What Every Mathlete Needs To Know

Middle School Math Coaching, Session 396

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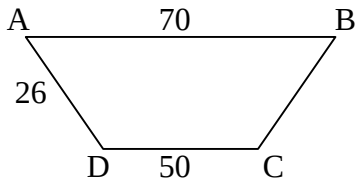
1. What is the number of centimeters in the perimeter of a right triangle whose legs measure 30 cm and 72 cm?

2. What is the number of square feet in the area of the isosceles trapezoid ABCD, AB//CD, with dimensions as shown?



3. Each edge of a cube measuring two inches on an edge is increased by four inches. The volume of the new cube is what percent of the volume of the original cube? The increase in volume of the new cube is what percent of the volume of the original cube?

4. The radius of a circle is decreased by 20%. By what percent is its area decreased?

5. If $x = -2$, then $ax^5 + bx^3 - 4 = 0$. What is the value of $ax^5 + bx^3 - 4$ when $x = 2$?

6. $\frac{1}{a} + \frac{1}{b} = 7 \qquad \frac{1}{a} - \frac{1}{b} = 3 \qquad \frac{1}{a^2} - \frac{1}{b^2} = ?$

7. $3x = 2y$ and $6y = 7z$. What is the value of $\frac{x}{z}$?

8. During the month of July the Harry and David Fruit Company sold twice as many apricots as pears, three times as many peaches as apricots and four times as many apples as peaches. They sold 300 more peaches than apricots. How many apples did they sell?

   A) 75 B) 180 C) 300 D) 720 E) 1800

9. What is the mean of $\frac{1}{2}, \frac{5}{6}, \frac{3}{4}, \frac{5}{12}$?

   A) $\frac{2}{5}$ B) $\frac{5}{8}$ C) $\frac{7}{8}$ D) $1\frac{3}{5}$ E) $2\frac{1}{2}$

10. Howard made a $1/400$ scale diagram of an airplane. The wingspan of the airplane in the diagram is 9.6 inches. What is the wingspan, in feet, of the actual airplane?

    A) 96 B) 320 C) 384 D) 960 E) 3840