SAT Math Level 1 Practice Paper

SAT Math Level 1 Practice Paper 4

1.

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3 | 7 9
4 | 4 5 6 6 7
5 | 0 2 3 3 4 4 4 8 8
6 | 0 1 5 5
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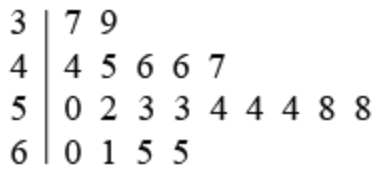
$3 \mid 7 = 37$ inches

The stem-and-leaf plot above gives the height, in inches, of evergreens in a nursery. What percent of the evergreens are over 55 inches tall?
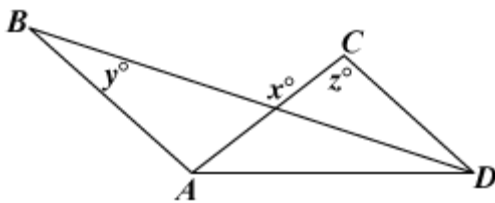**Select an Answer**
A 20 percent sign
B 25 percent sign
C 30 percent sign
D 40 percent sign
E 70 percent sign

2. **A band wants to distribute its music on compact discs (CDs). The equipment to produce the CDs costs $ 250, and blank CDs cost $ 5.90 for a package of 10. Which of the following represents the total cost, in dollars, to produce n CDs, where n is a multiple of 10?**
Select an Answer
A. left parenthesis 250 plus 0.59 right parenthesis n
B. 250 invisible times plus text   end text 0.59 n
C. left parenthesis 250 invisible times plus 5.90 right parenthesis n
D. 250 invisible times plus 5.90 n
E. 250 n plus 5.90

3.

In the figure above $\overline{AB}$ and $\overline{CD}$ are parallel. What is x in terms of y and z?
Select an Answer

A. y plus z
B. 2 y plus z
C. 2 y minus z
D. 180 minus y minus z
E. 180 plus y minus z

4. A number n is increased by 8. If the cube root of that result equals - 0.5, what is the value of n?
Select an Answer
A. - 15.625
B. - 8.794
C. - 8.125
D. - 7.875
E. 421.875

5. Tickets for a show cost $3 or $5. If 50 tickets were sold for a total of $230, how many tickets were sold for $3?
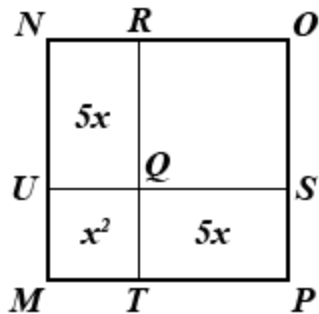Select an Answer
A. 10
B. 20
C. 25
D. 30
E. 40

6. The sum of the two roots of a quadratic equation is 5 and their product is - 6. Which of the following could be the equation?
Select an Answer:
A. $x^2 - 6x + 5 = 0$
B. $x^2 - 5x - 6 = 0$
C. $x^2 - 5x + 6 = 0$
D. $x^2 + 5x - 6 = 0$
E. $x^2 + 6x + 5 = 0$

7.

The figure above shows a square region divided into four rectangular regions, three of which have areas $5x$, $5x$, and x^2, respectively. If the area of $MNOP$ is 64, what is the area of square $QROS$?
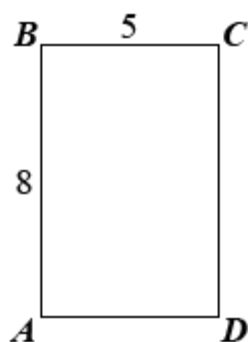
Select an Answer
A. 9
B. 25
C. 30
D. 34
E. 39

8. In the $xy-plane$, the points with coordinates $(0,-5)$ and $(6,-2)$ lie on line l. Line p contains the point with coordinates $(-5,0)$ and is perpendicular to line l. What is the $x-coordinate$ of the point where lines l and p intersect?

A. - 6
B. - 5
C. - 4
D. - 3
E. - 2

9.

If rectangle $ABCD$ **in the figure above is rotated about side** AB **, it generates a cylinder of volume**

A. 40π
B. 50π
C. 100π
D. 200π
E. 320π

10. A pole 12 meters tall is perpendicular to level ground. A taut wire that is 20 meters long extends from the top of the pole to the ground. What is the angle of elevation, to the nearest degree, from the bottom of the wire to the top of the pole?

A. $31°$
B. $35°$
C. $37°$
D. $53°$
E. $59°$

11.
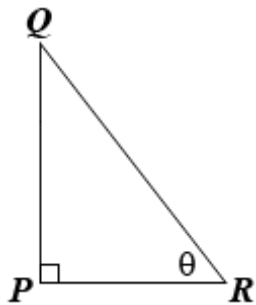
In the figure above, if $\dfrac{PQ}{QR} = \dfrac{2}{3}$, then $\tan\theta =$

A. $\dfrac{2}{5}$
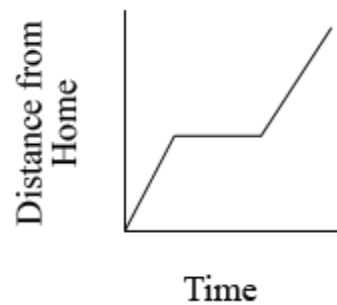
B. $\dfrac{2}{\sqrt{5}}$

C. $\dfrac{3}{\sqrt{5}}$
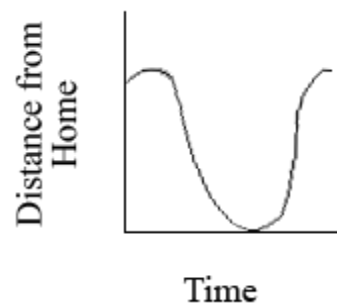
D. $\dfrac{\sqrt{5}}{2}$

E. $\dfrac{\sqrt{5}}{3}$

12. Ralph was on his way from home to work when he remembered that he left his briefcase at home. He drove home and then drove back to work. Which of the following graphs could represent his distance from home as a function of time?

A.

B.

C.

Distance from Home vs. Time

D.

Distance from Home vs. Time

E.

Distance from Home vs. Time
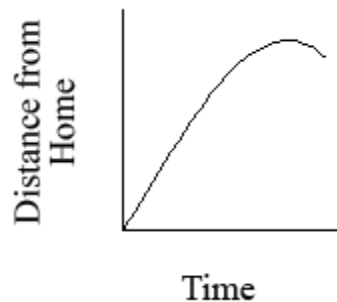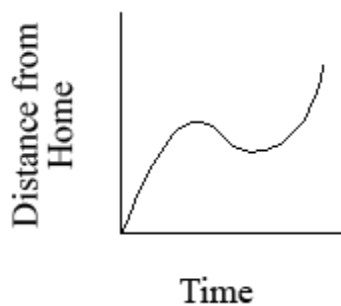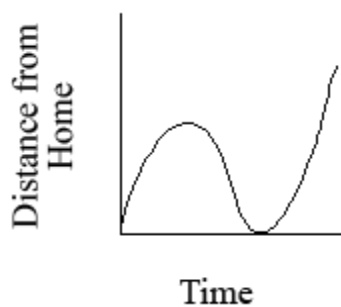
13. The function f, where $f(x) = (1+x)^2$, is defined for $-2 \leq x \leq 2$. What is the range of f?

A

$0 \leq f(x) \leq 4$

B

$0 \leq f(x) \leq 9$

C

$1 \leq f(x) \leq 4$

D

$1 \leq f(x) \leq 5$

E

$1 \le f(x) \le 9$

14. What is the least positive integer that has the same number of positive factors as 175?

A
    8

B
    10

C
    12

D
    16

E
    18

15. If a and b are real numbers, $i^2 = -1$, and $(a+b)+5i = 9+ai$, what is the value of b?

A
    4

B
    5

C
    9

D
    $4+5i$

E
    $5+4i$

16. What are all values of x for which $4-x^2 \ge x-2$?

A
    $x \ge -3$

B

$-5 \le x \le 0$

C

$-3 \le x \le 2$

D

$x \le -3$ or $x \ge 2$

E

$-2 \le x \le 3$

17. If $\log_c a = x$, which of the following must be true?

A

$a^c = x$

B

$a^x = c$

C

$c^a = x$

D

$c^x = a$

E

$x^c = a$

18. If $f(x) = x + 3$ and $g(x) = \dfrac{x^2 - 9}{x - 3}$, which of the following statements are true about the graphs of f and g in the $xy - \text{plane}$?

| I.	The graphs are exactly the same.
II.	The graphs are the same except when $x = 3$.
III.	The graphs have an infinite number of points in common.

A   I only
B   II only
C   III only
D   I and III

19. Twenty students have each sampled one or more of three kinds of candy bars that a school store sells. If 3 students have sampled all three kinds, and 5 have sampled exactly two kinds, how many of these students have sampled only one kind?

A   8
B   12
C   15
D   17
E   18

20.
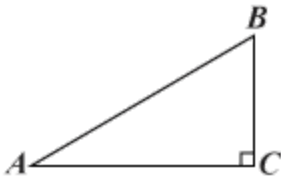
Note: Figure not drawn to scale.

In the figure above, $\triangle ABC$ has a right angle at C. If the length of side $\overline{AC}$ is 10 and the measure of $\angle BAC$ is $22°$, what is the length of side $\overline{BC}$?

A   3.7
B   4.0
C   5.8
D   6.8
E   9.3

21. If $f(x) = x^4 - 3x^3 - 9x^2 + 4$, for how many real numbers k does $f(k) = 2$?

A   None
B   One
C   Two
D   Three
E   Four

22. Marigolds are to be planted inside a circular flower garden so that there are 4 marigolds per square foot. The circumference of the garden is 20 feet. If marigolds are available only in packs of 6, how many packs of 6 flowers are needed?

A   6
B   13
C   14
D   20
E   22

23. The line with equation $y=7$ is graphed on the same $xy-plane$ as the circle with center $(4,5)$ and radius 3. What are the $x-coordinates$ of the points of intersection of the line and the circle?

A -5 and 5
B -1 and 1
C 1.35 and 6.65
D 1.76 and 6.24
E 2 and 6

24. The dimensions of a rectangular solid are 3 inches by 4 inches by 5 inches. The length of each edge of the solid is to be increased by 20%. What is the surface area, in square inches, of the new solid?

A   86.4
B   94
C   112.8
D   135.4
E   162.4

25.

| $X = \{2,3,4,5,6,7,8,9\}$ |
| --- |
| $Y = \{0,1\}$ |

$Z = \{0,1,2,3,4,5,6,7,8,9\}$

Before 1990, telephone area codes in the United States were three-digit numbers of the form xyz. Shown above are sets X, Y, and Z from which the digits x, y, and z, respectively, were chosen. How many possible area codes were there?

A   919

B   160

C   144

D   126

E   20

26. The numbers 3, 5, and 7 are three consecutive odd numbers that are prime. How many other triplets of consecutive odd numbers greater than 1 consist entirely of primes?

A   None
B   One
C   Two
D   Three
E   More than three

27.

2000 POPULATION
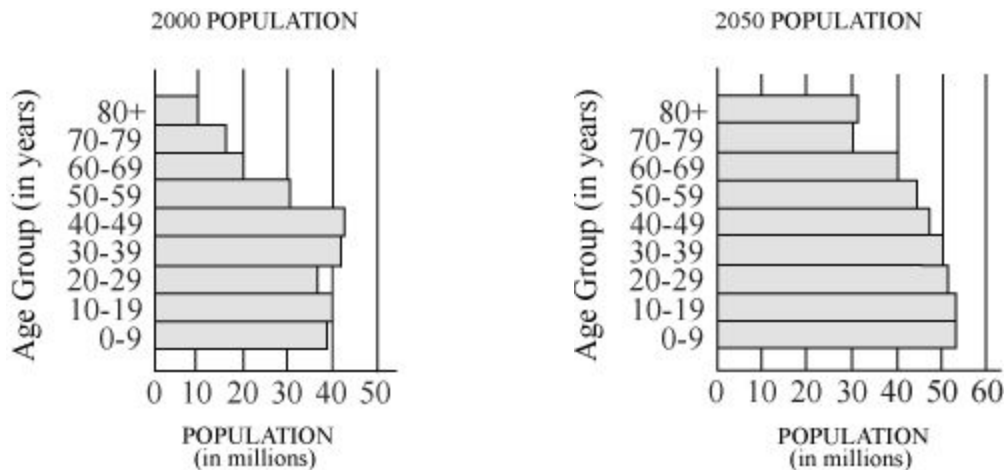
2050 POPULATION

The graphs above show United States Census Bureau population figures for the year 2000 for various age groups, together with projections for the year 2050. Of the following age groups, for which is the projected percent increase in population from 2000 to 2050 greatest?

A $30-39$

B $40-49$

C $50-59$

D $60-69$

E $70-79$

28. If line ℓ is the perpendicular bisector of the line segment with endpoints $(2,0)$ and $(0,-2)$, what is the slope of line ℓ ?

A 2

B 1

C 0

D -1

E -2

29. The function h given by $h(t) = -16t^2 + 46t + 5$ represents the height of a ball, in feet, t seconds after it is thrown. To the nearest foot, what is the maximum height the ball reaches?

A 5

B 23

C 35

D 38

E 46

30. The front, side, and bottom faces of a rectangular solid have areas of 24 square centimeters, 8 square centimeters, and 3 square centimeters, respectively. What is the volume of the solid, in cubic centimeters?

A 24

B 96

C 192

D 288

E 576

31.
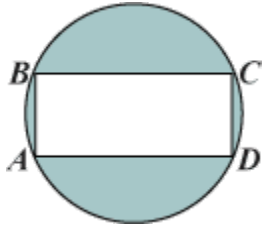
Rectangle $ABCD$ is inscribed in the circle shown above. If the length of side $\overline{AB}$ is 5 and the length of side $\overline{BC}$ is 12, what is the area of the shaded region?

A 40.8

B 53.1

C 72.7

D 78.5

E 81.7

32.

Time t (years)	0	1	2	5
Value $v(t)$ (dollars)	15,000	13,000	10,900	3,000

When purchased, an automobile is valued at $15,000. Its value depreciates at the rate shown in the table above. Based on a least-squares linear regression, what is the value, to the nearest hundred dollars, of the automobile when $t = 4$?

A $5,400

B $5,500

C $5,600

D $6,400

E $7,000