



Math Olympiad and Problem Solving Programs
E120 - Honors Algebra Problem Solving
Problem Set 5.2 - SAT Integers

Name:

Date:

1. E

2. E

3. E

4. E

5. A

6. C

7. B

Since n is a positive integer, we know that $n + 10 > n + 3$. Since p divides $n + 3$ and $n + 10$, we know that p will also divide $(n + 10) - (n + 3) = n + 10 - n - 3 = 7$. The only positive integer divisors of 7 are 1 and 7. p is greater than 1 so it must be 7.

8. An even integer is any integer that can be represented as 2 times a number, for example $2 = 2 \times 1$, $4 = 2 \times 2$, $6 = 2 \times 3$, $8 = 2 \times 4$, and so on. An odd integer is any integer that is an even integer plus 1, for example $3 = 2 + 1$, $5 = 4 + 1$, $7 = 6 + 1$, $9 = 8 + 1$, and so on.

When we look at our answer choices, we can immediately eliminate the choices which are odd: (B) $2k + 3$ and (D) $4k + 1$. Looking at the rest of the answer choices, $4k + 2$ can be factored into $2(2k + 1)$ and $2k + 1$ is odd so our answer is E.

9. C

10. 8