

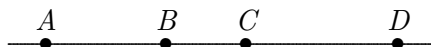
The 2015 Jamaican Mathematical Olympiad

Solutions for Practice Problem Set 6

1. We have $\sqrt{\frac{1}{9} + \frac{1}{16}} = \sqrt{\frac{16}{144} + \frac{9}{144}} = \sqrt{\frac{25}{144}} = \frac{5}{12}$.

2. Since one-fourth of Marsha's books are novels, the number of books she has is a multiple of 4. Since one-ninth of them are cookbooks, the number of books she has is also a multiple of 9. Then the number of her books is a multiple of 36. The multiples of 36 are 36, 72, 108, ... The only multiple between 50 and 100 is 72. Marsha has 72 books.

3. From the information given, $AB + BC = 10$ and $AB + BC + CD = 22$. Subtracting equations gives $CD = 12$. We also know that $BC + CD = 15$. Thus $BC + 12 = 15$. Subtracting 12 from both sides gives $BC = 3$.



4. The height of the rectangle is 12 cm and its width is 36 cm. The perimeter of the rectangle is 96 cm. Since the perimeter of the square is $1/3$ as much, the perimeter of the square is 32 cm. Then the length of each side of the square is 8 cm. The area of the square is 64 cm^2 .

