Task Models 1a, b **Response Types: Equation/Numeric** **Multiple Choice, single correct response** **DOK Level 2** **A-APR.A.1** Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. **Evidence Required:** 1. The student adds or subtracts polynomials. **Tools:** None **Version 3 Update:** Expanded TM1 into TM1a and TM1b; revised the stem for TM1a; added new TM1b.	**Prompt Features:** The student is prompted to select or enter the sum or difference of two or more polynomials. **Stimulus Guidelines:** Item difficulty can be adjusted via these example methods, but are not limited to these methods: • Two or more multivariate monomials where at least two have the same variables and powers (e.g, $3x^2y + 7x^2y$), • Two or more single variable polynomials (including monomials) where all the terms are degree 2 or less (e.g., $(6x^2 + 7x) + (4x^2 - 3x)$), • Two or more multivariate polynomials (including monomials) where at least two have terms with the same variables and powers and all the terms are degree 2 or less, or • Two or more multivariate polynomials (including monomials) of any degree where at least two have terms with the same variables and powers. **TM1a** **Stimulus:** The student is presented with a polynomial expression and is required to add and/or subtract polynomials in order to write it in another form. **Example Stem:** Enter an expression that is equivalent to $(4x^2 - 5x + 6) + (9x^2 - 2x) - (11x - 3)$, combining all like terms. **Rubric:** (1 point) The student enters a correct expression (e.g., $13x^2 - 18x + 9$). **Response Type:** Equation/Numeric **TM1b** **Stimulus:** The student is presented with a polynomial expression and is required to identify the expression written in another form. **Example Stem:** Which expression is equivalent to $(mx + 5) + (2x - b)$? A. $2mx - 5b$ B. $(2 + m)x - b + 5$ C. $2mx - 5 + b$ D. $2mx - bmx + 10x - 5b$ **Rubric:** (1 point) The student selects the correct expression (B). **Response Type:** Multiple choice, single correct response

Task Models 2a, b **Response Type: Equation/Numeric** **DOK Level 2** **A-APR.A.1** Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. **Evidence Required:** 2. The student multiplies polynomials. **Tools:** None **Version 3 Update:** Expanded TM2 into TM2a and TM2b and added new TM2c.	**Prompt Features:** The student is prompted to select or enter the product of two polynomials. **Stimulus Guidelines:** Item difficulty can be adjusted via these example methods, but are not limited to these methods: • Two or more multivariate monomials, • Two or more single variable polynomials (including monomials) where all the terms are degree 2 or less, • Two or more multivariate polynomials (including monomials) where all the terms are degree 2 or less, or • Two or more multivariate polynomials (including monomials) of any degree. **TM2a** **Stimulus:** The student is presented with an expression involving the product of polynomials and directed to respond in a specific form. **Example Stem:** Enter an expression equivalent to $(-\frac{1}{2}at) \cdot (12t^3)$ in the form A$x^m y^n$. **Rubric:** (1 point) The student enters the product in the requested form $(\text{e.g.}, -6at^4)$. **Response Type:** Equation/Numeric **TM2b** **Stimulus:** The student is presented with an expression involving the product of polynomials. **Example Stem:** Multiply and combine like terms to determine the product of these polynomials. $(2n-3)(5n+6)$ Enter your result in the response box. **Rubric:** (1 point) The student correctly multiplies and combines like terms (e.g., $10n^2 - 3n - 18$). **Response Type:** Equation/Numeric

Task Model 2c **Response Type: Multiple Choice, single correct response** **DOK Level 2** **A-APR.A.1** Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. **Evidence Required:** 2. The student multiplies polynomials. **Tools:** None **Version 3 Update:** Expanded TM2 into TM2a and TM2b and added new TM2c.	**Prompt Features:** The student is prompted to select or enter the product of two polynomials. **Stimulus Guidelines:** Item difficulty can be adjusted via these example methods, but are not limited to these methods: • Two or more multivariate monomials, • Two or more single variable polynomials (including monomials) where all the terms are degree 2 or less, • Two or more multivariate polynomials (including monomials) where all the terms are degree 2 or less, or • Two or more multivariate polynomials (including monomials) of any degree. **TM2c** **Stimulus:** The student is presented with an expression involving the product of polynomials. **Example Stem 1:** Which expression is equivalent to $(2x - t) \cdot (3x + 5)$? A. $5x - t + 5$ B. $6x^2 - 5t$ C. $6x^2 + 7x - 5t$ D. $6x^2 + (10 - 3t)x - 5t$ **Example Stem 2:** Which expression is equivalent to $(ax + b) \cdot (cx + d)$? A. $acx^2 + bd$ B. $(a + c)x + (b + d)$ C. $(a + c)x^2 + (b + d)$ D. $acx^2 + (ad + bc)x + bd$ **Rubric:** (1 point) The student selects the correct expression (e.g., C; D). **Response Type:** Multiple choice, single correct response