Mathematics Practice Test (Set E)

Instructions: Choose the BEST answer for each question. All questions are multiple choice with exactly one correct answer. Choices are shown inline to save space. Use plain-text math (a/b, sqrt(...), ^).

1. Evaluate (8 + 3/4) ÷ (2 + 1/3).

A. 15/5 B. 15/4 C. 3 3/4 D. 21/8 E. 14/9

2. A fair coin is flipped 6 times. What is the probability of getting exactly 4 heads (in any order)?

A. 5/16 B. 3/8 C. 11/64 D. 15/64 E. 1/4

3. Compute sqrt(196) - sqrt(49).

A. 7 B. 0 C. 3 D. 5 E. 14

4. Which is largest: 7/12, 5/9, 11/18, 2/3, 9/16?

A. 7/12 B. 5/9 C. 2/3 D. 11/18 E. 9/16

5. Solve for x: 4/(x+1) = 2/(x-1).

A. -3 B. -1 C. 1 D. 5 E. 3

6. What is the least common multiple of 18 and 24?

A. 36 B. 72 C. 48 D. 54 E. 96

7. A rectangle has side lengths 9 and 12. What is its diagonal length?

A. 13 B. 14 C. 16 D. 15 E. 18

8. A price is increased by 25% to $90. What was the original price?

A. $72 B. $70 C. $75 D. $80 E. $85

9. Simplify: (3/5) ÷ (9/10).

A. 3/2 B. 2/5 C. 2/3 D. 5/6 E. 5/9

10. How many 3-digit even numbers have all digits distinct?

A. 320 B. 324 C. 336 D. 348 E. 328

11. Four numbers have mean 11 and median 10. The largest is 20. What is the smallest possible value of the smallest number?

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

12. In a 30-60-90 triangle, the hypotenuse is 14. What is the shorter leg?

A. 7*sqrt(3) B. 14/3 C. 14/2 D. 7 E. 14/sqrt(3)

13. How many distinct arrangements of the letters in 'LEVEL' are there?

A. 30 B. 10 C. 12 D. 16 E. 20

14. A library charges a $2.50 base fee plus $0.75 per day for late returns. If Maria paid $8.50 total, how many days late was her book?

A. 6 days B. 7 days C. 8 days D. 9 days E. 10 days

15. Simplify: (3/4) ÷ (5/6) × (8/9).

A. 2/5 B. 6/5 C. 8/5 D. 10/9 E. 4/5

16. A class has 24 students; the ratio of boys:girls is 5:7. How many girls must join so that girls are 2/3 of the class?

A. 7 B. 6 C. 8 D. 9 E. 10

17. The geometric mean of 12 and x is 18. Find x.

A. 24 B. 30 C. 36 D. 27 E. 48

18. A cylindrical water tank has a radius of 4 feet and height of 12 feet. If water flows out at a rate of 8π cubic feet per hour, how long will it take to empty a full tank?

A. 24 hours B. 20 hours C. 18 hours D. 28 hours E. 32 hours

19. A square and a circle have equal perimeters. If the circle radius is 7, what is the side of the square? (nearest tenth)

A. 10.8 B. 11.2 C. 11.0 D. 11.5 E. 12.0

20. If lcm(x,y)=84 and gcd(x,y)=6 for positive integers x,y, what is xy?

A. 84 B. 126 C. 294 D. 756 E. 504

21. Simplify: 1/(2 + 1/(3 + 1/2)).

A. 5/12 B. 7/16 C. 7/17 D. 9/20 E. 12/29

22. The sum of interior angles of a polygon is 2880 degrees. How many sides does it have?

A. 16 B. 20 C. 22 D. 18 E. 24

23. A rectangular prism is 5 by 6 by h and has the same volume as a cube of side 10. Find h. (nearest hundredth)

A. 33.33 B. 3 C.4 D. 3.5 E. 3.33

24. Which is equal to 0.125?

A. 1/6 B. 1/9 C. 1/8 D. 3/20 E. 5/32

25. The average of three distinct primes is 13. What is their sum?

A. 40 B. 41 C. 42 D. 43 E. 39

26. A car travels 180 miles at 60 mph, then returns 180 miles at 45 mph. What is the average speed for the round trip? (nearest mph)

A. 50 B. 51 C. 52 D. 53 E. 54

27. Solve for x: (x+3)/4 = (x-1)/2.

A. -5 B. -1 C. 1 D. 5 E. 3

28. A right triangle has hypotenuse 25 and one leg 7. Find the other leg.

A. 24 B. 18 C. 20 D. 21 E. 26

29. What is lcm(14, 15, 20)?

A. 210 B. 315 C. 420 D. 360 E. 630

30. Order from least to greatest: 0.6, 13/20, 5/8, 0.63. Which comes first?

A. 0.6 B. 5/8 C. 0.63 D. They are equal E. 13/20

31. Which fraction terminates in decimal form?

A. 7/30 B. 13/40 C. 11/24 D. 17/60 E. 19/90

32. Two fair dice are rolled. What is P(sum is prime)?

A. 7/18 B. 1/3 C. 11/36 D. 5/12 E. 13/36

33. How many distinct arrangements of the letters in 'BALLOON' are there?

A. 1260 B. 1050 C. 1680 D. 2100 E. 2520

34. What percent of 96 is 36?

A. 33% B. 35% C. 37.5% D. 36% E. 40%

35. Which is closest to sqrt(200)?

A. 13.9 B. 14.2 C. 14.3 D. 14.5 E. 14.1

36. If 3^(2x+1) = 27^(x-2), what is the value of x?

A. 7 B. 8 C. 9 D. 10 E. 11

37. A circle and a square have equal areas. If the circle radius is 6, what is the square's side? (nearest tenth)

A. 9.7 B. 9.9 C. 10.0 D. 10.6 E. 10.1

38. The sum of the measures of one exterior angle at each vertex of any convex polygon equals:

A. 360 B. 180 C. 270 D. 540 E. 720

39. An airplane flies 450 miles with a tailwind of 30 mph in the same time it takes to fly 330 miles against the same headwind. What is the speed of the airplane in still air (no tailwind or headwind)?

A. 180 mph B. 195 mph C. 210 mph D. 225 mph E. 240 mph

40. Simplify: 1 / (1 + 1/(2 + 1/(1 + 1/2))).

A. 3/5 B. 5/8 C. 8/13 D. 13/21 E. 8/11

Answer Key

1. B (15/4)

2. D (15/64)

3. A (7)

4. C (2/3)

5. E (3)

6. B (72)

7. D (15)

8. A ($72)

9. C (2/3)

10. E (328)

11. B (4)

12. D (7)

13. A (30)

14. C (8 days)

15. E (4/5)

16. B (6)

17. D (27)

18. A (24 hours)

19. C (11.0)

20. E (504)

21. B (7/16)

22. D (18)

23. A (33.33)

24. C (1/8)

25. E (39)

26. B (51)

27. D (5)

28. A (24)

29. C (420)

30. A (0.6)

31. B (13/40)

32. D (5/12)

33. A (1260)

34. C (37.5%)

35. E (14.1)

36. A (7)

37. D (10.6)

38. A (360)

39. B (195 mph)

40. E (8/11)