

BCA PREP – LEVEL 1 – TEST 1

Applicants are given sixty minutes without a calculator to complete the 40-question test. In scoring, two points are given for each correct answer and one-half point is deducted for each incorrect answer. Unanswered questions are not counted.

NOTE: fractions "a/b", square root as "sqrt", exponents as "^".

1. Evaluate $(9 + 2/3) \div (3 + 1/2)$.

A. 58/21 B. 21/58 C. 7/3 D. 29/7 E. 3

2. What digit A makes 42A7 divisible by both 3 and 11?

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

3. A regular hexagon has side length 8. What is its area? (Give your answer in terms of $\sqrt{3}$.)

A. $64\sqrt{3}$ B. $80\sqrt{3}$ C. $96\sqrt{3}$ D. $112\sqrt{3}$ E. $128\sqrt{3}$

4. How much is $(1/400)$ of 60%?

A. 0.06% B. 0.12% C. 0.15% D. 0.6% E. 1.5%

5. Which of the following has the largest value?

A. 19/28 B. 5/7 C. 13/20 D. 3/5 E. 7/12

6. What percent of 48 is 84?

A. 160% B. 170% C. 172% D. 175% E. 180%

7. Calculate the value of $\sqrt{18 * 50 * 12}$. (Choose the nearest whole number.)

A. 100 B. 102 C. 104 D. 106 E. 108

8. The reciprocal of $(3/4 + 5/6)$ is:

A. 12/19 B. 19/12 C. 5/9 D. 9/5 E. 19/4

9. Calculate $1/4 + 1/45$ to the nearest hundredth.

A. 0.26 B. 0.27 C. 0.28 D. 0.29 E. 0.30

10. If 4% of a number is 18, what is the number?

A. 360 B. 400 C. 450 D. 480 E. 500

11. Find the smallest whole number larger than $6 \frac{1}{2} + 4 \frac{2}{3} + 3 \frac{3}{4}$.

A. 14 B. 15 C. 16 D. 17 E. 18

12. In what interval does $\sqrt{13^2 + 14^2}$ lie?

A. <18 B. 18 to 19 C. 19 to 20 D. 20 to 21 E. >21

13. Evaluate $|6 - (-4)^2 - (-4)^3|$.
- A. 36 B. 40 C. 48 D. 54 E. 60
14. If $A \# B = 3A - B^2$, find $2 \# ((3 \# 2) \# 1)$.
- A. -196 B. -190 C. -184 D. -100 E. 100
15. What is the area, in square centimeters, of the smallest square that will contain a circle of radius 8 cm?
- A. 128 B. 196 C. 225 D. 256 E. 289
16. When a book is opened, two facing pages have numbers that sum to 623. What is the number of the next page?
- A. 312 B. 313 C. 314 D. 315 E. 316
17. A factory runs four 8.5-hour shifts without stopping. The first shift starts at 7:15 AM. When does the fourth shift end?
- A. 1:15 PM same day B. 11:15 PM same day C. 1:15 AM next day D. 5:15 PM next day E. 7:15 PM next day
18. A store buys oranges at 6 for \$1.80 and sells them at 4 for \$1.60. How many must be sold to make a profit of \$90?
- A. 360 B. 540 C. 720 D. 900 E. 1200
19. In a league, a win counts for 3 points and a draw for 1 point. After 15 games (7 wins, 5 losses, 3 draws), how many points will the team have after 90 games at the same rate?
- A. 132 B. 138 C. 144 D. 150 E. 156
20. A rectangle has perimeter 64 and the ratio length:width is 3:1. What is its area?
- A. 160 B. 176 C. 192 D. 200 E. 216
21. What fraction of 2 hours is 15 seconds?
- A. $\frac{1}{120}$ B. $\frac{1}{240}$ C. $\frac{1}{360}$ D. $\frac{1}{480}$ E. $\frac{1}{960}$
22. Find the value of $1 / (1 + 1 / (3 + 1 / (2 + 1/3)))$.
- A. $\frac{17}{29}$ B. $\frac{24}{31}$ C. $\frac{29}{36}$ D. $\frac{31}{24}$ E. $\frac{7}{9}$
23. Estimate the value of $\pi / 67$.
- A. <0.045 B. 0.045 to 0.050 C. 0.051 to 0.055 D. 0.056 to 0.060 E. >0.060
24. $\frac{1}{12}$ is the square root of what number?
- A. $\frac{1}{64}$ B. $\frac{1}{100}$ C. $\frac{1}{121}$ D. $\frac{1}{144}$ E. $\frac{1}{196}$
25. A class has 50 students, 22 of whom are girls. If 3 more girls join, what fraction of the class are girls?
- A. $\frac{22}{50}$ B. $\frac{25}{53}$ C. $\frac{25}{50}$ D. $\frac{23}{50}$ E. $\frac{26}{52}$

26. An estate of \$6.4 million leaves 15% to charity and \$1.1 million to a spouse. The remainder is divided equally among 5 children. How much does each child receive?
- A. \$820,000 B. \$850,000 C. \$868,000 D. \$880,000 E. \$900,000
27. Nine cans of paint cover 14 identical rooms. How many whole cans are needed to paint 25 rooms?
- A. 15 B. 16 C. 17 D. 18 E. 19
28. If July 22 is a Thursday, what day of the week is August 26 of the same year?
- A. Monday B. Tuesday C. Wednesday D. Thursday E. Friday
29. Mixing 5 kg of 18% sugar solution with 3 kg of pure water produces a solution with what concentration?
- A. 10% B. 11% C. 11.25% D. 11.5% E. 12%
30. A car travels 215 miles in 3 hours 35 minutes. What is its average speed (mph)?
- A. 55 B. 58 C. 60 D. 62 E. 65
31. The first five quiz scores average 7.6. The next two scores are 5 and 9. If the eight-quiz average is 7.25, what is the eighth score?
- A. 5 B. 6 C. 7 D. 8 E. 9
32. There are 2.54 cm in an inch. How many centimeters are in 5 feet 3 inches? (nearest tenth)
- A. 157.5 B. 160.0 C. 162.5 D. 165.1 E. 167.6
33. The product $8.03 * 3.96$ is closest to:
- A. 31 B. 32 C. 33 D. 34 E. 35
34. How many 3-digit multiples of 11 are less than 800?
- A. 60 B. 61 C. 63 D. 65 E. 67
35. Multiplying by $\frac{5}{6}$ and then dividing by $\frac{7}{8}$ is the same as dividing by:
- A. $\frac{20}{21}$ B. $\frac{21}{20}$ C. $\frac{5}{7}$ D. $\frac{7}{5}$ E. $\frac{8}{9}$
36. What is the least common multiple (LCM) of 40 and 54?
- A. 540 B. 720 C. 1080 D. 1620 E. 2160
37. Successive discounts of 25% and 35% equal a single discount of (nearest whole percent):
- A. 49% B. 50% C. 51% D. 52% E. 53%
38. A pizzeria offers 9 toppings. How many distinct 3-topping pizzas are possible?
- A. 56 B. 72 C. 84 D. 108 E. 120
39. Four students eat 6 doughnuts in 5 minutes. At this rate, how many doughnuts will 10 students eat in 12 minutes?

A. 30 B. 32 C. 36 D. 40 E. 42

40. In the next 6 days, 5600 people will move to New Jersey. On average, how many will move each hour?
(nearest whole number)

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

Answer Key (Set D)

1. A (58/21)
2. D (5)
3. C ($96\sqrt{3}$)
4. C (0.15%)
5. B (5/7)
6. D (175%)
7. C (104)
8. A (12/19)
9. B (0.27)
10. C (450)
11. B (15)
12. C (19 to 20)
13. D (54)
14. B (-190)
15. D (256)
16. B (313)
17. D (5:15 PM next day)
18. D (900)
19. C (144)
20. C (192)
21. D (1/480)
22. B (24/31)
23. B (0.045 to 0.050)
24. D (1/144)
25. B (25/53)
26. C (\$868,000)
27. C (17)
28. D (Thursday)

29. C (11.25%)

30. C (60)

31. B (6)

32. B (160.0)

33. B (32)

34. C (63)

35. B (21/20)

36. C (1080)

37. C (51%)

38. C (84)

39. C (36)

40. B (39)