A1. Find the slope of the line through the points (-2, -7) and (2, 1).

A2. Let $k$ be the number you receive. Find the base of a rectangle whose perimeter is 20 and whose height is $k$ more than its base.

A3. Let $k$ be the number you receive. Find the $x$-intercept of the line of slope 2 through the point (4, $k$).

A4. Let $k$ be the number you receive. Evaluate

$$\frac{1 + \frac{1}{k}}{1 - \frac{1}{k^2}}$$

A5. Let $k$ be the number you receive. Find the y-intercept of the line that contains the point ($k$, $k^2$) and is perpendicular to the line through that point and the origin.

1. 2 2. 4 3. 2 4. 2 5. 5
B1. If the difference of two positive numbers is 5 and the difference of their squares 45, find their sum.

B2. Let \( k \) be the number you receive. Find the \( x \)-coordinate of the point where the lines \( 2x + y = 0 \) and \( x - y = k \) intersect.

\[
\frac{2}{1 - \frac{1}{k}}
\]

B3. Let \( k \) be the number you receive. Evaluate \( 1 + \)

B4. Let \( k \) be the number you receive. Find the larger of the two \( x \)-intercepts of the parabola \( y = k - (x - 2)^2 \).

B5. Let \( k \) be the number you receive. Find the area of a square with diagonal of length \( k \).

1. 9  2. 3  3. 4  4. 4  5. 8
C1. How many prime numbers are less than 20?

C2. Let $k$ be the number you receive. Find the smaller of the two roots of the quadratic $2x^2 - 3kx + k^2$.

C3. Let $k$ be the number you receive. Let $f(x) = x^2 + kx$ for all $x$. Solve for $x$: $f(x+1) = f(x) + 11$.

C4. Let $k$ be the number you receive. Find the length of the hypotenuse of a right triangle with legs of lengths $k^2 - 1$ and $2k$.

C5. Let $k$ be the number you receive. When a tree of height 35 ft. casts a shadow of length $k$ ft., how many feet tall is a tree that casts a shadow of length $k + 8$ ft.?

1. 8  2. 4  3. 3  4. 10  5. 6
D1. How many positive integers less than 25 are multiples of 3 or 4 or both?

D2. Let $k$ be the number you receive. If $8^x = 4^{k+3}$, find $x$.

D3. Let $h$ be the number you receive from the front, and let $k$ be the number you receive from the back. Find $x$ if

\[
\frac{1}{h+k} + \frac{1}{k} = \frac{x}{h+k}
\]

D4. Let $k$ be the number you receive. Find the larger of the two roots of

\[kx^2 - (k^2 + 1)x + k\]

D5. Let $a_1 = 0$ and $a_2 = 1$. If $a_n = 2a_{n-1} - a_{n-2}$ for $n \geq 3$, find $a_6$.

1. 12  
2. 10  
3. 4  
4. 5  
5. 5