

- For which of the following values of k does the equation $\frac{x-1}{x-2} = \frac{x-k}{x-6}$ have no solution for x ?
(A) 1 (B) 2 (C) 3 (D) 4 (E) 5
- Find the value(s) of x such that $8xy - 12y + 2x - 3 = 0$ is true for all values of y .
(A) $\frac{2}{3}$ (B) $\frac{3}{2}$ or $-\frac{1}{4}$ (C) $-\frac{2}{3}$ or $-\frac{1}{4}$ (D) $\frac{3}{2}$ (E) $-\frac{3}{2}$ or $-\frac{1}{4}$
- The sum of three numbers is 20. The first is 4 times the sum of the other two. The second is seven times the third. What is the product of all three?
(A) 28 (B) 40 (C) 100 (D) 400 (E) 800
- Both roots of the quadratic equation $x^2 - 63x + k = 0$ are prime numbers. The number of possible values of k is
(A) 0 (B) 1 (C) 2 (D) 4 (E) more than four
- Two different positive numbers a and b each differ from their reciprocals by 1. What is $a + b$?
(A) 1 (B) 2 (C) $\sqrt{5}$ (D) $\sqrt{6}$ (E) 3
- If $a + 1 = b + 2 = c + 3 = d + 4 = a + b + c + d + 5$, then $a + b + c + d$ is
(A) -5 (B) $-10/3$ (C) $-7/3$ (D) $5/3$ (E) 5
- What is the sum of the reciprocals of the roots of the equation
$$\frac{2003}{2004}x + 1 + \frac{1}{x} = 0?$$

(A) $-\frac{2004}{2003}$ (B) -1 (C) $\frac{2003}{2004}$ (D) 1 (E) $\frac{2004}{2003}$
- If a, b , and c are positive real numbers such that $a(b+c) = 152$, $b(c+a) = 162$, and $c(a+b) = 170$, then abc is
(A) 672 (B) 688 (C) 704 (D) 720 (E) 750