Time: 10 minutes

7. The hypotenuse of a right triangle measures $8\sqrt{5}$ and one of its legs measures $4\sqrt{11}$. If the measure of its other leg is the same as that of a diagonal of a square, compute the area of the square.

8. Compute the number formed by the last two digits (on the right) when $11^{57} - 5^{72}$ is written in standard decimal number form.

Time: 10 minutes

9. If $x^4 + ax^3 + 7x^2 + bx + 12$ is divisible by $x + 2$ and by $x - 3$, compute $b - a$.

10. Working alone, John can paint a fence in 9 hours. Working alone, Fred can do the same job in 7.5 hours. John begins the job alone and later is joined by Fred. They work together on the job for the same amount of time that John had worked by himself, at which time John leaves. It takes Fred 1.5 more hours to complete the job by himself. Compute the number of hours the two were working together on the job.

Time: 10 minutes

11. Given A appositive integer, n an integer greater than or equal to 2, and $p = 1, 2, 3, \ldots$ Compute, in terms of A and n, the sum $\dfrac{A}{n} + \dfrac{A}{n^2} + \dfrac{A}{n^3} + \cdots + \dfrac{A}{n^p} + \cdots$.

12. Diagonal $\overline{BD}$ is drawn in quadrilateral $ABCD$ so that $\angle A \cong \angle CBD$, $AB = 5$, $AD = 9$, $BD = 8$ and $BC = 14.4$. Compute CD.