SOLUTIONS: Stage I Question Set 14

Solution to Question #1:
The area of the triangle is half the base times the height. ½(5)(10) = 25
The correct answer is **(b)** .

Solution to Question #2:

$$\frac{5.5}{\frac{1}{3}} = 3(5.5) = 16.5$$

The correct answer is **(d)** .

Solution to Question #3:
-27 + v = 6; v = 6 + 27 = 33
The correct answer is **(b)**

Solution to Question #4:

$$108\pi = \pi R^2 \qquad R^2 = 108, \text{ so } R = \sqrt{108} = 6\sqrt{3}$$

The diameter of the circle is $2(6\sqrt{3})\pi = 12\sqrt{3}\pi$. The correct answer is **(d)** .

Solution to Question #5:
The sum of the angles in a triangle is 180°. 140 + 2x = 180; 2x = 40; x = 20
The correct answer is **(e)** .

Solution to Question #6:
Q = 2(78) = 156; 3Q/5 = 156(3)/5 = 93.6
The correct answer is **(a)** .

Solution to Question #7:
The printer will be serviced at 15,000 ; 30,000 ; 45,000 ; 60,000 ; and 75,000.
The printer will have been serviced 5 times. The correct answer is **(c)** .

Solution to Question #8:
85(3) + 90 + 95 = 440 ; 440 ÷ 5 = 88; Bill's average test score will be 88%.
The correct answer is **(b)** .

Solution to Question #9:
7 squares are shaded blue or yellow. There are 6 x 4 = 24 squares in total, and half of 24 is 12. 12 - 7 = 5. 5 squares have to be shaded red in order for half of the squares to be shaded blue, yellow or red.
The correct answer is **(c)** .

Solution to Question #10:
1008 kg = 1,008,000 grams. The volume occupied is 1,008,000 ÷ 32 = 31,500 cm^3
The correct answer is **(d)** .

Solution to Question #11:
The number of minutes which elapse between 9:22 a.m. and 3.pm. is 38 + 5(60) = 338 minutes.
338 ÷ 22 = 15.36... The attendant checks the meter at 9:22 and 15 times after that before 3 p.m. for a total of 16 times.
The correct answer is **(d)** .

Solution to Question #12:
A Choclo candy bar weighs 50 g in total. The total weight of the candy bars in the box is 10 kg - 0.5 kg = 9.5 kg (since 500 g = 0.5 kg). 9.5 kg = 9500 g. Since each candy bar weighs 50g then 9,500g ÷ 50g = 190
Thus, there are a total of 190 candy bars in the box. The correct answer is **(a)** .

Solution to Question #13:
102 = 3 x 2 x 17; 207 = 9 x 23; 308 = 4 x 77 = 4 x 11 x 7
The LCM = 17 x 9 x 4 x 11 x 7 x 23 = 1083852
The correct answer is **(c)** .

Solution to Question #14:
$9,200(0.2) = $1840 depreciation. The value in one year will be $9200 - $1840 = $7360.
The correct answer is **(d)** .

Solution to Question #15:
Larry had 100 UV shares, so they decreased in value by 5(100) = a $500 loss
Larry had 200 UV shares, so they increased in value by 10(200) = a $2000 gain
Larry's net gain was $1500.
The correct answer is **(b)** .

Solution to Question #16:
With Bank P, Michael would receive $80 in interest, and would lose $24 in service charges and $10 in setup fees. He would have $1046 after one year. With Bank Q, Michael would receive $50 in interest, and lose no money to service charges or setup fees. He would have $1050 after one year. With Bank R, Michael would receive $70 in interest, but would lose $12 in service charges and $20 in setup fees. He would have $1038 after one year. With Bank S, Michael would receive $60 in interest, but would lose $50 in setup fees. He would have $1010 after one year. Michael will be in the best financial situation after one year if he opts for Bank Q. The correct answer is **(b)** .

Solution to Question #17:
The difference in volume between the middle and outer cylinder is $\pi (3)(3)(10) - \pi (2)(2)(10) = 50\pi$
The volume of the smallest cylinder is $\pi (1)(1)(10) = 10\pi$
The total volume occupied in the space between the middle and outer cylinders plus the volume of the smallest cylinder is $(50 + 10)\pi = 60\pi$
The correct answer is **(e)** .

Solution to Question #18:
If the concrete is 10 cm = 0.1m thick, the dimensions of the "inner" base is 9.8 x 1.8. The trough will have an effective height of 1.9m (since there is no loss at the top).
$V = 9.8 \times 1.8 \times 1.9 = 33.5\ m^3$
The correct answer is **(a)** .

Solution to Question #19:
If Winston takes biology, there are two possible combinations. He can take biology, woodworking and English OR he can take biology, autoshop and English. If Winston takes chemistry, there are two possible combinations. He can take chemistry, woodworking and English OR he can take chemistry, auto shop and English. If Winston takes physics, he can take physics, woodworking and English OR he can take physics, auto shop and English. Winston has a total of six possible combinations.
The correct answer is **(b)** .

Solution to Question #20:
The base of the triangle is 2R, and the height of the triangle is R.
The area of the triangle is $\frac{1}{2}(2R)(R) = R^2 = 225$. $R = 15$.
The circumference of the circle is $2\pi R = 30\pi$
The correct answer is **(e)** .