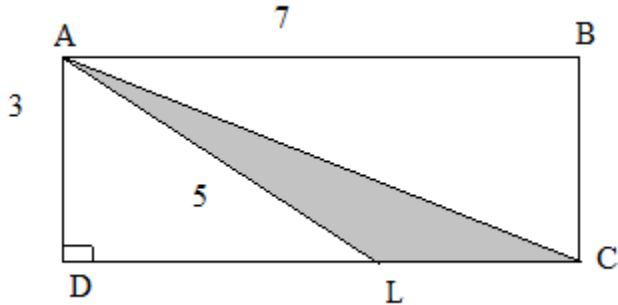1. **What is the area of triangle ALC in the figure given below?**

- 2.5
- 3
- 3.5
- 4
- 4.5

2. **Alan has two more than twice as many chocolates as does Alice, and half as many chocolates as does Nadia. If Alice has 'a' number of chocolates, then in terms of 'a', how many chocolates do Alan, Alice and Nadia have?**

- 2a+ 4
- 5a+5
- 6a+7
- 7a+6
- 9a+4

3. **Milk needs to be thinned to a ratio of 3 parts milk to 2 parts water. The milk-man has by mistake added water so that he has 8 liters of milk which is half water and half milk. What must he add to make the proportions of the mixture correct?**

○ 1 liter milk

○ 1 liter water

○ 2 liters milk

○ 1.5 liter milk

○ 3 Liter milk

4. **The width of a rectangle is 2/3 times its length. If the length is calculated to be 9, what is the value of perimeter for this rectangle?**

○ 36

○ 9

○ 12

○ 54

○ 30

5. **A line l is parallel to the y-axis and passes through the point (2,3). What is its gradient (m) and x-intercept?**

○ m= 0 , x= (3,0)

○ m= ∞ , x= (2,0)

○ m= 0 , x= (2,0)

○ m= ∞ , x= (3,0)

○ m= 2 , x= (0,0)

6. What is the equation of the new parabola created by shifting $y = x^2$, three units in the positive y-axis direction?

A. $y = (x+3)^2$

B. $y = x^2$

C. $y = x^2 + 3$

D. $3y = x^2$

E. $y = x^3$

○ A
○ B
○ C
○ D
○ E

7. **A sphere with diameter 1 unit is enclosed in a cube of side 1 unit each. Find the unoccupied volume remaining inside the cube.**

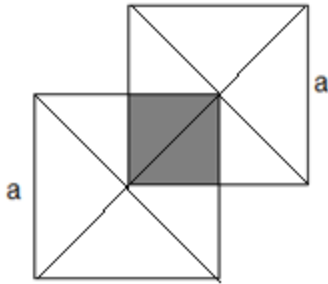○ ¼

○ 2π

○ $\pi/6-1$

○ $1-\pi/4$

○ $1-\pi/6$

8. The function $y=3x^2$ is shifted 2 units towards the positive x-axis (right) and 3 units towards the positive y-axis (up). Find the resulting function.

A. $y=3x^2+5$

B. $y=3x^2$

C. $y=3(x+2)^2+3$

D. $y=3(x-2)^2-3$

E. $y=3(x-2)^2+3$

○ A
○ B

9. **Find the shaded area when two squares with side 'a' intersect as shown in the figure below.**

A. 1/8 a^2

B. 1/4 a^2

C. a^2

D. 1/3 a^2

E. 2/5 a^2

A

B

C

D

E

10. **If the largest side of a triangle is A, and the other two sides are B and C. What relation exists between them?**

A=B+C

A+C

○ A>|B-C|

○ |B-C|

○ A=π(B-C)