- 1. What is the greatest common factor of $15x^4y^3 21x^3y^3 + 6x^2y^2$?
 - A x^2y^2
 - B xy
 - C $3xy^2$
 - D $3x^2y^2$
- 2. Simplify: $\frac{14c^3d^2 21c^2d^3}{14cd^2}$
 - A $c^2 \frac{3cd}{2}$
 - $\mathsf{B} \qquad c^2 \frac{3c^2d}{2}$
 - $\mathbf{C} \qquad c^2 21c^2d^2$
 - D $c^2d \frac{3cd}{2}$
- 3. Simplify: $(x + 2)(x^2 + 2x + 3)$
 - A $x^3 + 7x + 6$
 - B $5x^2 + 7x + 6$
 - C $2x^3 + x^2 + x + 6$
 - D $x^3 + 4x^2 + 7x + 6$

- 4. Which binomial is a factor of $3x^2 + 2x - 5?$ A 3x - 1B x - 1
 - D x 5

С

3x - 5

- 5. What is the quotient when $(6x^4 9x^2 + 12x)$ is divided by 3x?
 - $A \qquad 2x^4 3x^2 + 4x$
 - B $2x^3 + 6x + 4$
 - C $2x^3 + 3x + 4$
 - D $2x^3 3x + 4$
- 6. Which expression is a factor of $(6x^3 13x^2 28x)?$
 - A x 4
 - B 2x 7
 - C 2x + 7
 - D 3x 4

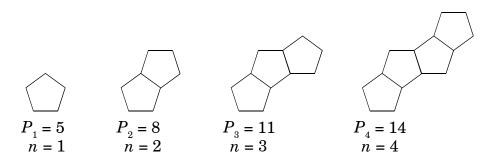
- 7. Multiply:
 - $\left(3x^{6}y^{4}
 ight)^{^{-1}}\!\!\left(3x^{5}y^{3}
 ight)^{2}$
 - A $^{-}27x^{11}y^{7}$
 - B $-18x^{11}y^7$
 - C $2x^4y^2$
 - D $3x^4y^2$
- 8. Suppose that the value, *V*, of a used machine can be calculated by using the formula $V = P\left(1 - \frac{n}{20}\right)$, where *P* represents the price of a new machine and *n* represents the machine's age in years. A company purchased a new machine for \$15,000. The value of the machine is now \$12,375. How old is the machine?
 - A 1.2 years
 - B 3.5 years
 - C 4.3 years
 - D 5.7 years

9. To find the image length, L, of a 4-foot-tall object in a spherical mirror with a focal length of 2 feet, $L = 4\left(\frac{2}{o-2}\right)^2$ can be used, where

o is the distance, in feet, of theobject from the mirror. What is theimage length of the object when itis 1.5 feet away from the mirror?

- A 256 feet
- B 128 feet
- C 64 feet
- D 32 feet

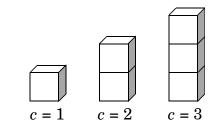
10. The following figures are created with regular pentagons. Each pentagon has a side length of one unit. P_1 is the perimeter of the first figure, P_2 is the perimeter of the second figure, and so on.



According to this pattern, what would be the rule for the perimeter, P_n , of the *n*th figure when n > 1?

- A $P_n = 2P_{n-1} 2$
- $\mathbf{B} \qquad P_n = 2P_{n-1} + 4$
- $\mathbf{C} \qquad P_n = P_{n-1} 3$
- $D \qquad P_n = P_{n-1} + 3$

11. Which expresses the total surface area (including the top and bottom) of a tower of *c* cubes each having side length *e*? (do not include faces that cover each other)



- A $(4c + 2)e^2$
- B $c \bullet e^3$
- C $6c \cdot e^2$
- D $4c \cdot e^2$

- 12. The number of bacteria in an experiment can be represented by the formula $N_{t+1} = 2.5N_t$. In the formula, N_t is the number of bacteria at the end of t minutes, and N_{t+1} is the number of bacteria at the end of t + 1 minutes. There are 16,400 bacteria in the experiment at the end of 7 minutes. How many bacteria will be in the experiment at the end of 10 minutes?
 - A 23,429
 - B 102,500
 - C 123,000
 - D 256,250
- 13. Hooke's law states that the distance a vertical spring stretches varies directly with the weight hanging from it. A spring stretches 14 inches when a 35-pound weight is hanging from it. How much weight is needed to stretch the spring 44 inches?
 - A 110 pounds
 - B 65 pounds
 - C 17.6 pounds
 - D 11.1 pounds

- 14. When x is 3, y is 12. If y varies directly as x, which equation relates x and y?
 - A y = x + 9
 - B y = 15 x
 - C $y = \frac{36}{x}$
 - D y = 4x
- 15. Suppose that y varies directly as x, and y = 5 when x = 2. What is the value of y when x = 7?
 - A 2.8
 - B 10
 - C 17.5
 - D 35

- 16. Neglecting reaction time, the distance required for a car to stop is directly proportional to the square of its velocity. If a car can stop in 8.5 meters at 20 kilometers per hour, *approximately* how many meters are needed to stop at 50 kilometers per hour?
 - A 13.4
 - B 21.3
 - C 53.1
 - D 117.6

End of Goal 1 Sample Items

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Algebra 1 Goal 1 Sample Items Key Report

1	Objective: 1.01 Write equivalent forms of algebraic expressions to solve problems. a) Apply the laws of exponents. b) Operate with polynomials. c) Factor polynomials.
	Thinking Skill:ApplyingCorrect Answer:D
2	Objective: 1.01Write equivalent forms of algebraic expressions to solve problems. a) Apply the laws of exponents. b) Operate with polynomials. c) Factor polynomials.Thinking Skill:ApplyingCorrect Answer:A
3	Objective: 1.01 Write equivalent forms of algebraic expressions to solve problems. a) Apply the laws of exponents. b) Operate with polynomials. c) Factor polynomials.
	Thinking Skill:ApplyingCorrect Answer:D
4	Objective: 1.01 Write equivalent forms of algebraic expressions to solve problems. a) Apply the laws of exponents. b) Operate with polynomials. c) Factor polynomials.
	Thinking Skill:ApplyingCorrect Answer:B
5	Objective: 1.01 Write equivalent forms of algebraic expressions to solve problems. a) Apply the laws of
	exponents. b) Operate with polynomials. c) Factor polynomials. Thinking Skill: Applying Correct Answer: D
6	Objective: 1.01 Write equivalent forms of algebraic expressions to solve problems. a) Apply the laws of
	exponents. b) Operate with polynomials. c) Factor polynomials. Thinking Skill: Applying Correct Answer: B
7	Objective: 1.01 Write equivalent forms of algebraic expressions to solve problems. a) Apply the laws of
	exponents. b) Operate with polynomials. c) Factor polynomials. Thinking Skill: Applying Correct Answer: D
8	Objective: 1.02 Use formulas and algebraic expressions, including iterative and recursive forms, to
	model and solve problems.Correct Answer:BThinking Skill:AnalyzingCorrect Answer:B

Algebra 1 Goal 1 Sample Items Key Report

9	Objective: 1.02 Use formulas and alg model and solve prob Thinking Skill:	gebraic expressions, including itera blems. Applying	ntive and recursive form Correct Answer:	s, to C
10	Objective: 1.02 Use formulas and alg model and solve prob Thinking Skill:	gebraic expressions, including itera blems. Analyzing	ative and recursive form Correct Answer:	s, to D
11	Objective: 1.02 Use formulas and alg model and solve prob Thinking Skill:	gebraic expressions, including itera lems. Analyzing	ntive and recursive form Correct Answer:	s, to A
12	Objective: 1.02 Use formulas and alg model and solve prob Thinking Skill:	gebraic expressions, including itera lems. Applying	ative and recursive form Correct Answer:	s, to D
13	Objective: 1.03 Model and solve prob Thinking Skill:	olems using direct variation. Applying	Correct Answer:	A
14	Objective: 1.03 Model and solve prob Thinking Skill:	olems using direct variation. Applying	Correct Answer:	D
15	Objective: 1.03 Model and solve prob Thinking Skill:	olems using direct variation. Applying	Correct Answer:	С
16	Objective: 1.03 Model and solve prob Thinking Skill:	olems using direct variation. Applying	Correct Answer:	С