# Math Level 1 SAT Practice Test 12

1. The table below shows the 2010 human population and projected 2025 human population for different regions. In which region is the greatest percent increase predicted?

Region	2010	2025
Africa	1,033,043	1,400,184
Asia	4,166,741	4,772,523
Latin America and the Caribbean	588,649	669,533
North America	351,659	397,522
Oceania	35,838	42,507

(A) Africa   (B) Asia   (C) Latin America and the Caribbean
(D) North America   (E) Oceania

2. $M(2,6)$ is the midpoint of $\overline{AB}$. If A has coordinates $(10,12)$, the coordinates of B are

(A) $(6,10)$ (B) $(-6,0)$ (C) $(-8,-4)$
(D) $(18,16)$ (E) $(22,18)$

3. When the figure below is spun around its vertical axis, the volume of the solid formed will be

6 cm

6 cm

    (A) 9π (B) 36π (C) 72π (D) 144π (E) 288π
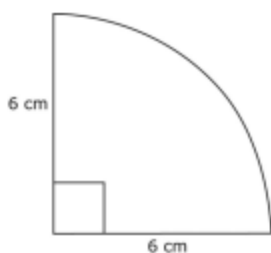
4. If $f(x) = \dfrac{x^2 + x - 6}{x^2 + 6x + 8}$, $f(2) =$

    (A) 0   (B) 5.75   (C) 6.25   (D) 24.5   (E) Undefined

5. A high school musical production sells student tickets for $5 each and adult tickets for $8 each. If the ratio of adult to student tickets purchases is 3:1, what is the average income per ticket sold?

    (A) $5.50   (B) $5.75   (C) $6.50   (D) $7.25   (E) $14.50

6. Due to poor economic conditions, a company had to lay off 20% of its workforce. When the economy improved, it was able to restore the number of employees to its original number. By what percent was the depleted workforce increased in order to return to the original number of employees?

    (A) 20   (B) 25   (C) 80   (D) 120   (E) 125

7. A value z is multiplied by $\dfrac{1}{3}$, $\dfrac{1}{2}$ is subtracted from the result, and the square root of the end result is 4. What was the original number?

    (A) $\dfrac{1}{2}$ (B) $5\dfrac{1}{6}$ (C) $15\dfrac{1}{2}$ (D) 16   (E) $49\dfrac{1}{2}$

8. If two fair dice are rolled, what is the probability that the sum of the dice is at most 5?

(A) $\dfrac{5}{36}$ (B) $\dfrac{6}{36}$ (C) $\dfrac{10}{36}$ (D) $\dfrac{26}{36}$ (E) $\dfrac{30}{36}$

9. If $\dfrac{5}{8}x+\dfrac{2}{3}=\dfrac{7}{12}$, then $\dfrac{1}{2}x=$

(A) $\dfrac{-1}{15}$ (B) $\dfrac{-2}{15}$ (C) 1   (D) 2   (E) 4

10. $\left(\dfrac{x^2-2x-8}{x^2-4}\right)\left(\dfrac{6-3x}{20-5x}\right)=$

(A) $\dfrac{-3}{5}$ (B) $\dfrac{3}{5}$ (C) $\dfrac{3(x+4)(2-x)}{5(x+2)(4-x)}$

(D) $\dfrac{3(x+4)(x-2)}{5(x+2)(x-4)}$ (E) $\dfrac{3(x+4)}{5(4-x)}$

11. If $i^2=-1$, then $(5+6i)^2=$

(A) -11 (B) $-11+11i$ (C) $-11+30i$ (D) $-11+60i$
(E) 61

12. The mean of 48, 27, 36, 24, x, and $2x$ is 37. $x=$

(A) $13\dfrac{1}{3}$ (B) $16\dfrac{2}{3}$ (C) 29   (D) $33\dfrac{3}{4}$ (E) 40

13. $\sqrt[3]{32x^6y^8}=$

(A) $4x^3y^4\sqrt[3]{2}$ (B) $2x^2y^4\sqrt[3]{4}$ (C) $2x^2y^3\sqrt[3]{4y^2}$

(D) $2x^2y^2\sqrt[3]{4y^2}$ (E) $2x^2y^3\sqrt[3]{2y^2}$

14. A circle is inscribed in a square of side length 6. The area of the region inside the square but outside the circle is

(A) 36π (B) $36\pi-9$ (C) $36\pi-36$
(D) $36-9\pi$ (E) $9\pi-36$

15. If the binary operation $a \# b = a^b - \sqrt{b}$, then $(2 \# 4) - (4 \# 2) =$

   (A) –32   (B) $\sqrt{2} - 2$ (C) 0   (D) $\sqrt{2} - 2$ (E) 32

16. Of the 45 countries in Europe, 7 get 100% of their natural gas from Russia, and 6 get 50% of their natural gas from Russia. If 25% of all the natural gas imported into Europe comes from Russia, what is the average percent of imported natural gas from Russia for the remaining countries in Europe?

    (A) 3.9%   (B) 20%   (C) 25%   (D) 75%   (E) 78.1%

17. $A(-3,9)$ and $B(9,-1)$ are the endpoints of the diameter of a circle. The equation for this circle is

    (A) $(x - 3)^2 + (y - 4)^2 = 61$ (B) $(x - 7)^2 + (y + 4)^2 = 269$
    (C) $(x + 7)^2 + (y - 4)^2 = 61$ (D) $(x + 3)^2 + (y + 4)^2 = 169$
    (E) $(x + 3)^2 + (y - 4)^2 = 25$

18. Isosceles trapezoid $ACDE$ with $\overline{AC} \parallel \overline{DE}$ is shown below. E is the midpoint of AB, and $BD = DC$ and $BC = DE$.
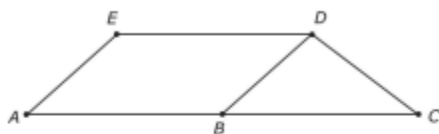
    The ratio of the area of triangle BDC to trapezoid $ACDE$ is

    (A) 1:2   (B) 1:3   (C) 1:4   (D) 1:5   (E) 1:6

19. If $3\begin{bmatrix} 2 & 3 \\ -4 & 1 \end{bmatrix} - 2\begin{bmatrix} x & y \\ 3 & 4 \end{bmatrix} = \begin{bmatrix} 10 & 11 \\ z & -5 \end{bmatrix}$, then $x + y - z =$

    (A) –21   (B) –15   (C) 0   (D) 15   (E) 21

20. If $f(x) = 5x + 3$ and $g(x) = x^2 - 1$, then $f(g(2)) =$

    (A) 3   (B) 13   (C) 18   (D) 39   (E) 168