SOLUTIONS: Stage I Question Set 10

Solution to Question #1:
1/5 + 1/2 + 1/4 = 1/5 + 3/4 = 4/20 + 15/20 = 19/20
The correct answer is **(c)** .

Solution to Question #2:
5 x 5 + 5 x 0.5 + 5 x 0.05 = 25 + 2.5 + 0.25 = 27.75
The correct answer is **(d)** .

Solution to Question #3:
22 x 33 = 726 km²
The correct answer is **(c)** .

Solution to Question #4:
8(1.25) = $10, if Emily buys the milk in 1 L jugs.
4(2.25) = $9, if Emily buys the milk in 2 L jugs.
Emily saves $1 by using the 2 L jugs.
The correct answer is **(a)** .

Solution to Question #5:
(-4)(-4)(-4) = 64(-1) = -64
-4 is the cube root of -64.
The correct answer is **(a)** .

Solution to Question #6:
$\sqrt{64} + \sqrt{128} = 8 + 8\sqrt{2}$
The correct answer is **(b)** .

Solution to Question #7:
The only one of these expressions which is negative is (x - y), so this is the least.
The correct answer is **(d)** .

Solution to Question #8:
Thomas played the song at
3:12, 3:24, 3:36, 3:48,
4:00, 4:12, 4:24, 4:36, 4:48,
5:00, . . .
6:00, . . .
7:00, 7:12, 7:24, 7:36.
4 + 5 + 5 + 5 + 4 = 23 times.
The correct answer is **(e)** .

Solution to Question #9:
50 x 2.2 = 110 pounds
The correct answer is **(c)**

Solution to Question #10:
$$\frac{4 + 0.4}{0.4} = \frac{4.4}{0.4} = 11$$
The correct answer is **(d)** .

Solution to Question #11:

Kathryn has deductions of (0.2)(3000) = $600 per month. Her take-home income is $2,400. If she spends 25% on clothing, she spends (0.25)(2400) = $600 per month.
The correct answer is **(d)** .

Solution to Question #12:
x is negative. (x + 1) may be positive or negative. (-x) is positive
The only possibilities for the greatest element are (x + 1) and (-x). But you cannot say whether (-x) or (x + 1) is the greater. If x = -1/2, then (-x) and (x + 1) are identical. if x = -1, then (-x) > (x + 1). If x = -1/4, then (-x) > (x + 1). The correct answer is **(e)** .

Solution to Question #13:
4 x 5 x 9 = 180, which is a 3-digit number. There is no number which fits the conditions that is smaller, since 4, 5 and 9 have no factors in common.
The correct answer is **(b)** .

Solution to Question #14:
$l = d + D$, where d is the diagonal of the small rectangle, and D the diagonal of the large rectangle. For the large rectangle, D² = 4² + 8² = 80
For the small rectangle, d² = 2² + 4² = 20

$$D + d = \sqrt{80} + \sqrt{20} = 4\sqrt{5} + 2\sqrt{5} = 6\sqrt{5}$$

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

Solution to Question #15:
The diameter must fit within the rectangle, so the maximum diameter is 15m.
$C = \pi(15) = 15\pi$
The correct answer is **(c)** .

Solution to Question #16:
The number must be divisible by 42, since 6 x 7 = 42, and 6 and 7 have no common factors. 42 x 3 = 126, which is a 3-digit number. No smaller number is possible if it is to be divisible by both 6 and 7.
The correct answer is **(a)** .

Solution to Question #17:
The area of the square is 8 x 8 = 64 cm². The area of the four triangles = 4(½)(3)(2) = 12 cm².
The area of the unshaded region is 64 - 12 = 52 cm².
The correct answer is **(d)** .

Solution to Question #18:
The area of triangle ABD = the area of triangle ABC, since both have the same base and the same height. Since both triangles share the area of triangle ABE, the area of triangle ADE is equal to the area of triangle BCE. area of triangle ABE + area of triangle DEA = area of triangle ABD = ½(8)(10) = 40 cm².
area of triangle ABE + 16 = 40;   area of triangle ABE = 24 cm².
The correct answer is **(e)** .

Solution to Question #19:
One-sixth of the large circle is 6π = πr², where r is the radius of the small circle.
$r = \sqrt{6}$ cm. The correct answer is **(b)** .

Solution to Question #20:
The total area of the four triangles is 100 cm². Since the whole figure is a square, the dimensions of the square are 10 cm x 10 cm. The perimeter is 4(10) = 40 cm.
The correct answer is **(c)** .