

Factor completely each polynomial below. Find your answer and notice the letter next to it. Write this letter in the box containing the number of that exercise.

① $3x^2 - 15x + 18$ O

② $x^3 + 11x^2 + 10x$ E

③ $8x^3 - 18x$ N

④ $5x^3 - 40x^2 + 60x$ O

⑤ $4x^2 + 8x - 60$ C

⑥ $2x^3 - 20x^2 - 48x$ H

Answers:

① $5x(x + 3)(x - 4)$

② $2x(2x + 3)(2x - 3)$

③ $2x(x + 6)(x - 4)$

④ $5x(x - 4)(x - 6)$

⑦ $4m^2 - 18m + 14$ N

⑧ $15m^3 + 24m^2 + 9m$ O

⑨ $15m^2 - 10m - 25$ T

⑩ $50m^3 - 2m$ P

⑪ $3m^2 - 10m + 8$ R

⑫ $60m^3 + 54m^2 - 6m$ C

Answers:

⑦ $3m(5m + 3)(m + 1)$

⑧ $5(3m + 1)(m - 5)$

⑨ $(3m - 4)(m - 2)$

⑩ $2(25m^2 + 1)(m + 7)$

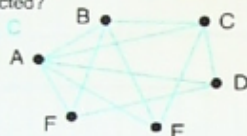
NOTE: You may prefer to use these questions one at a time.

TEST OF GENIUS

- ① The land of Euclidia has six remote towns, which we shall call A, B, C, D, E, and F. Unfortunately, not all the towns are connected by telephone lines. Town A is connected to all the other five towns, but Town B is connected to only four. Town C, too, is connected to four; whereas D, E, and F are each connected to only three towns.

There is a line from Town D to Town F. To what towns is Town E connected?

A, B, C



- ② In the following multiplication problem, the letters A, B, C, and D represent four different digits. What digit should replace each letter?

$$\begin{array}{r} ABCD \\ \times 4 \\ \hline DCBA \end{array} \quad \begin{array}{r} 2178 \\ \times 4 \\ \hline 8712 \end{array}$$

- ③ On what day of the week was the following statement made:

When the day before yesterday was referred to as "the day after tomorrow," the day that was then called "yesterday" was as far away from today as today is from next Saturday. (HINT: Use the diagram below.)

..... ①
today Monday

- ④ A clock loses ten minutes each hour. If the clock is set correctly at 12 o'clock noon, what is the correct time when the clock reads 3:00 P.M.?

3:36 P.M.

- ⑤ How tall is a tree which is 15 feet shorter than a pole that is three times as tall as the tree?

 $7\frac{1}{2}$ ft

- ⑥ Rollo, Gorgo, and Zed work in the circus. They are the ringmaster, lion tamer, and clown, though not necessarily in that order.

1. Zed has red hair.
2. Rollo has curly hair.
3. The ringmaster is shorter than Rollo.
4. The lion tamer is bald.

Who is the clown?

Rollo

- ⑦ Three men, A, B, and C, were traveling with their wives, a, b, and c. They came to a river which they had to cross. There was just one boat and only two could cross at one time. Since the husbands were jealous, no woman could be left with a man unless her husband were also present. How did they get across the river?



- ⑧ Find the number that logically continues each of these series:

a) 2, 3, 5, 9, 17, 33b) 14, 19, 29, 40, 44, 52, 59

Each difference is the sum of the digits of the preceding number.

SCORING KEY

7 or 8—Extra Extraordinary Genius

5 or 6—Extraordinary Genius

3 or 4—Ordinary Genius

1 or 2—Ex-Genius