Practice Test 2 Answer Key

Session 1

1. (B)

2. (C)

3. (D)

4. (B)

5. (B)

6. (B)

7. (C)

8. (A)

9. (C)

10. (B)

11. (C)

12. (D)

13. (C)

14. (B)

15. See explanation.

16. $67.99

17. (C)

18. $130

19. 35

20. See explanation.

21. See explanation.

Session 2

22. (C)

23. (D)

24. (C)

25. (C)

26. (C)

27. See explanation.

28. (C)

29. (C)

30. (B)

31. See explanation.

32. (D)

33. (C)

34. (D)

35. (B)

36. (D)

37. (B)

38. (B)

39. (D)

40. (C)

41. See explanation.

42. See explanation.

MCAS Practice Test 2 Answer Explanations

Session 1

1. B **(Standard Assessed: 10.P.4)**

Frankie has 30 baseball cards at the beginning of the week, and he gives x away. So you know the expression will begin with $30 - x$. Then Frankie's mother gives him more baseball cards (y). The entire expression should be $30 - x + y$.

2. C **(Standard Assessed: 10.D.3)**

There are six sections on the spinner, so the denominator will be 6. Two of these sections have a 2 on them, so the fraction is $\frac{2}{6}$ or $\frac{1}{3}$.

3. D **(Standard Assessed: 10.N.1)**

To answer this question, you need to determine the value of each answer choice. Answer choice A, the square root of 196, is 14. Answer choice B, 3 times the square root of 12, is approximately 10. Answer choice C, 2 raised to the fourth power, is 16. Answer choice D, 3 raised to the third power, is 27. Answer choice D is the correct answer.

4. B **(Standard Assessed: 10.P.4)**

The expression $4(x + 2y) + 2(3x - y) - (x + y)$ can be simplified like this:

$4x + 8y + 6x - 2y - x - y$. Then combine like terms to get this result:

$9x + 5y$

5. B **(Standard Assessed: 10.P.6)**

The only answer choice that works is $x < 7$, since (6) × (7) is 42.

6. B **(Standard Assessed: 10.D.3)**

The denominator is 30 since this is how many marbles are in the bag. There are 5 red marbles in the bag. This fraction reduces to $\frac{1}{6}$.

7. C **(Standard Assessed: 10.P.4)**

You can simplify the expression by canceling out the y in the numerator and one y in the denominator.

8. A (Standard Assessed: 10.P.4)

The variable in this problem is x, the number of cans of lemonade Teresa sells. Teresa will charge $2.50 for each can, so the best expression is $2.5x - 75 - 20$.

9. C (Standard Assessed: 10.M.2)

If you multiply 12 by 6 and then the answer by 4, you get 288.

10. B (Standard Assessed: 10.D.1)

To find the mean, you need to add all of the numbers (1407) and divide by the number of months (7). $140 \div 7 = 20$.

11. C (Standard Assessed: 10.D.1)

To find out how many girls play basketball and soccer, you need to look in the overlapping portion of circle 1 and circle 3, excluding circle 2.

12. D (Standard Assessed: 10.N.1)

The square root of 81 is 9. The number 9 cubed is 729.

13. C (Standard Assessed: 10.G.9)

The triangle is reflected and then moved completely around the origin. It is moved 180 degrees.

14. B (Standard Assessed: 10.G.1)

In a parallelogram, consecutive angles are supplementary. $m\angle S = 45° + 30° = 75°$. Since $\angle R$ is supplementary to $\angle S$, $m\angle R = 105°$.

15. (Standard Assessed: 10.G.4)

To solve this problem, set up a proportion: $\frac{50}{100} = \frac{x}{80}$. Then solve the proportion:

$$100x = 4,000$$

$$x = \frac{4,000}{100}$$

$$x = 40$$

16. $67.99 per pair   **(Standard Assessed: 10.N.4)**

First determine how much the sneakers are discounted: $84.99 \times .20 = \$17.00$. Then deduct this amount from the original cost of the sneakers.

17. C   **(Standard Assessed: 10.D.1)**

The mode is the number that occurs most; in this case, it is 90.

18. $130   **(Standard Assessed: 10.N.1)**

To solve this problem, you first need to determine the 35% discount. Multiply .35 by $200 to get $70. Then deduct this amount from $200. Peter's final cost was $130.

19. 35   **(Standard Assessed: 10.P.1)**

Begin with the number 21, the number of miles Ashaki runs during the first week. Then, add 2 to this number until you get to the eighth week.

20.   **(Standard Assessed: 10.G.5)**

Part A

$$a^2 + b^2 = c^2$$

$$9^2 + b^2 = 15^2$$

$$b^2 = 15^2 - 9^2$$

$$b^2 = 225 - 81$$

$$b^2 = 144$$

$$b = 12 \text{ feet}$$

Part B

$$A = \frac{1}{2}bh$$

$$A = \frac{1}{2}(12 \times 9)$$

$$A = \frac{1}{2}(108)$$

$$A = 54 \text{ square feet}$$

21. (Standard Assessed: 10.D.1)

Sample answer: $200 + 225 + 240 + 240 + 280 + 375 + 400 = 1,960$

a. $1,960 \div 7 = 280$. This is the mean. The mode is 240 and the median is 240. The range is 200.

b. Management would use the mean in an argument against pay raises.

c. The labor union could use either the mode or median in an argument for pay raises.

Session 2

22. C (Standard Assessed: 10.N.4)

To find the number of people employed in manufacturing jobs, multiply 131,000,000 by .13 or 13%.

23. D (Standard Assessed: 10.P.3)

Melanie worked 40 hours, for which she earned $8 an hour. She earned $320 for the 40 hours. Then she worked 8 hours of overtime, for which she is paid $12 an hour. She earned $96 in overtime. If you add $320 + $96, the answer is $416.

24. C (Standard Assessed: 10.P.1)

The number of shrubs doubles in each row, so the fifth row would have 16 shrubs.

25. C (Standard Assessed: 10.D.1)

When you add Beth's scores, the answer is 190. When you divide this by 10, the number of basketball games, the answer is 19.

26. C (Standard Assessed: 10.G.10)

Use the formula $A = \pi r^2$ to solve this problem. $A = (\pi)(4)^2 = 16\pi \approx 50.3$, which is closest to 50.

27.   **(Standard Assessed: 10.M.3)**

a. The dimensions of the soup can become: diameter = 4 inches and height = 4 inches. This means that the new radius becomes 2 inches. Then $V = (\pi)(R^2)(H) = (\pi)(2^2)(4) = 16\pi \approx 50.27$ cubic inches.

b. The dimensions of the soup can become: diameter = 3 inches and height = 5 inches. This means that the radius remains 1.5 inches. Then $V = (\pi)(R^2)(H) = (\pi)(1.5^2)(5) = 11.25\pi \approx 35.34$ cubic inches.

c. The difference in volume is $50.27 - 35.34 = 14.93$ cubic inches. Thus, the difference in cost is $(14.93)(\$0.12) \approx \$1.79$. The soup can in part (b) costs less.

28. C   (Standard Assessed: 10.P.8)

To find the percent of decrease, first subtract the two numbers: $3.6 - 1.8$. Then put the difference over the original number, $\frac{1.8}{3.6}$. Then reduce and multiply by 100%: $\frac{1}{2} \times 100\% = 50\%$.

29. C   (Standard Assessed: 10.N.1)

First determine the sale price: $\frac{1}{4}$ or .25 percent of $\$45 = 11.25$; the sale price is $\$45 - \$11.25 = \$33.75$. Then take 10% off this price: $\$33.75 - \$3.37 = \$30.38$.

30. B   (Standard Assessed: 10.G.1)

To solve this problem, you can set up a proportion: $\frac{8}{10} = \frac{24}{x}$. The ratio between 8 and 24 is 1:3, so the correct answer is 30.

31.   **(Standard Assessed: 10.G.4)**

a. The two rectangles are similar because their sides are proportional. The second is an enlargement of the first by a factor of 2.5.

b. The area of the smallest rectangle is 14 inches, whereas the area of the larger rectangle is 87.5 inches. The ratio of the areas is $\frac{14}{87.5}$ inches, which can be reduced to .16 or $\frac{4}{35}$ inches.

c. This rectangle has a length that is twice the length of the larger rectangle on the diagram. Thus, its width would be (2)(5) = 10 and its area would be 350 units².

32. D   (Standard Assessed: 10.N.1)
To determine how much money Madeline earns during the summer, multiply her hourly wage, $8.25, by 12, the number of hours she works per week. Then multiply this amount by 10, the number of weeks she works during the summer.

33. C   (Standard Assessed: 10.N.1)
To find the discount, multiply $75 by .20. The discount is $15.

34. D   (Standard Assessed: 10.M.2)
To find the volume of the cylinder, use the formula: $V = \pi r^2 h$

$$V = (3.14)3^2 \times 12; V = 339 \text{ in}^3$$

35. B   (Standard Assessed: 10.P.4)
Answer choice B shows the correct equation for the representation. Remember that with a matrix, you multiply the first member of each row in the first matrix by the top member of the column in the second matrix. Then multiply the second members of the rows by the bottom member of the second matrix.

36. D   (Standard Assessed: 10.P.8)
To find the percent increase in the population of Gina's town, subtract 1.5 from 2.7 to get 1.2. Then divide 1.5 into 1.2.

37. B   (Standard Assessed: 10.M.1)
To find the area of the circle, use the radius, 6, which is one-half of 12, the diameter. Then, plug 6 cm into the formula $A = \pi r^2$ to get $\pi(6^2) = 36 \pi \sim 113$

38. B   (Standard Assessed: 10.P.1)
Charlie's average on the four tests he has taken is already over 85%. He can get an 80% on the fifth test and still get an average of 85%. The sum of Charlie's 4 test scores is 345. In order to have a mean of 85 for all five scores, he needs a total of (85)(5) = 425. Then 425 − 345 = 80, which is the minimum score needed on the 5th test.

39. D   **(Standard Assessed: 10.D.1)**
A bar graph is the best way to display this information. Too much information is given for a circle graph (the percentages add up to over 100). There aren't two variables, so a line graph isn't the best choice, and there isn't enough information to plot on a scatter plot.

40. C   **(Standard Assessed: 10.P.1)**
This pattern is the Fibonacci Numbers, where the two previous numbers are added together. The sequence of the first twelve numbers should be shown, that are: 2, 3, 5, 8, 13, 21, 34, 55, 89, 144, 233, 377.

41.   **(Standard Assessed: 10.P.8)**
Sample answer:

    a. $c = 100 + 10g$

    b. $c = 100 + 10(112)$; $c = \$1,220$

    c. $c = 12g$

    d. Nora's Catering Service would charge \$1,220; Villa Mambo's Take-Out would charge \$1,344, so it is the more expensive of the two.

42.   **(Standard Assessed: 10.D.2)**
Sample answer:

    a.

       mean: $0 + 0 + 1 + 2 + 4 + 4 + 4 + 6 + 7 + 8 = 36/10 = 3.6$
       median: 4
       mode: 4
       range: $8 - 0 = 8$

    b. actual scores: 80, 80, 81, 82, 84, 84, 84, 86, 87, 88

       mean: 83.6
       median: 84
       mode: 84
       range: $88 - 80 = 8$