(A) 9 **(B)** 12 **(C)** 16 **(D)** 49 **(E)** 63

12 / 13

2007 Q10

10. For any positive integer n, define $\boxed{n}$ to be the sum of the positive factors of n. For example, $\boxed{6} = 1 + 2 + 3 + 6 = 12$. Find $\boxed{\boxed{11}}$.

(A) 13 **(B)** 20 **(C)** 24 **(D)** 28 **(E)** 30

2012 Q10

10. How many 4-digit numbers greater than 1000 are there that use the four digits of 2012?

(A) 6 **(B)** 7 **(C)** 8 **(D)** 9 **(E)** 12