

SOLUTIONS: Stage I Question Set 12

Solution to Question #1:

$$0.20(7000) = 1400$$

The correct answer is (d) .

Solution to Question #2:

$$4^2 - 4 + 4^3 \times 4 = 16 - 4 + 256 = 268$$

The correct answer is (b)

Solution to Question #3:

$$1/3(2/3) = 2/9. \text{ The correct answer is (b) .}$$

Solution to Question #4:

$$(20\text{g/L})(1000 \text{ L}) = 20,000 \text{ g.}$$

The correct answer is (a) .

Solution to Question #5:

$$\sqrt{49 * 49 * 9} = \sqrt{49(49)(3)(3)} = 3(49) = 147$$

The correct answer is (b) .

Solution to Question #6:

$$0.425 = 425/1000 = 17/40$$

The correct answer is (d) .

Solution to Question #7:

ABCD is a rectangle with dimensions of 8 x 5. Its perimeter = $2(8) + 2(5) = 26$.

The correct answer is (c)

Solution to Question #8:

There are six surfaces.

4 surfaces are 5 x 3, and 2 surfaces are 5 x 5.

The total surface area is $4(5 \times 3) + 2(5 \times 5) = 60 + 50 = 110 \text{ m}^2$.

The correct answer is (d)

Solution to Question #9:

$$\beta < 0, \beta = -4.$$

The correct answer is (c) .

Solution to Question #10:

The area of the whole figure is 400 cm^2 , so the area of each square is 100 cm^2 , which means each square has sides of 10 cm x 10 cm. The perimeter of the area marked in pink is $= 2(20) + 2(10) = 60 \text{ cm}$.

The correct answer is (c)

Solution to Question #11:

The path goes along four sides altogether, so the length of the path is 4.

The correct answer is (c) .

Solution to Question #12:

If Tanya begins by eating on a restaurant January 1, she can eat in a restaurant 74 times during the year if she eats at a restaurant every 5 days. $366 = 5(73) + 1$. The correct answer is (a) .

Solution to Question #13:

The circle has radius of 5, and an area of 25π . The square has an area of $10 \times 10 = 100$.
 The difference between the area of the square and the area of the circle is $(100 - 25\pi)$.
 One-quarter of the circle is shaded. So is half of the difference between the area of the square and the area of the circle.
 The shaded area = $25\pi / 4 + \frac{1}{2}(100 - 25\pi)$.
 The correct answer is **(e)**.

Solution to Question #14:

The two smaller squares have dimensions of 4×4 . The total area of the two squares is $2(4 \times 4) = 32$.
 The correct answer is **(b)**.

Solution to Question #15:

The total length of the diagonal is $5\sqrt{2}$, and the half-diagonal is $\frac{1}{2}(5\sqrt{2})$.
 The total length of the path is $5 + \frac{1}{2}(5\sqrt{2}) + \frac{1}{2}(5\sqrt{2}) = 5 + 5\sqrt{2}$
 The correct answer is **(a)**.

Solution to Question #16:

Just multiply $16\pi \times 7 = 112\pi$
 The correct answer is **(c)**.

Solution to Question #17:

$5x + 10 - 3x + 3 = 10x + 10 - 2x + 6$.
 $2x + 13 = 8x + 16$
 $6x = -3$
 $x = -\frac{1}{2}$
 The correct answer is **(b)**.

Solution to Question #18:

A hexagon has six sides, so its perimeter is $6(4s - 2) = 24s - 12$.
 The correct answer is **(a)**.

Solution to Question #19:

6 inches \times 6 inches = 0.5 ft \times 0.5 ft Marla can tile the portion of her bedroom which is 12 \times 10 with the 2 \times 2 tiles. The total area is 120 sq. feet, and each 2 \times 2 tile occupies 4 sq. feet. She will need 30 2 \times 2 tiles. A strip measuring 1 \times 12 remains to be tiled with the 0.5 \times 0.5 tiles. Each tile has a surface area of $.5(0.5) = 0.25$ sq. ft, and the total remaining area to be tiled is $12 \times 1 = 12$ sq. ft. $12 \div 0.25 = 48$ Thus, Marla will need 48 0.5 \times 0.5 tiles. Altogether, Marla will use $30 + 48 = 78$ tiles.
 The correct answer is **(c)**.

Solution to Question #20:

The sum of all positive even integers from 1 to 100 is:
 $E = 2 + 4 + 6 + \dots + 100 = 2(1 + 2 + 3 + \dots + 50)$
 The sum of all positive odd integers between 1 and 100 is:
 $P = 1 + 3 + 5 + \dots + 99 = 1 + (1 + 2) + (1 + 4) + (1 + 6) + \dots + (1 + 98) = 1(50) + 2(1 + 2 + 3 + \dots + 49)$
 The difference between E and P = $2(1 + 2 + 3 + \dots + 50) - 2(1 + 2 + 3 + \dots + 49) - 1(50) = 2(50) - 1(50) = 50$. The correct answer is **(d)**.