Stage I Question Set 12

1) 20 questions
2) Completion time 30 to 40 minutes
3) Calculators are permitted
4) No penalty for incorrect answers
5) Diagrams are not drawn to scale

QUESTION #1
What is 20% of 7,000?

a) 9,000 b) 900 c) 140 d) 1400 e) none of the above

QUESTION #2
Evaluate $4^2 - 4 + 4^3 \times 4$

a) 276 b) 268 c) 256 d) 248 e) none of the above

QUESTION #3
One-third of two-thirds, expressed as a fraction is,

a) 4/9 b) 2/9 c) 1/9 d) 2/6 e) none of the above

QUESTION #4
If 20g of vanilla extract are used for every liter of ice cream made at Hazel's Heavenly Ice Cream Shop, how many grams of vanilla extract are used for a 1000 L batch of vanilla ice cream?

a) 20,000 g b) 2,000 g c) 0.2 kg d) 5000g e) none of the above

QUESTION #5

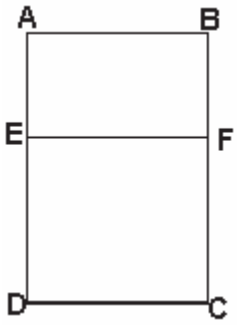
Evaluate $\sqrt{49 * 49 * 9}$

a) 441 b) 147 c) 21 d) 63 e) none of the above

QUESTION #6
Express 0.425 as a fraction reduced to lowest terms.

a) 4/9 b) 17/35 c) 5/8 d) 17/40 e) none of the above

QUESTION #7
CDEF is a square with dimensions 5 x 5. ABFE is a rectangle with dimensions 5 x 3. What is the perimeter of the figure ABCD?



a) 40 b) 31 c) 26 d) 35 e) none of the above

QUESTION #8
What is the surface area of a rectangular block which has the dimensions of 5m x 3m x 5m in m²?

a) 75 b) 40 c) 130 d) 110 e) none of the above

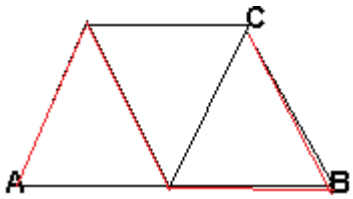
QUESTION #9

$\frac{\beta}{2} = \frac{8}{\beta}$ Find the value of β. $\beta < 0$.

a) 0 b) 4 c) -4 d) $2\sqrt{2}$ e) none of the above

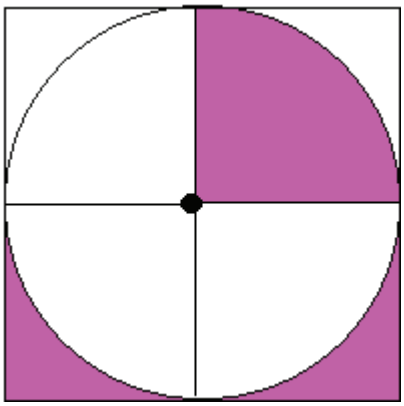
QUESTION #10
The figure is made of four squares linked together. The area of the whole figure is 400 cm². What is the perimeter of the area marked in pink?

a) 80 cm b) 100 cm c) 60 cm d) 40 cm e) none of the above



QUESTION #11
Each of the triangles is equilateral, with a side length of 1. What is the length of the longest path from A to C, without going along any side more than once, if you travel only along the marked sides?

a) $3\sqrt{3}$ b) 2 c) 4 d) 3 e) none of the above

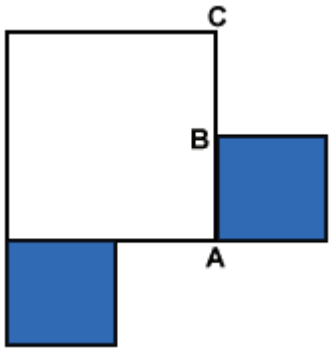


QUESTION #12
If Tanya eats at a restaurant once every 5 days, what is the maximum number of days she eats at a restaurant in a leap year?

a) 74 b) 73 c) 65 d) 67 e) none of the above

QUESTION #13
The large square has dimensions of 10 x 10. The centre of the circle is marked, and the circle is divided into four equal sections. What is the area of the shaded region?

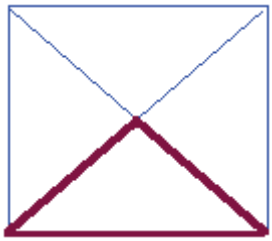
a) $25\pi/4 + (100 - 25\pi)$ b) $25\pi + 25$ c) $25\pi - 50$ d) $25\pi/4 - ½(100 - 25\pi)$
e) none of the above



QUESTION #14
AB = AC/2. The largest square has dimensions of 8 x 8. The two smaller squares have equal dimensions. Find the total area of the shaded regions.

a) 64 b) 32 c) 16 d) 24
e) none of the above

QUESTION #15



The figure is a square, with dimensions 5 x 5, with two diagonals drawn as shown. Find the length of the brown path.

a) $5 + 5\sqrt{2}$ b) $5 + 2.5\sqrt{2}$ c) $5\sqrt{2} - 5$ d) $5 - 2.5\sqrt{2}$
e) none of the above

QUESTION #16

1/8 of the circle (the shaded portion) has an area of 16π. What is the area of the remaining 7/8 of the circle?

a) 108π b) 114π c) 112π d) 56π
e) none of the above

QUESTION #17

$5(x + 2) - 3(x - 1) = 10(x + 1) - 2(x - 3)$. Find the value of x.

a) ½ b) -½ c) ¼ d) -¼
e) none of the above

QUESTION #18

Find the perimeter of a regular hexagon in terms of s if one side has dimensions of $4s - 2$.

a) $24s - 12$ b) $12s - 24$ c) $12s - 6$ d) $20s - 10$
e) none of the above

QUESTION #19

Marla is tiling her bedroom which has dimensions of 12 feet x 11 feet with two different types of tiles. One tile has dimensions of 6 inches x 6 inches. The other tile has dimensions of 2 feet x 2 feet. (12 inches = 1 foot). What is the minimum number of tiles she will need altogether?

a) 48 b) 38 c) 78 d) 56
e) none of the above

QUESTION #20

What is the difference between the sum of all positive even integers less than or equal to 100 and the sum of all positive odd integers less than or equal to 100?

a) 49 b) 51 c) 101 d) 50
e) none of the above