ACT Math Practice Test 2

Direction: For each problem, choose the correct answer. You are allowed to use a calculator on this test for any problems you choose. Unless the problem states otherwise, you should assume that figures are not drawn to scale. For this test, all geometric figures lie in a plane, the word line refers to a straight line, and the word average refers to the arithmetic mean.

Q1. How is five hundred twelve and sixteen-thousandths written in decimal form?

- A). 512.016
- B). 512.16
- C). 512,160
- D). 51.216
- E). 512.0016

Answers: _____

Q2. Simplify $|3 - 11| + 4 \times 2^3$

- A). 421
- B). 520
- C). -10
- D). 40
- E). 28

Answers: _____

Q3. The ratio of boys to girls in a math class is 4 to 5. If there are 18 students in the class, how many are boys?

- A). 2
- B). 4
- C). 8
- D). 12
- E). 13

Answers: _____

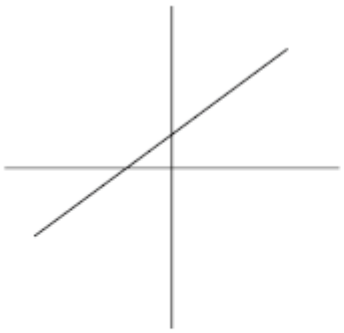
Q4. What is the median of 0.024, 0.008, 0.1, 0.024, 0.095, and 0.3?

- A). 0.0595
- B). 0.0969
- C). 0.055
- D). 0.0566
- E). 0.95

Answers: _____

Q5. Which of the following is NOT the graph of a function?

a.



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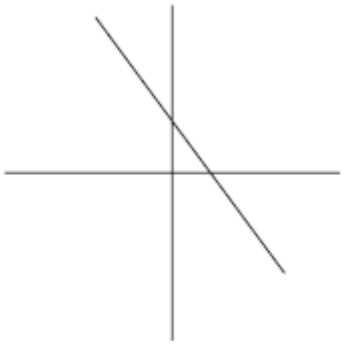

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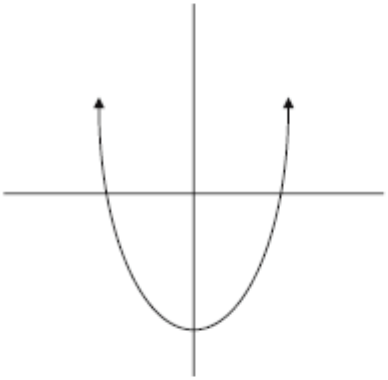

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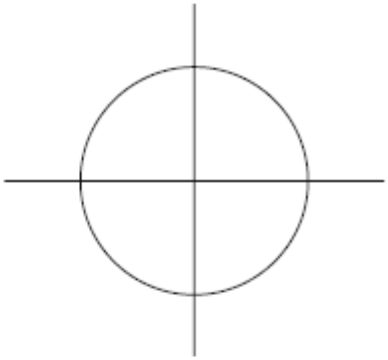
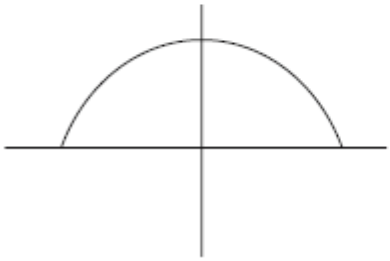


e.



Answers: _____

Q6. What is the value of x^5 for x = –3?

- A). –243
- B). 243
- C). –43
- D). 43
- E). 13

Answers: _____

Q7. What is the next number in the following pattern? 0, 3, 8, 15, 24, . . .

- A). 34
- B). 35
- C). 36
- D). 37
- E). 33

Answers: _____

Q8. What is the prime factorization of 84?

- A). 42 × 2
- B). 7 × 2 × 3
- C). $2^2 \times 3 \times 7$

- D). $2^2 \times 6 \times 7$
- E). $2^3 \times 7$

Answers: _____

Q9. Find the slope of the line 7x = 3y − 9.

- A). 3
- B). −9
- C). 3/7
- D). −3
- E). 7/3

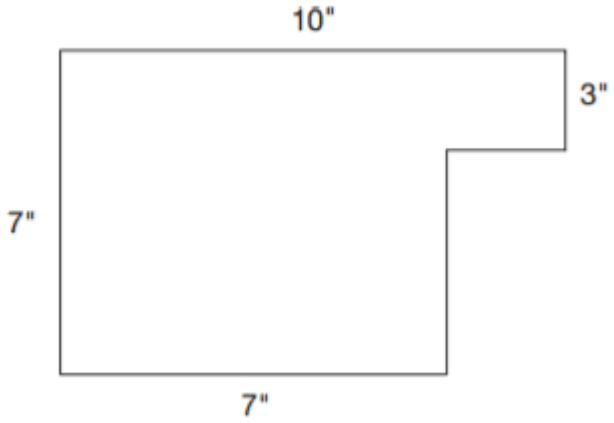
Answers: _____

Q10. The perimeter of a rectangle is 20 cm. If the width is 4 cm, find the length of the rectangle.

- A). 5 cm
- B). 6 cm
- C). 15 cm
- D). 25 cm
- E). 32 cm

Answers: _____

Q11. Find the area of the following figure



- A). 58 sq. in.
- B). 18 sq. in.
- C). 51 sq. in.
- D). 39 sq. in.
- E). 98 sq. in.

Answers: _____

Q12. Five cans of tomatoes cost $6.50. At this rate, how much will nine cans of tomatoes cost?

- A). $13.00
- B). $11.70
- C). $3.30
- D). $4.70
- E). $13.70

Answers: _____

13. For all $x \neq 0$, $\frac{2}{3x} + \frac{1}{5} =$

a. $\frac{2}{15x}$

b. $\frac{10 + 3x}{15 + x}$

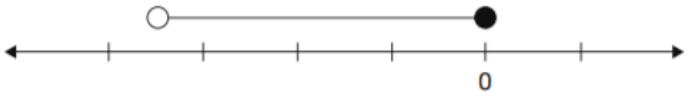
c. $\frac{3}{3x + 15}$

d. $\frac{10 + 3x}{15x}$

e. $\frac{1}{5x}$

Answers: _____

Q14. Which inequality best represents the following graph?



- A). $-1.5 > x > -1$
- B). $x \leq 0$
- C). $-0.5 > x > 0$
- D). $-1.5 < x \leq 0$
- E). $-1.5 \leq x \leq 0$

Answers: _____

Q15. Simplify $-(6x^4y^3)^2$

- A). $-3^6x^6y^5$
- B). $-36x^8y^6$
- C). 3^66x^22y
- D). $-36xy$
- E). $-36x^2y$

Answers: _____

Q16. If $2x + 3y = 55$ and $4x = y + 47$, find $x - y$

- A). 6
- B). 12
- C). 24
- D). 28
- E). 32

Answers: _____

Q17. Simplify $3\sqrt{16x^5y^4}$

- A). $2xy\ 3\sqrt{2x^2}$
- B). $8xy\ 3\sqrt{2}$
- C). $2xy\ 3\sqrt{xy}$
- D). $2x^2y$
- E). $4x^2y^2$

Answers: _____

Q18. The formula to convert Celsius to Fahrenheit is where $F= \frac{9}{5} C + 32$ **is degrees Fahrenheit, and C is degrees Celsius. What Fahrenheit temperature is equivalent to 63°C?**

- A). 35°
- B). 49°
- C). 67°
- D). 89°
- E). 97°

Answers: _____

Q19. What are the solutions to the equation x2 + 8x + 15 = 0?

- A). {8,15}
- B). {0}
- C). {−5,−3}
- D). {−8,−13}
- E). {2,4}

Answers: _____

Q20. If 5k = 9m − 18, then m =

- A). 5k + 18
- B). (5k+18) / 9
- C). −9 + 5k
- D). (5k + 9) / 9
- E). 9k + 18

Answers: _____

Q21. What are the solutions of the equation 5x − 7 = 5(x + 2)?

- A). {2}
- B). {7}
- C). all positive numbers
- D). all real numbers

- E). empty set

Answers: _____

Q22. \frac{4x^2 + 11x - 3} {x+3} $\frac{4x^2+11x-3}{x+3}$ for all **x ≠ −3**

- A). $3x^2 + 11$
- B). $2x + 1$
- C). $4x^2 + 1$
- D). $10x - 6$
- E). $4x - 1$

Answers: _____

23. If $x = \begin{pmatrix} 3 & 4 \\ 5 & 6 \end{pmatrix}$ and $y = \begin{pmatrix} -2 & 4 \\ -1 & 0 \end{pmatrix}$, find $x - y$.

a. $\begin{pmatrix} 5 & 0 \\ 6 & 6 \end{pmatrix}$

b. $\begin{pmatrix} -5 & 0 \\ -6 & -6 \end{pmatrix}$

c. $\begin{pmatrix} 1 & 8 \\ 4 & 6 \end{pmatrix}$

d. $\begin{pmatrix} 4 & 1 \\ 2 & 8 \end{pmatrix}$

e. $\begin{pmatrix} 6 & 1 \\ 2 & 5 \end{pmatrix}$

Answers: _____

Q24. If $\log_3 x = 2$, then x =

- A). 6
- B). 9
- C). ¼
- D). ½
- E). ¾

Answers: _____

Q25. The vertices of a triangle are A(−1,3), B(3,0), and C(−2,−1). Find the length of side AC.

- A). √15
- B). √17

- C). $1\sqrt{5}$
- D). $\sqrt{7}$
- E). $1\sqrt{7}$

Answers: _____

Q26. Which of the following equations has a graph that has a y-intercept of 4 and is parallel to 3y − 9x = 24?

- A). −12x + 4y = 16
- B). 9x − 3y = −15
- C). 2y = 4x + 8
- D). 7y = 14x + 7
- E). 3x − 9y = 14

Answers: _____

Q27. The best approximation of \sqrt{37} × \sqrt{125}37×125

- A). 52
- B). 1058
- C). 2566
- D). 138
- E). 66

Answers: _____

Q28. If a coin is flipped and a number cube is rolled, what is the probability of getting tails and 3?

- A). ¼
- B). ½
- C). ¾
- D). 1/12
- E). 2/10

Answers: _____

Q29. What is ½% of 90?

- A). 0.04
- B). 0.145
- C). 45
- D). 0.45
- E). 145

Answers: _____

Q30. Mike has 12 bags of shredded cheese for making pizzas. If he uses ¾ of a bag of cheese for each pizza, how many pizzas can he make?

- A). 6
- B). 8
- C). 16
- D). 32
- E). 49

Answers: _____

Q31. Greene ran the 100-meter dash in 9.79 seconds. What was his speed in km/h (rounded to the nearest km)?

- A). 3 km/h
- B). 7 km/h
- C). 17 km/h
- D). 37 km/h
- E). 47 km/h

Answers: _____

Q32. Larry has 4 pairs of pants, 6 pairs of socks, and 10 shirts in his dresser. How many days could Larry go without wearing the same combination of 1 pair of pants, 1 pair of socks, and 1 shirt?

- A). 5
- B). 52
- C). 152
- D). 382
- E). 452

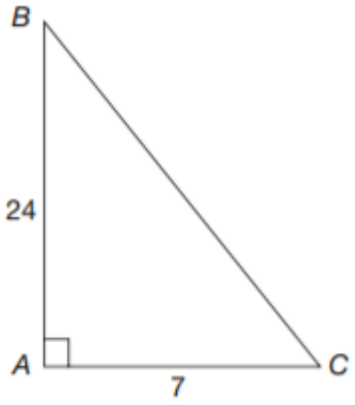
Answers: _____

Q33. What is the product of 5×10^{-4} and 6×10^{8}?

- A). 3×10^{5}
- B). 7×10^{4}
- C). 1.1×10^{-5}
- D). 3.6×10^{-4}
- E). 5.6×10^{4}

Answers: _____

Q34. What is the sine of angle B in the triangle?



- A). 7/25
- B). 5/27
- C). 9/28
- D). 3/ 37
- E). 4/39

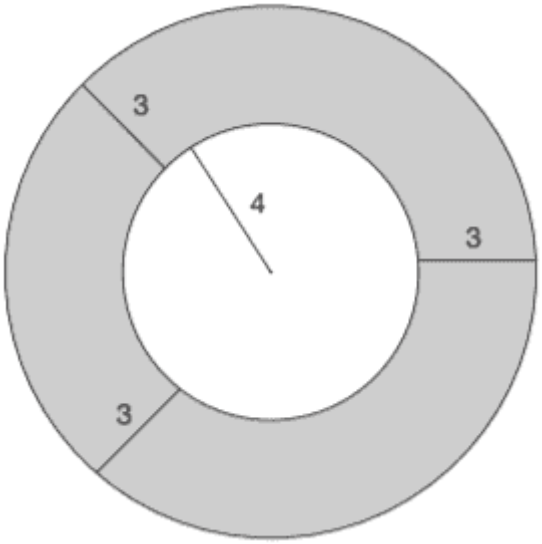
Answers: _____

Q35. If the surface area of a box is found by taking the sum of the areas of each of the faces of the box, what is the surface area of a box with dimensions 6 in. by 8 in. by 10 in.?

- A). 76 sq. in.
- B). 176 sq. in.
- C). 276 sq. in.
- D). 376 sq. in.
- E). 476 sq. in.

Answers: _____

Q36. Find the area of the shaded region.



- A). 6π
- B). 16π
- C). 33π
- D). 62π
- E). 77π

Answers: _____

Q37. The area of square WXYZ is 100 sq. cm. Find the length of diagonal WY in cm.

- A). 10 √2 cm
- B). 20 √2 cm
- C). 10 cm
- D). 15 cm
- E). 10 √5 cm

Answers: _____

Q38. Which of the following could be the value of x when y is equal to 15 for the equation y = 4×2 − 1?

- A). –1
- B). –2
- C). –4
- D). 0
- E). √2

Answers: _____

Q39. At Roosevelt High, Kristen won the election for class president with 60% of the vote. Of that 60%, 75% were female. If 540 students voted, how many female students voted for Kristen?

- A). 149
- B). 243
- C). 278
- D). 313
- E). 416

Answers: _____

Q40. If cos θ = 12/13 and tan θ = 5/12 , then sin θ =

- A). 5/13
- B). 7/9
- C). 5/11
- D). 12/5
- E). 13/5

Answers: _____

Q41. The formula for the volume of a rectangular solid is V = lwh. If each dimension is tripled, how many times the original volume will the new volume be?

- A). 3
- B). 9
- C). 27
- D). 89
- E). 173

Answers: _____

Q42. In a right triangle, the two non-right angles measure 7x and 8x. What is the measure of the smaller angle?

- A). 15°
- B). 27°
- C). 42°
- D). 49°
- E). 61°

Answers: _____

Q43. The length of a rectangle is twice the width. If the perimeter of the rectangle is 72 feet, what is the length of the rectangle?

- A). 3
- B). 7
- C). 12
- D). 24
- E). 32

Answers: _____

Q44. The area of a triangle is 80 sq. in. Find the height if the base is 5 in. more than the height.

A. $\frac{1+\sqrt{629}}{2}$

B. $\frac{-9\pm\sqrt{5}}{2}$

C. $4\pm\sqrt{85}$

D. $5-\sqrt{665}$

E. $\frac{-5+\sqrt{665}}{2}$

Answers: _____

Q45. Three of the vertices of a square are (−2,3), (5,3), and (−2,−4).What is the length of a side of the square?

- A). 4
- B). 5
- C). 6
- D). 7
- E). 9

Answers: _____

Q46. Which of the following lines is perpendicular to y = 3x + 1?

- A). f. 6x + 5 = 2y
- B). 4 + y = 3x
- C). −9y = −3 + 2x
- D). 2x + y = 4
- E).3 y + x = 5

Answers: _____

Q47. What is the midpoint of line XY if X(−4,−2) and Y(3,8)?

- A). (−7,6)
- B). (−0.5,3)
- C). (−1,6)
- D). (−7,−10)
- E). (2,−1.5)

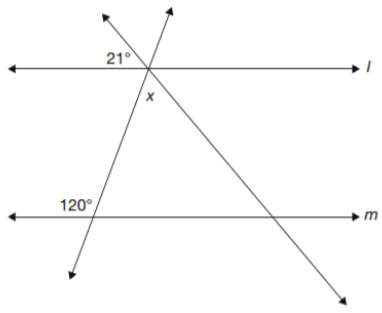
Answers: _____

Q48. Simplify $(\frac{1}{2} x^2)^{-3}$

- A). $6x^3$
- B). $8x^6$
- C). $(8/x^6)$
- D). 8x
- E). 6x

Answers: _____

Q49. Line l is parallel to line m. Find the measure of angle x.



- A). 21°
- B). 39°
- C). 99°
- D). 106°
- E). 121°

Answers: _____

Q50. Find the radius of the circle with center (4,−2) that is tangent to the y-axis

- A). 2
- B). 6
- C). 1
- D). 4
- E). 10

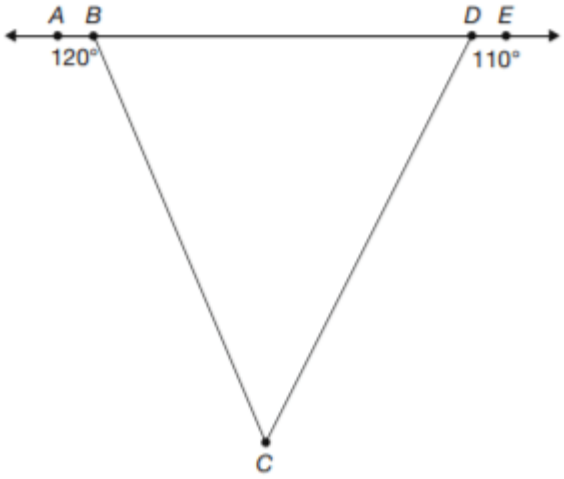
Answers: _____

Q51. Find the area, in square units, of the circle shown by the equation $(x - 5)^2 + (y - 2)^2 = 36$

- A). 4π
- B). 25π
- C). 25π
- D). 36π
- E). 48π

Answers: _____

Q52. m ∠ABC = 120° and m ∠CDE = 110°. Find the measure of ∠C



- A). 21°
- B). 39°
- C). 99°
- D). 106°
- E). 121°

Answers: _____

Q53. What is the minimum value of 9 cos x?

- A).a. –9
- B). –2
- C). 0
- D). 2
- E). 9

Answers: _____

Q54. The Abrams put a cement walkway around their rectangular pool. The pool's dimensions are 12 ft. by 24 ft., and the width of the walkway is 5 ft. in all places. The area of the walkway is

- A). 205 sq. ft.
- B). 288 sq. ft.
- C). 460 sq. ft.
- D). 493 sq. ft.
- E). 748 sq. ft.

Answers: _____

Q55. Triangle XYZ is an equilateral triangle. $\overline{\rm YW}$ is an altitude of the triangle. If $\overline{\rm XY}$ is 10 in., what is the length of the altitude?

- A). 5 in.
- B). 5 √3 in.
- C). 10 in.
- D). 10 √3 in.
- E). 5√2 in.

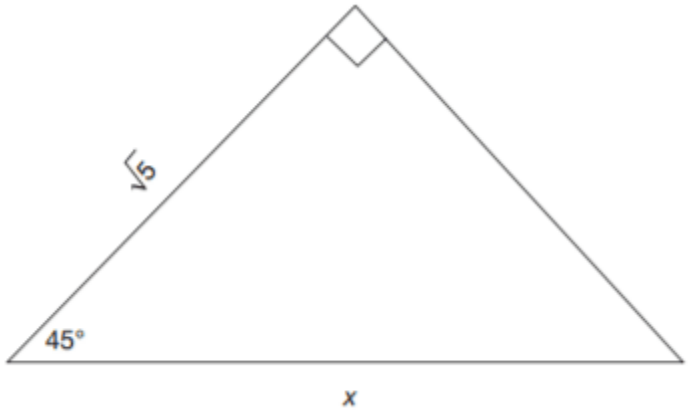
Answers: _____

Q56. Find the value of cos A if angle A is acute and sin A = 7/10

- A). 3/10
- B). 1/9
- C). 7/√51
- D). 51/10
- E). √51/10

Answers: _____

Q57. Find the value of x



- A). 2
- B). 1
- C). √7
- D). √10
- E). 2 √5

Answers: _____

Q58. Which equation corresponds to the graph?

A). $\frac{x^2}{25} + \frac{y^2}{9} = 1$

B). $25x^2 + 9y^2 = 1$

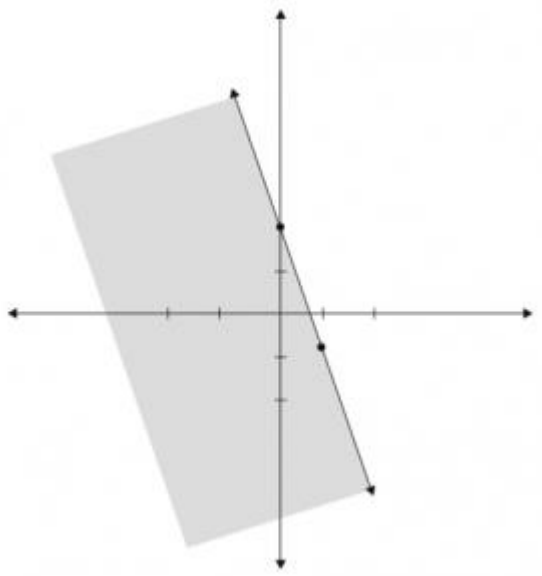
C). $\frac{x^2}{25} - \frac{y^2}{9} = 1$

D). $\frac{y^2}{25} + \frac{x^2}{9} = 1$

E). $5x^2 + 3y^2 = 3$

Answers: _____

Q59. What is the inequality that corresponds to the graph?



- A). $y > 3x + 2$
- B). $y \leq -3x + 2$
- C). $y \geq -3x + 2$
- D). $y < 3x + 2$
- E). $y < -3x + 2$

Answers: _____

Q60. What is the domain of the function f (x) = $\frac{4x - 5}{x^2 + 3x - 4}$?

- A). $\{x \mid x \neq 0\}$
- B). Ø
- C). all real numbers
- D). $\{x \mid x \neq 3\}$
- E). $\{x \mid x \neq -4 \text{ and } x \neq 1\}$

Answers Keys and Solution Link: ACT Math Practice Test 2