CHAPTER 10

Chapter Standardized Test

TEST-TAKING STRATEGY Some questions involve more than one step. Reading too quickly might lead to mistaking the answer to a preliminary step for your final answer.

1. MULTIPLE CHOICE Classify $3x^2 - 7 + 4x^3 - 5x$ by degree and by the number of terms.

(A) quadratic trinomial

(B) cubic polynomial

(C) quartic polynomial

(D) quadratic polynomial

(E) cubic trinomial

2. MULTIPLE CHOICE Which of the following is equal to $(-x^2 - 5x + 7) + (-7x^2 + 5x - 2)$?

(A) $8x^2 - 5$ (B) $-8x^2 + 10x + 5$

(C) $6x^2 + 5$ (D) $-8x^2 - 10x + 5$

(E) $-8x^2 + 5$

3. MULTIPLE CHOICE Which of the following is equal to $(5x^3 + 3x^2 - x + 1) - (2x^3 + x - 5)$?

(A) $3x^3 + 3x^2 - 4$

(B) $3x^3 + 3x^2 - 2x - 4$

(C) $3x^3 + 3x^2 - 2x - 6$

(D) $3x^3 + 3x^2 - 2x + 6$

(E) $7x^3 + 3x^2 - 2x + 6$

4. MULTIPLE CHOICE The base of a triangular sail is x feet and its height is $\frac{1}{2}x + 7$ feet. Which expression represents the sail's area? (The area of a triangle is $A = \frac{1}{2}bh$.)

(A) $\frac{1}{2}x^2 + 7x$ (B) $\frac{1}{4}x^2 + \frac{7}{2}x$

(C) $\frac{1}{2}x^2 + \frac{7}{2}x$ (D) $\frac{7}{2}x^2 + \frac{1}{2}x$

(E) $\frac{1}{4}x^2 + 7x$

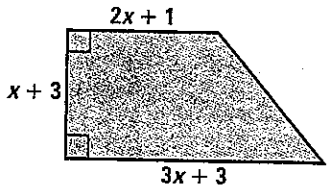
5. MULTIPLE CHOICE Which of the following is equal to $(4x - 9)(7x - 2)$?

(A) $28x^2 - 71x + 18$ (B) $28x^2 - 55x + 18$

(C) $28x^2 - 71x - 18$ (D) $28x^2 + 55x + 18$

(E) $28x^2 - 69x + 18$

6. MULTIPLE CHOICE Which trinomial represents the area of the trapezoid? (The area of a trapezoid is $A = \frac{1}{2}h(b_1 + b_2)$.)



(A) $\frac{5}{2}x^2 + 19x + 12$ (B) $5x^2 + 19x + 6$

(C) $\frac{5}{2}x^2 + \frac{19}{2}x + 6$ (D) $5x^2 + 19x - 6$

(E) $\frac{5}{2}x^2 + \frac{17}{2}x + 6$

7. MULTIPLE CHOICE Which of the following is equal to $(2x - 9)^2$?

(A) $x^2 + 81$ (B) $x^2 - 18x - 81$

(C) $4x^2 + 36x + 81$ (D) $4x^2 - 18x + 81$

(E) $4x^2 - 36x + 81$

8. MULTIPLE CHOICE What are the coordinates of the vertex of the graph of $y = (x - 6)(x + 5)$?

(A) $\left(-\frac{1}{2}, -24\frac{1}{2}\right)$ (B) $\left(\frac{1}{2}, -25\frac{1}{2}\right)$

(C) $(2, -28)$ (D) $\left(\frac{1}{2}, -30\frac{1}{4}\right)$

(E) $\left(-\frac{1}{2}, -24\frac{1}{4}\right)$

9. MULTIPLE CHOICE Which of the following is one of the solutions of the equation $x^2 - 2x = 120$?

(A) -12 (B) -10 (C) 10

(D) 20 (E) 60

10. MULTIPLE CHOICE The area of a circle is given by $A = \pi(9x^2 + 30x + 25)$. Which expression represents the radius of the circle?

(A) $|3x + 5|$ (B) $9x^2 - 25$ (C) $(3x - 5)^2$

(D) $9x^2 + 25$ (E) $(3x + 5)^2$

11. MULTIPLE CHOICE If $x = -2$ is a solution of $x^2 - bx - 16 = 0$, what is the value of b?

Ⓐ -8 Ⓑ -6 Ⓒ 6 Ⓓ 8 Ⓔ 10

12. MULTIPLE CHOICE A ball is tossed into the air from a height of 10 feet with an initial upward velocity of 12 feet per second. Find the time in seconds for the ball to reach the ground.

Ⓐ $\frac{1}{2}$ Ⓑ $\frac{4}{5}$ Ⓒ $1\frac{1}{4}$ Ⓓ $1\frac{1}{2}$ Ⓔ 2

13. MULTIPLE CHOICE Which of the following is a correct factorization of $-45x^2 + 150x - 125$?

Ⓐ $5(-3x + 5)$ Ⓑ $-5(3x + 5)^2$ Ⓒ $-5(3x + 5)(3x - 5)$

Ⓓ $-5(3x - 5)^2$ Ⓔ $-5(-3x + 5)(-3x - 5)$

QUANTITATIVE COMPARISON In Exercises 14 and 15, evaluate the expression for the given values and choose the statement that is true about the results.

Ⓐ The number in Column A is greater. Ⓑ The number in Column B is greater.

Ⓒ The two numbers are equal. Ⓓ The relationship cannot be determined from the information given.

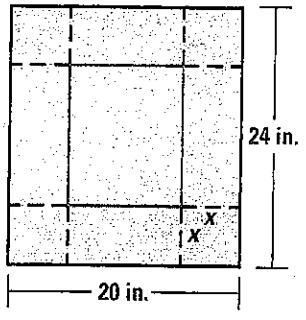
	Column A	Column B
14.	$(a + b)^2$ when $a = 17$ and $b = -8$	$(a - b)^2$ when $a = 17$ and $b = -8$
15.	$(a^2 - b^2)$ when $a = 3$ and $b = -4$	$(a - b)^2$ when $a = 3$ and $b = -4$

16. MULTIPLE CHOICE Which of the following is equal to the expression $x^3 - 2x^2 - 11x + 22$?

Ⓐ $(x - 2)(x - 11)$ Ⓑ $(x - 2)(x^2 + 11)$ Ⓒ $(x - 2)(x^2 - 11)$

Ⓓ $(x - 2)(x + 11)$ Ⓔ none of these

17. MULTI-STEP PROBLEM You have made clay animals to sell for charity. Each animal is about 6 inches long by 8 inches wide by 8 inches tall. You want to package each animal in a box with the top of its head showing. You will not use a lid for the box. You have received a donation of cardboard sheets that are 24 inches by 20 inches to make the boxes. You must cut out corner regions of x^2 so that the flaps can be folded up to form each box.



a. Write a polynomial expression for the area of the box bottom. Find the area of the box bottom in terms of x.

b. Write a polynomial expression for the volume of the box. Find the volume of the box in terms of x.

c. Is it possible to use squares that are 12 inches for the corners? Explain your reasoning.

d. Is it possible to use the donated cardboard sheets to make boxes that will be large enough to hold the clay animals? Explain.