Math Level 1 SAT Practice Test 13

21. Chords $\overline{AB}$ and $\overline{CD}$ of circle O intersect at point E. If $CE = 3$, $ED = 12$, and AE is 5 units longer than EB, $AB =$

(A) 4 (B) 9 (C) 11 (D) 13 (E) 18

22. Which is the equation of the line perpendicular to $4x - 5y = 17$ that passes through the point (5,2)?

(A) $4x - 5y = 10$ (B) $5x + 4y = 33$ (C) $4x + 5y = 30$

(D) $5x - 4y = 17$ (E) $y = \frac{-5}{4}x + \frac{15}{2}$

23. A stone is thrown vertically into the air from the edge of a building with height 12 meters. The height of the stone is given by the formula $h = -4.9t^2 + 34.3t + 12$. What is the maximum height, in meters, of the stone?

(A) 3.5 (B) 12 (C) 72.025 (D) 114.9 (E) 468.2

24. In $\triangle ABC$, $AB = 40$, the measure of angle $B = 50°$, and $BC = 80$. The area of $\triangle ABC$ to the nearest integer is

(A) 613 (B) 1024 (C) 1226 (D) 2240 (E) 2252

25. If $\frac{a+b}{2} = 4$, and a and b are non-negative integers, which of the following cannot be a value of ab?

(A) 0 (B) 7 (C) 14 (D) 15 (E) 16

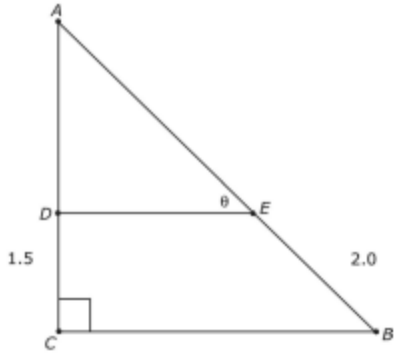
26. The perpendicular bisector of the segment with endpoints (3,5) and (–1,–3) passes through

(A) (–5,2) (B) (–5,3) (C) (–5,4)
(D) (–5,5) (E) (–5,6)

27. The difference between the product of the roots and the sum of the roots of the quadratic equation $6x^2 - 12x + 19 = 0$ is

(A) $\frac{7}{6}$ (B) $\frac{31}{6}$ (C) $\frac{7}{12}$ (D) $\frac{31}{12}$ (E) $-\frac{7}{6}$

28. In right triangle ABC, $\overline{DE} \parallel \overline{BC}$, $CD = 1.5$, and $BE = 2.0$.



The sine of angle θ is equal to

(A) $\frac{1}{2}$ (B) $\frac{3}{4}$ (C) $\frac{\sqrt{2}}{2}$ (D) $\frac{\sqrt{3}}{2}$ (E) $\frac{3}{5}$

29. *QUEST* is a pentagon. The measure of angle $Q = 3x - 20$, the measure of angle $U = 2x + 50$, the measure of angle $E = x + 30$, the measure of angle $S = 5x - 90$, and the measure of angle $T = x + 90$. Which two angles have equal measures?

(A) E and S (B) Q and U (C) U and T
(D) T and E (E) U and E

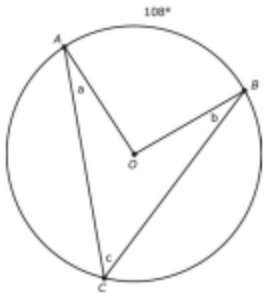
30. The vertices of triangle PQR are $P(-3,2)$, $Q(1,-4)$, and $R(7,0)$. The altitude drawn from Q intersects the line PR at the point

(A) (1,2) (B) (2,1) (C) (1,–2)
(D) (–3,2) (E) (7,0)

31. If q is a positive integer > 1 such that $q^{3n^{2}-n-4} = 1$, $n =$

(A) 1 (B) –1 (C) 1, $\frac{-4}{3}$ (D) –1, $\frac{4}{3}$ (E) $\frac{1 \pm i\sqrt{47}}{6}$

32. The measure of arc AB in circle O is 108°.



$\frac{a+b+c}{3} =$

(A) 18 (B) 27 (C) 36 (D) 45 (E) 54

33. Alex observed that the angle of elevation to the top of 800-foot Mount Colin was 23°. To the nearest foot, how much closer to the base of Mount Colin must Alex move so that his angle of elevation is doubled?

(A) 200 (B) 400 (C) 489 (D) 1112 (E) 1600

34. If $f(x) = \frac{x^2+x-6}{x^2-6x+8}$, solve $f(x) = 3$.

(A) {–5, –1} (B) {2, 7.5} (C) $\left\{\frac{1+3\sqrt{7}}{2}, \frac{1-3\sqrt{7}}{2}\right\}$

(D) $\left\{\frac{17+\sqrt{73}}{6}, \frac{17-\sqrt{73}}{6}\right\}$ (E) ∅

35. In $\triangle QRS$, X is on $\overline{QR}$ and Y is on $\overline{QS}$, so that $\overline{XY} \parallel \overline{RS}$ and $\frac{QX}{XR} = \frac{1}{4}$. The ratio of the area of $\triangle QXY$ to the area of trapezoid $XYSR$ is

(A) 1:4 (B) 1:15 (C) 1:16 (D) 1:24 (E) 1:25

36. In quadrilateral $KLMN$, $KL = LM$, $KN = MN$, and diagonals $\overline{KM}$ and $\overline{NL}$ intersect at P. If $KP = PM$, then which of the following statements is true?

I. $NP = PL$.
II. $KLMN$ is a rhombus.
III. The area of $KLMN$ is $\frac{1}{2}(KM)(NL)$.

(A) I only (B) II only (C) III only
(D) II and III only (E) I and III only

37. If $7x + 9y = 86$ and $4x - 3y = -19$, $x + 4y =$

(A) $-31\frac{18}{19}$ (B) $22\frac{1}{3}$ (C) $31\frac{18}{19}$ (D) 35 (E) 105

38. The solution set to $10x^2 + 11x - 6 \le 0$ is

(A) $-0.4 \le x \le 1.5$ (B) $-1.5 \le x \le 0.4$ (C) $x \le -0.4$ or $x \ge 1.5$

(D) $x \le -1.5$ or $x \ge 0.4$ (E) $-1.5 \le x \le -0.4$

39. In simplest form, $\dfrac{2-\dfrac{1}{x-3}}{1-\dfrac{1}{3-x}}$ is equivalent to

(A) $\frac{2x-7}{x-2}$ (B) $\frac{7-2x}{x-2}$ (C) $\frac{2x-5}{x-2}$

(D) $\frac{2x+7}{x-2}$ (E) 1

40. In right triangle QRS, QR is perpendicular to RS, $QR = 12$, and $RS = 12\sqrt{3}$. The area of the circle that circumscribes triangle QRS is

(A) 108π (B) 144π (C) 288π (D) 576π (E) 1728π