

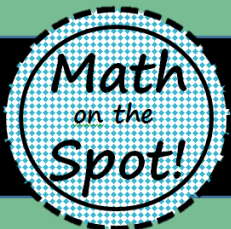
# STAAR Algebra 1 EOC

Reporting  
Category **1**

## Assessment Items

*Includes 31 Multiple Choice and  
2 Open Ended Questions*

- Factoring Trinomials
- Laws of Exponents
- Adding, Subtracting, Multiplying, and Dividing Polynomials
- Difference of Two Squares
- Simplifying Radicals
- Defining Functions
- Arithmetic and Geometric Sequences
- Solving Literal Equations



**Algebra 1**

1. Which expression is equivalent to  $3x^2 + 4x - 15$ ?
  - A  $(x - 3)(3x + 5)$
  - B  $(x + 3)(3x - 5)$
  - C  $(x - 3)(3x - 5)$
  - D  $(x + 3)(3x + 5)$
  
2. Which expression is a factor of  $x^2 - x - 6$ ?
  - A  $x - 6$
  - B  $x - 1$
  - C  $x - 3$
  - D  $x - 2$
  
3. The volume of a rectangular prism is  $18x^2 - 33x + 12$  cubic units. Which of the following could be the dimensions of the prism?
  - A 3 units,  $(2x - 1)$  units, and  $(3x - 4)$  units
  - B 3 units,  $(2x + 1)$  units, and  $(3x + 4)$  units
  - C 2 units,  $(3x - 1)$  units, and  $(2x - 4)$  units
  - D 2 units,  $(3x + 1)$  units, and  $(3x + 4)$  units
  
4. Which expression is equivalent to  $9x^2 + 12x + 4$ ?
  - A  $(3x - 2)(3x + 2)$
  - B  $(3x - 2)^2$
  - C  $(3x + 2)^2$
  - D None of these

5. Which expression is equivalent to  $\frac{6x^{-3}y^{-5}z^3}{9x^4y^{-2}z^2}$ ?

**A**  $\frac{3x^7z}{2y^7}$

**B**  $\frac{2xy^7z^5}{3}$

**C**  $\frac{y^7z}{3x}$

**D**  $\frac{2z}{3x^7y^3}$

6. A sphere has a radius of  $3a^3b^5$  cm. The surface area of the sphere can be found by using  $S = 4\pi r^2$ . What is the surface area of this sphere in square centimeters?

**A**  $36a^5b^7\pi$

**B**  $36a^6b^{10}\pi$

**C**  $24a^5b^7\pi$

**D**  $24a^6b^{10}\pi$

7. Which expression is equivalent to  $\sqrt{7x}$ ?

**A**  $7x^{\frac{1}{2}}$

**B**  $(7x)^{\frac{1}{2}}$

**C**  $7x^2$

**D**  $(7x)^2$

8. Which expression is equivalent to  $(x^{\frac{3}{4}})(x^{\frac{1}{2}})$ ?

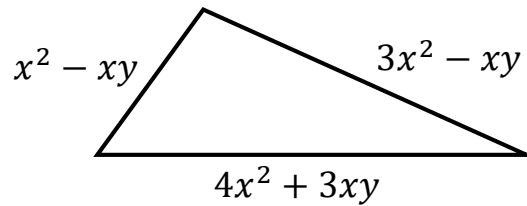
- A  $\sqrt[4]{x^5}$
- B  $\sqrt[5]{x^4}$
- C  $\sqrt[8]{x^3}$
- D  $\sqrt[3]{x^8}$

9. What is the value of the expression  $(8^{\frac{1}{3}})^2$ ?

Record your answer and fill in the bubbles on your answer document.

+	•	•	•	•	•	•	•
-	0	0	0	0	0	0	0
	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	3	3	3	3	3	3	3
	4	4	4	4	4	4	4
	5	5	5	5	5	5	5
	6	6	6	6	6	6	6
	7	7	7	7	7	7	7
	8	8	8	8	8	8	8
	9	9	9	9	9	9	9

10. The figure below shows the side lengths of a triangle.



Which expression represents the perimeter of the triangle?

- A**  $7x^2 + 3xy$
  - B**  $8x^2 + xy$
  - C**  $7x^4 + 3x^2y^2$
  - D**  $8x^4 + x^2y^2$
11. Which expression is equivalent to  $2q^2 - (5 + 4q) + 6q + (3q^2 + 1)$ ?
- A**  $5q^2 + 10q - 6$
  - B**  $9q^2 - 4$
  - C**  $5q^2 - 10q - 6$
  - D**  $5q^2 + 2q - 4$
12. The area of a rectangular sheet of paper is  $2x^2 + 6x - 4$ . A smaller rectangle with an area  $3x + 2$  is cut out of the center of the piece of paper. What is the area of the remaining piece of paper?
- A**  $2x^2 + 9x - 6$
  - B**  $2x^2 + 9x - 2$
  - C**  $2x^2 + 3x - 6$
  - D**  $2x^2 + 3x - 2$

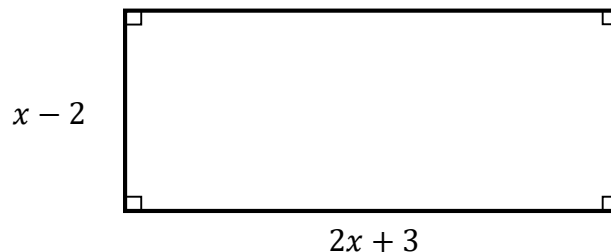
13. A rectangular prism has a width of  $x - 3$  inches, a length of  $x + 2$  inches, and a height of  $2x$  inches. If the volume of the prism can be found using  $V = lwh$ , then which expression represents the volume in cubic inches of this rectangular prism?

- A  $2x^3 - 2x^2 - 12x$
- B  $2x^3 - 6$
- C  $4x^3 - 1$
- D  $2x^3 - 10x^2 - 12x$

14. Which expression is equivalent to  $(x - 3)(2x^2 - 3x + 1)$ ?

- A  $2x^2 + 9x - 3$
- B  $2x^2 - 9x - 3$
- C  $2x^3 - 9x^2 + 10x - 3$
- D  $2x^3 + 9x^2 - 10x - 3$

15. The diagram shows the floor plan of a backyard deck. All dimensions are given in feet.



Which expression represents the area of the deck in square feet?

- A  $2x^2 + 1$
- B  $3x^2 + 1$
- C  $2x^2 - 7x - 6$
- D  $2x^2 - x - 6$

16. Which expression is equivalent to  $(3x^2 + 2x - 5) \div (x + 2)$ ?

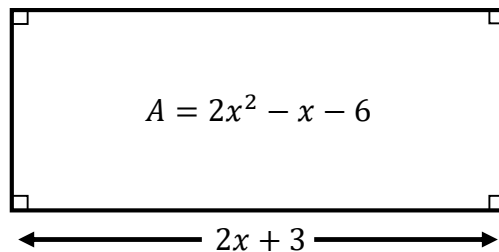
**A**  $3x + 4 - \frac{3}{x+2}$

**B**  $3x - 3$

**C**  $3x - 4 + \frac{3}{x+2}$

**D**  $3x + 9 + \frac{13}{x+2}$

17. The figure below shows the area and length of a rectangle.



What is the width of the rectangle?

**A**  $x + 6$

**B**  $x - 6$

**C**  $x + 2$

**D**  $x - 2$

18. Which expression is equivalent to  $5s^2 - \frac{1}{5}(15 - 2s) - 3s^2$ ?

**A**  $2s^2 - \frac{2}{5}s - 3$

**B**  $2s^2 - 2s - 3$

**C**  $2s^2 + 2s - 3$

**D**  $2s^2 + \frac{2}{5}s - 3$

19. Which expression is equivalent to  $6x^2 + 18x - 4x - 12$ ?

**A**  $6x(x - 3) + 4(x - 3)$

**B**  $6x(x + 3) + 4(x + 3)$

**C**  $6x(x - 3) - 4(x - 3)$

**D**  $6x(x + 3) - 4(x + 3)$



20. Which expression is equivalent to  $18 - 8x^2$ ?

- A**  $9(2 - 8x)^2$
- B**  $2(3 - 2x)^2$
- C**  $2(3 + 2x)(3 - 2x)$
- D**  $(9 - 4x)$

21. Which expression is equivalent to  $x^2 + 16$ ?

- A**  $(x + 4)^2$
- B**  $(x - 4)^2$
- C**  $(x + 4)(x - 4)$
- D** None of these

22. Which expression is equivalent to  $\sqrt{48}$ ?

- A  $16\sqrt{3}$
- B  $4\sqrt{3}$
- C 24
- D 12

23. Which expression is equivalent to  $-2\sqrt{360}$ ?

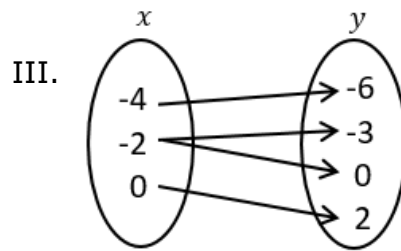
- A  $-12\sqrt{10}$
- B  $6\sqrt{10}$
- C  $-36\sqrt{10}$
- D  $18\sqrt{10}$

24. Which of the following equations is not a function?

- A  $y = 2^x$
- B  $y = 2x$
- C  $y = 2$
- D  $x = 2$

25. Which of the following relations represents  $y$  as a function of  $x$ ?

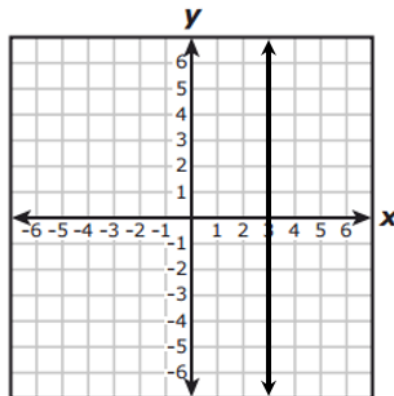
I.  $y = x^2 - 2$



II.

x	y
-3	-2
-1	-2
2	-2
7	-2
10	-2

IV.



- A I and II only
- B II only
- C I, II, and III only
- D I and III only

26. Given  $h(x) = -2(x^2 - 2x + 4)$ , what is the value of  $h(-3)$ ?

Record your answer and fill in the bubbles on your answer document.

+	•	•	•	•	•	•	•
-	0	0	0	0	0	0	0
	1	1	1	1	1	1	1
	2	2	2	2	2	2	2
	3	3	3	3	3	3	3
	4	4	4	4	4	4	4
	5	5	5	5	5	5	5
	6	6	6	6	6	6	6
	7	7	7	7	7	7	7
	8	8	8	8	8	8	8
	9	9	9	9	9	9	9

27. Given  $g(x) = 7(3)^x$ , what is the value of  $g(4)$ ?

- A 189
- B 84
- C 567
- D 25

28. A geometric sequence is defined by the recursive rule  $f(n) = f(n - 1) \cdot -3$ . If  $f(1) = 31$ , what is the fourth term of the sequence?

- A 2511
- B -837
- C 28
- D -7533

29. An arithmetic sequence is defined by the recursive rule  $f(n) = f(n - 1) + 4$ . If  $f(1) = -12$ , what is the sixth term of the sequence?

- A -12
- B 4
- C -8
- D 8

30. The first four terms in a sequence are shown below.

$$4, 1, -2, -5, \dots$$

Which formula can be used to find the  $n^{\text{th}}$  term?

**A**  $a_n = 3 - 7n$

**B**  $a_n = 4 - 7n$

**C**  $a_n = 7 - 3n$

**D**  $a_n = 4 - 3n$

31. Which equation represents a formula for the  $n^{\text{th}}$  term of the sequence 40, -20, 10, -5, ...?

**A**  $a_n = -40(0.5)^{n-1}$

**B**  $a_n = 80(0.5)^{n-1}$

**C**  $a_n = 40(-0.5)^{n-1}$

**D**  $a_n = 80(-0.5)^{n-1}$

32. Which equation is equivalent to  $3x + 5y + 10 = 0$ ?

**A**  $y = -\frac{3}{5}x - 2$

**B**  $y = -\frac{5}{3}x + 2$

**C**  $y = \frac{3}{5}x + 2$

**D**  $y = \frac{5}{3}x - 2$

33. Which equation is equivalent to  $A = \pi r^2$ ?

**A**  $r = \sqrt{\frac{\pi}{A}}$

**B**  $r = \sqrt{\frac{A}{\pi}}$

**C**  $r = \sqrt{A - \pi}$

**D**  $r = \sqrt{A + \pi}$

## Reporting Category #1 Answer Key:

Texas TEK	Question	Answer
A.10 E (R)	1	B
A.10 E (R)	2	C
A.10 E (R)	3	A
A.10 E (R)	4	C
A.11 B (R)	5	D
A.11 B (R)	6	B
A.11 B (R)	7	B
A.11 B (R)	8	A
A.11 B (R)	9	4
A.10 A (S)	10	B
A.10 A (S)	11	D
A.10 A (S)	12	C
A.10 B (S)	13	A
A.10 B (S)	14	C
A.10 B (S)	15	D
A.10 C (S)	16	C
A.10 C (S)	17	D

Texas TEK	Question	Answer
A.10 D (S)	18	D
A.10 D (S)	19	D
A.10 F (S)	20	C
A.10 F(S)	21	D
A.11 A (S)	22	B
A.11 A (S)	23	A
A.12 A (S)	24	D
A.12 A (S)	25	A
A.12 B (S)	26	-38
A.12 B (S)	27	C
A.12 C (S)	28	B
A.12 C (S)	29	D
A.12 D (S)	30	C
A.12 D (S)	31	C
A.12 E (S)	32	A
A.12 E (S)	33	B

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