Mathematics Practice Test (Set G — No Figures, Horizontal Choices)

Instructions: Choose the BEST answer for each question. Choices are inline. Use plain-text math (a/b, sqrt(...), ^).

1. Evaluate (6 + 5/6) ÷ (2 + 3/4).

A. 82/33 B. 21/8 C. 15/4 D. 25/11 E. 7/3

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

A. 5/8 B. 7/10 C. 8/13 D. 16/23 E. 13/21

3. The average pay of six workers is $260 per week. The five servers average $220 per week. What is the cook's weekly pay?

A. $460 B. $280 C. $300 D. $340 E. $360

4. Roughly how many gallons are there in 250 liters? (1 gallon ≈ 4.54 liters)

A. 50 B. 52 C. 54 D. 58 E. 55

5. A bag has 4 red, 3 blue, and 3 green marbles. One marble is drawn at random. What is P(not red)?

A. 3/5 B. 1/3 C. 2/5 D. 2/3 E. 1/2

6. A pizza place has 7 toppings. How many distinct 3-topping pizzas include at least one of the two favorites (pepperoni, mushrooms)?

A. 21 B. 27 C. 28 D. 25 E. 35

7. In a right triangle, the legs are 9 and 12. What is the hypotenuse?

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

8. A rectangle has perimeter 64 and side ratio length:width = 5:3. What is its area?

A. 192 B. 200 C. 240 D. 216 E. 256

9. Pump A fills a tank in 6 hours, pump B in 8 hours. Working together (no overlap losses), how many hours to fill the tank? (nearest tenth)

A. 3.2 B. 3.5 C. 3.7 D. 3.4 E. 4.0

10. Mix 3 kg of 20% sugar solution with 2 kg of 8% solution. What is the concentration of the mixture? (nearest tenth of a percent)

A. 14.8% B. 15.2% C. 15.0% D. 15.5% E. 16.0%

11. What is lcm(12, 15, 18)?

A. 90 B. 120 C. 150 D. 180 E. 210

12. In an arithmetic sequence with first term 7 and common difference 5, what is the 20th term?

A. 92 B. 97 C. 102 D. 105 E. 112

13. Evaluate |3 - (-2)^2 + (-2)^3|.

A. 3 B. 5 C. 7 D. 9 E. 11

14. If five days ago was Monday, what day will it be 100 days from today?

A. Monday B. Saturday C. Sunday D. Tuesday E. Wednesday

15. A train travels at 80 ft/s. It takes 3 s to fully enter a tunnel, and 10 s to pass completely through a 560-ft tunnel. What is the train's length (ft)?

A. 200 B. 220 C. 240 D. 260 E. 300

16. At a rate of 1 dollar = 125 yen, how many yen do you get for $56?

A. 6800 B. 6900 C. 7100 D. 7000 E. 7200

17. If gcd(x,y)=9 and lcm(x,y)=252, what is xy?

A. 243 B. 2268 C. 756 D. 1134 E. 4536

18. Two fair dice are rolled. What is P(at least one six)?

A. 1/6 B. 5/36 C. 1/3 D. 11/36 E. 7/18

19. What is the sum of interior angles of a 14-gon (in degrees)?

A. 1980 B. 2040 C. 2160 D. 2100 E. 2340

20. A drawer has 4 colors of socks, 5 of each color. How many socks must you draw (without looking) to guarantee at least one matching pair?

A. 4 B. 6 C. 7 D. 5 E. 8

21. A paint is mixed in the ratio A:B = 2:3 to make 25 liters. How many liters of A are needed?

A. 10 B. 12 C. 13 D. 14 E. 15

22. How many primes are between 50 and 80 (inclusive)?

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

23. After a 15% increase, a phone costs $230. What was the original price?

A. $196 B. $205 C. $210 D. $200 E. $220

24. Each interior angle of a regular polygon is 150 degrees. How many sides does the polygon have?

A. 12 B. 8 C. 10 D. 15 E. 18

25. Solve for x: (x+2)/5 + (x-3)/10 = 3.

A. 9 B. 19/2 C. 10 D. 29/3 E. 31/3

26. How many positive factors does 180 have?

A. 12 B. 18 C. 16 D. 20 E. 24

27. Find the distance between (−3, 4) and (5, −8).

A. sqrt(208) B. 12*sqrt(2) C. 14 D. 4*sqrt(13) E. 16

28. A runner goes 3 miles at 6 mph and then 3 miles at 9 mph. What is the average speed for the 6 miles?

A. 7.0 mph B. 7.4 mph C. 7.2 mph D. 7.5 mph E. 8.0 mph

29. What percent of 250 is 70?

A. 25% B. 27% C. 30% D. 28% E. 32%

30. Find the area of a regular hexagon with side length 6. (Give your answer in terms of sqrt(3).)

A. 54*sqrt(3) B. 36*sqrt(3) C. 45*sqrt(3) D. 60*sqrt(3) E. 72*sqrt(3)

31. From a standard 52-card deck, what is P(drawing a heart)?

A. 1/13 B. 3/13 C. 4/13 D. 1/4 E. 1/2

32. Compute 9^(3/2).

A. 27 B. 9 C. 18 D. 24 E. 36

33. A rectangular tank 30 by 20 by h holds the same volume as a cylinder of radius 10 and height 24. Find h. (nearest tenth)

A. 8.0 B. 12.6 C. 10.0 D. 12.0 E. 14.0

34. Five numbers have mean 12. Four of them are 8, 10, 14, and 20. What is the fifth number?

A. 8 B. 6 C. 7 D. 9 E. 12

35. A right triangle with legs 5 and 12 has hypotenuse 13. If all side lengths are scaled by 2.5, what is the new hypotenuse?

A. 25 B. 30 C. 32.5 D. 31.5 E. 33

36. A circle has area 100*pi. What is its circumference?

A. 20*pi B. 10*pi C. 25*pi D. 40*pi E. 100*pi

37. For x^2 - 7x + 10 = 0, what is the sum of the roots?

A. 2 B. 7 C. 5 D. 9 E. 10

38. A car travels 150 miles in 3.75 hours. What is its average speed (mph)?

A. 40 B. 38 C. 39 D. 41 E. 42

39. Compute 7 1/3 + 2 5/6. (nearest tenth)

A. 10.1 B. 10.2 C. 10.3 D. 10.4 E. 10.5

40. In a 30-60-90 triangle, the longer leg is 9*sqrt(3). What is the hypotenuse?

A. 9 B. 12 C. 18 D. 27 E. 36

Answer Key

1. A (82/33)

2. D (16/23)

3. A ($460)

4. E (55)

5. A (3/5)

6. D (25)

7. A (15)

8. C (240)

9. D (3.4)

10. B (15.2%)

11. D (180)

12. C (102)

13. D (9)

14. A (Monday)

15. C (240)

16. D (7000)

17. B (2268)

18. D (11/36)

19. C (2160)

20. D (5)

21. A (10)

22. C (7)

23. D ($200)

24. A (12)

25. D (29/3)

26. B (18)

27. D (4*sqrt(13))

28. C (7.2 mph)

29. D (28%)

30. A (54*sqrt(3))

31. D (1/4)

32. A (27)

33. B (12.6)

34. A (8)

35. C (32.5)

36. A (20*pi)

37. B (7)

38. A (40)

39. B (10.2)

40. C (18)