Practice Test 1 Answer Key

Session 1

1. (C)
2. (A)
3. (A)
4. (D)
5. (D)
6. (B)
7. (A)
8. (C)
9. (A)
10. (A)
11. (B)
12. (B)
13. (C)
14. (D)

15. −2
16. 60
17. See explanation.
18. 3
19. 64.6
20. See explanation.
21. See explanation.

Session 2

22. (C)
23. (D)
24. (C)
25. (A)
26. (C)
27. (A)
28. (A)

29. (A)
30. (B)
31. See explanation.
32. (C)
33. (C)
34. (B)
35. (D)
36. (D)
37. 447 cm²
38. (B)
39. (B)
40. (C)
41. See explanation.
42. See explanation.

MCAS Practice Test 1 Answer Explanations

1. C (Standard Assessed: 10.N.1)
Answer choice A is 81, answer choice B is 32, answer choice C is 125, and answer choice D is 36.

2. A (Standard Assessed: 10.P.3)
Answer choice A correctly combines the like terms.

3. A (Standard Assessed: 10.D.1)
To find the mean number of points Andy scored, total his points (170). Then divide by 10. The answer is 17.

4. D (Standard Assessed: 10.N.1)
A real number is any number that can be placed on a number line. Real numbers include fractions. Many, many real numbers would fall between these numbers on a number line.

5. D (Standard Assessed: 10.M.1)
To solve this problem, you need to find the area of a circle. To do this, use the formula $A = \pi r^2$. The radius is 12, and 12 squared is 144. The number 144 multiplied by 3.14 is about 452.

6. B (Standard Assessed: 10.P.3)
Simplify the equation before solving for x: $9x - 5 = 40$. Now put x on one side of the equation: $x = \frac{(40 + 5)}{9}$. The answer is 5.

7. A (Standard Assessed: 10.P.2)
To find the slope of the line, use this formula: $\frac{(y_2 - y_1)}{(x_2 - x_1)}$. The answer is $\frac{5}{5}$ or 1.

8. C (Standard Assessed: 10.N.4)
You have to estimate this answer. You can tell by looking at this pie graph that one section is a little over 50% and another is about 10%. The other sections are closest to 20% and 17%.

9. A   (Standard Assessed: 10.G.1)

All trapezoids have exactly one pair of parallel sides. In an isoceles trapezoid, as we have here, the base angles are also congruent. But the base angles in this case are angles C and D, not angles A and D.

10. A   (Standard Assessed: 10.G.1)

A rectangle has interior angles that are right angles. It also has opposite sides that are congruent, but adjacent sides are not congruent.

11. B   (Standard Assessed: 10.D.3)

There are 40 jelly beans in the bag, so this is the denominator. Only 2 of them are white, so 2 is the numerator. When you reduce the fraction, the answer is $\frac{1}{20}$.

12. B   (Standard Assessed: 10.D.3)

There are eight sections of the spinner, so this is the denominator. Three sections are blue, so the probability of spinning blue is $\frac{3}{8}$.

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

A cube has the same length, width, and height, so you would substitute 4 into the formula $V = s^3$ which equals 64 cubic inches or in^3.

14. D   (Standard Assessed: 10.P.1)

Each of the numbers in the sequence is multiplied by .5.

15.   (Standard Assessed: 10.P.2)

Using the slope definition, $\frac{y-7}{3-15} = \frac{3}{4}$, $4y - 28 = (3)(-12)$, $4y - 28 = -36$, $4y = -8$, $y = -2$.
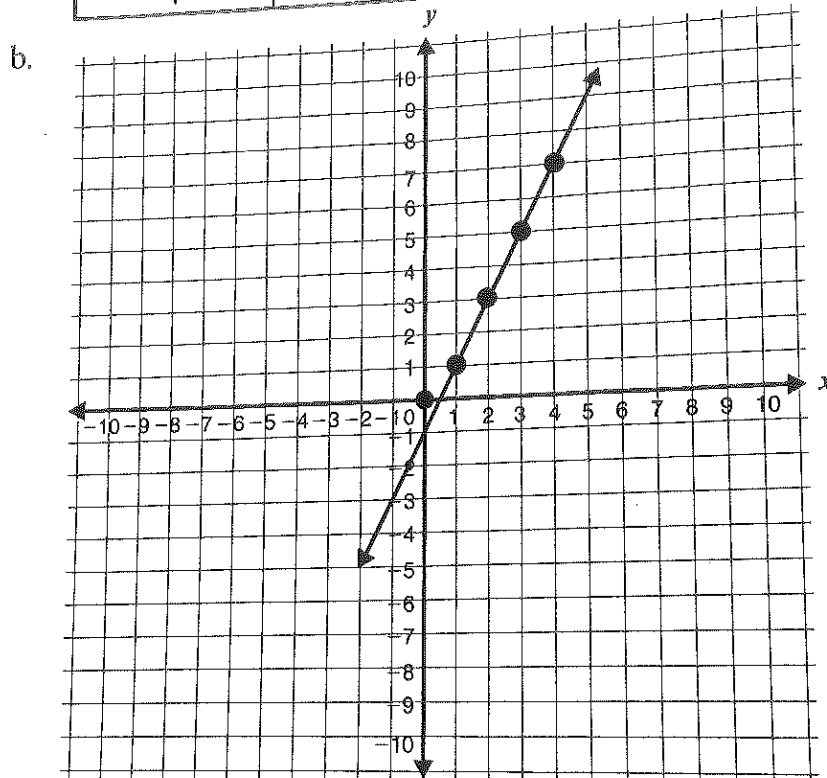
16.   (Standard Assessed: 10.D.1)

To solve this problem, put the number of days that the temperature was over 70 degrees, 18, over the total number of days, 31. Then divide 31 into 18, which is approximately .58 = 58%.

17. (Standard Assessed: 10.P.7)

Sample answer:

a.

x	y
1	1
2	3
3	5
4	7

b.

c. $(2, 3)$ $(3, 5)$ can be substituted into the equation:

$$\frac{y_2 - y_1}{x_2 - x_1}$$

$$\frac{5 - 3}{3 - 2}$$

The slope is 2.

d. A parallel line will also have the slope of 2, since parallel lines have the same slope.

18.

Sample answer:

To solve this problem, you need to substitute values into the formula to find the surface area of a sphere:

$$SA = 4\pi r^2$$

$$113.04 = (4)(3.14)r^2$$

$$113.04 = 12.56r^2$$

$$113.04 / 12.56 = r^2$$

$$9 = r^2$$

$$3 = r$$

19. (Standard Assessed: 10.N.2)

$$(4)^3 + 6 \div 10$$

$$64 + 6 \div 10 = 64 + 0.6 = 64.6$$

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

Sample answer:

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

$8^2 + 6^2 = c^2$

$64 + 36 = 100$

$\sqrt{100} = 10$

$c = 10$

b. $m\angle A = 180° - 90° - m\angle C$ and $m\angle D = 180° - 90° - m\angle F$. Since $\angle C \cong \angle E$, $\angle A \cong \angle D$. The two triangles are similar because there are 3 pairs of congruent angles.

c. Since triangle DEF is $\frac{1}{2}$ the size of triangle ABC for each corresponding line segment, $ED = \left(\frac{1}{2}\right)(8) = 4$ and $EF = \left(\frac{1}{2}\right)(6) = 3$.

21.   (Standard Assessed: 10.P.7)

   a. $300 \times \$15 = \$4,500$

      $\$5,600 - \$4,500 = \$1,100$

      $\$1,100 \div \$10 = 110$, the number of children's tickets sold

   b. $x + y = 700$

   c. $15x + 10y = \$10,000$

   d. $x + y = 700$

      $15x + 10y = 10,000$

Multiply the first equation by 10 to get $10x + 10y = 7000$. Now subtract the second equation to get $-5x = -3000$, so $x = 600$. Put 600 into the first equation in place of x. Then $600 + y = 700$, so $y = 100$.

22. C   **(Standard Assessed: 10.M.1)**

To find the area of a circle, use the formula πr^2. This circle has a radius of 8 cm, so substitute 8 into the formula: $(3.14)64 = 200.9$ or 201 cm.

23. D   **(Standard Assessed: 10.D.1)**

The median is the number in the middle. If you put the numbers in order from least to greatest, you'll see that 26 is in the middle.

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

Since there are 20 straws in the box, convert $\frac{3}{5}$, the number of red straws, into a fraction with 20 as the denominator: $\frac{12}{20}$. Therefore, eight straws out of the 20 are blue.

25. A   **(Standard Assessed: 10.M.2)**

If the perimeter of the hexagon is 36, add the length of the sides you were given: 3, 4, 6, 8, and $12 = 33$. You know that the perimeter is 36, so subtract 33 from 36 to find the missing side.

26. C   **(Standard Assessed: 10.N.2)**

$2(4) + 4^2$ or $8 + 16 = 24$.

27. A (Standard Assessed: 10.G.4)

The measurements of the first rectangle are 4 ft. and 6 ft. Since $18 = 3 \times 6$, the other side would be 3×4 or 12. $\frac{4}{x} = \frac{6}{18}$; $6x = 72$; $x = 12$.

28. A (Standard Assessed: 10.N.1)

The equation shows the distributive property, which allows you to multiply a sum by multiplying each addend separately and then adding the products.

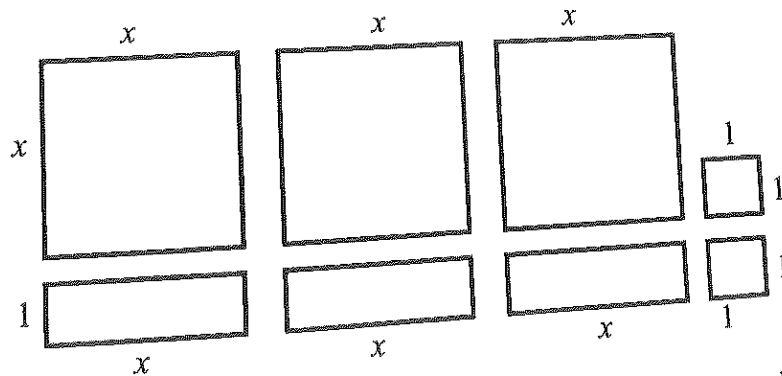**29. A** (Standard Assessed: 10.P.4)

$5(x - 7y) - 7(x + 5y) = 5x - 35y - 7x - 35y$. Combining like terms, we get $-2x - 70y$.

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

About 300 students are enrolled in composition, and 75 are enrolled in psychology. If you subtract 75 from 300, the answer is 225.
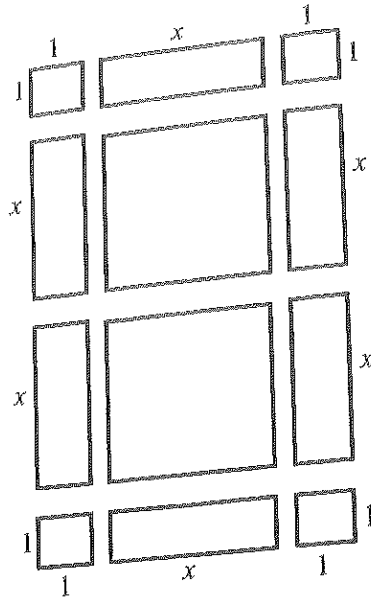
31. (Standard Assessed: 10.P.4)

Sample answer.

a. This doesn't work because a rectangle can't be formed.

b.

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

To find out how many people attended the museum over five days, multiply the mean by 5.

33. C (Standard Assessed: 10.G.4)

Set up a ratio:

$$\frac{10}{24} = \frac{12}{x}$$

$$24 \times 12 = 288$$

$$10x = 288$$

$$x = 28.8$$

$$28.8 \approx 29$$

34. B (Standard Assessed: 10.N.1)

To find the amount of tax Emily needs to add, multiply $12 by .06. The answer is $0.72.

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

To answer this question, you need to find the value of each of the answer choices. Answer choice A is about 8, answer choice B is about 22, answer choice C is about 11, and answer choice D is about 25. Therefore, answer choice D is the largest.

36. D (Standard Assessed: 10.P.8)

If one out of 5 people exercise and you want to determine how many people out of 25,000 exercise, divide 5 into 25,000. The answer is 5,000.
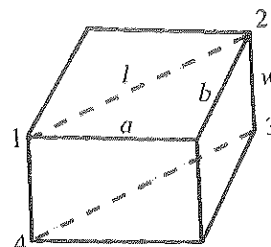
37. (Standard Assessed: 10.M.2)

Sample answer: $a^2 + b^2 = c^2 = 10^2 + 20^2 = c^2$

$$100 + 400 = 500$$

$$\sqrt{500} = 22.36 = c = l$$

$$A_{1234} = lw = (22.36)(20) = 447 \text{ cm}^2$$

38. B (Standard Assessed: 10.G.9)

Remember that a reflection is a mirror image. Therefore, when the triangle is reflected over the x-axis, it will look as if it's upside-down.

39. B (Standard Assessed: 10.M.2)

You have to use the Pythagorean theorem ($a^2 + b^2 = c^2$) to solve this problem. Both side a and side b of the triangle measure 6 inches, so $36 + 36 = 72$. Then you have to find the square root of 72 to get the correct answer: about $8\frac{1}{2}$ inches, which means choice B is the one to pick.

40. C (Standard Assessed: 10.P.2)

Notice that the y-intercept of this line is $(0, -2)$. By the slope-intercept formula $y = mx + b$, we can narrow down the correct answer choice as either C or D. Next, consider the points $(0, -2)$ and $(1, 0)$ which both lie on this line. The slope value is given by $\frac{0 - (-2)}{1 - 0} = 2$. Thus answer choice C is correct.

41. (Standard Assessed: 10.M.1)

Sample answer:

a. Surface area $= (2\pi)(3)(10) + (2\pi)(3^2) = 60\pi + 18\pi \approx 245.04$ square inches.

b. Total cost $= (245.04)(\$0.25) = \$61.26$

c. The new radius is 6. The new surface area is $(2\pi)(6)(10) + (2\pi)(6^2) = 120\pi + 72\pi \approx 603.19$ square inches. The new total cost is $(603.19)(\$0.25) = \$150.80$. Thus, the percent increase is

$$\left(\frac{\$150.80 - \$61.26}{\$61.26} \right)(100) \approx 146\% .$$

42. (Standard Assessed: 10.P.8)

Sample answer:

a. $\dfrac{75,000}{150,000} = \dfrac{3}{6} = \dfrac{1}{2} \times 100\% = 50\%$

b. 37,500

c. $37,500 \times .50 = 18,750$