Math Level 1 SAT Practice Test 18

20. If $xyz \neq 0$, then $\frac{2x^3y^2z}{8x^2y^3z^2} =$

(A) $4xyz$

(B) $\frac{4x}{yz}$

(C) $\frac{xyz}{4}$

(D) $\frac{xy}{4z}$

(E) $\frac{x}{4yz}$

21. If $f(x) = -x^2 - 3$ and $g(x) = 3 - x^2$, what is the value of $f(f(g(7)))$?

(A) –46

(B) –2119

(C) –73207

(D) –4490164

(E) –7295398

22. A polygon Q with a certain perimeter P will have its greatest area when all of its sides have the same length. What is the maximum area of a rectangle with a perimeter of P units?

(A) $\frac{P^2}{16}$

(B) $\frac{P^2}{4}$

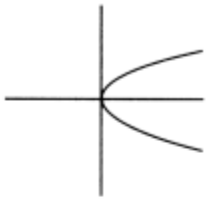
(C) P^2

(D) $2P^2$

(E) $4P^2$

23. Which of the following graphs is NOT the graph of a function?

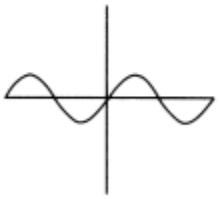
(A)



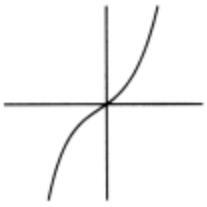
(B)

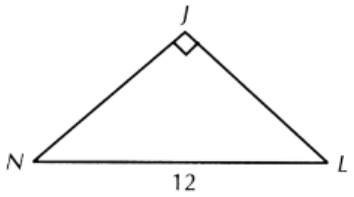
(C)

(D)



(E)





24. In the figure above, if $\sin N = \frac{\sqrt{5}}{2}$, then $\overline{JL}$ =

(A) 26.83
(B) 13.42
(C) 6.71
(D) 1.12
(E) 0.37

25. An equation for the circle with its center at the origin and passing through the point (1,2) is

(A) $x^2 + y^2 = \sqrt{5}$
(B) $x^2 + y^2 = 3$
(C) $x^2 + y^2 = 5$
(D) $x^2 + y^2 = 9$
(E) $x^2 + y^2 = 25$

26. How many integers are in the solution set of $|1 - 3x| < 5$?

(A) None
(B) One
(C) Two
(D) Three
(E) Infinitely many

27. If x, y, and z are positive integers such that $4x + 6y = z$, then z must be divisible by

(A) 2
(B) 4
(C) 6
(D) 10
(E) 24

28. If the points (–2,4), (3,4), and (3, –2) are connected to form a triangle, the area of the triangle is

(A) $\frac{11}{2}$
(B) 6
(C) 12
(D) 15
(E) 24

29. If $i^2 = -1$ and if $k = 2 + i$, then k^2 =

(A) 1
(B) $3 + 4i$
(C) $4 + 3i$
(D) $6 + 7i$
(E) $9 + 12i$

30. If a line contains the points (–2, 1) and (4,4), then the x–intercept is

(A) –4
(B) $-\frac{1}{2}$
(C) 0
(D) $\frac{2}{3}$
(E) $\frac{3}{2}$

31. In Figure 7, if the radius of the circle is r, then the ratio $\frac{\text{area of the larger square}}{\text{area of the smaller square}}$ =

(A) $\frac{2\sqrt{2}}{1}$
(B) $\frac{2}{1}$
(C) $\frac{\sqrt{2}}{1}$
(D) $\frac{1}{\sqrt{2}}$
(E) $\frac{1}{2}$

Figure 7

32. $f(\theta) = \sin^2 4\,\theta + \cos^2 4\,\theta$, find $f(72°)$

(A) –.71
(B) –.22
(C) 1.0
(D) 1.26
(E) 4.0

33. If $f(x) = 3x - 2$ and $g(f(x)) = x$, then $g(x) =$

(A) $3x + 2$

(B) $2 - 3x$

(C) $\frac{1}{3x-2}$

(D) $\frac{x}{3}+2$

(E) $\frac{x+2}{3}$

34. In Figure 8, if $AC \parallel GE$ and $GF = x$ and $FE = y$, then the ratio $\frac{\text{area } \Delta\ BCD}{\text{area } \Delta BCA} =$

(A) $\frac{x}{y}$

(B) $\frac{y}{x}$

(C) $\frac{x}{x+y}$

(D) $\frac{y}{x+y}$

(E) $\frac{y}{2(x+y)}$

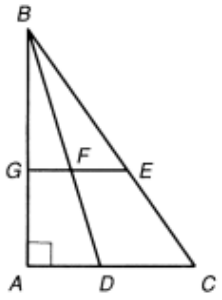


Figure 8

35. If $\frac{1}{a}+\frac{1}{b}=\frac{1}{c}$, then $c =$

(A) $\frac{1}{ab}$

(B) ab

(C) $\frac{a+b}{ab}$

(D) $\frac{ab}{a+b}$

(E) $\frac{2ab}{a+b}$

36. If $x^3y^2z < 0$, then it must be true that

(A) $x^3 < 0$

(B) $z < 0$

(C) $xy < 0$

(D) $xz < 0$

(E) $yz < 0$

37. If the slope of a line is 3 and the y–intercept is 2, then the x–intercept of the line is

(A) $-\frac{3}{2}$

(B) $-\frac{2}{3}$

(C) -1

(D) $\frac{2}{3}$

(E) $\frac{3}{2}$

38. For the right triangle in Figure 9, all of the following statements are true EXCEPT:

(A) $\sin \theta = \frac{b}{c}$

(B) $\tan \sigma = \frac{a}{b}$

(C) $\cos \theta = \frac{c}{a}$

(D) $\sin \theta = \cos \sigma$

(E) $\cot \sigma = \tan \theta$

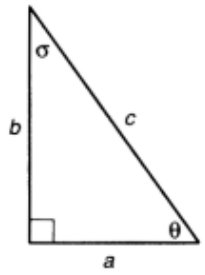


Figure 9

20. E 21. D 22. A 23. A 24. B 25. C 26. D 27. A 28. D 29. B 30. A 31. B 32. C 33. E 34. D 35. D 36. D 37. B 38. C