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| **Content: Multiplying and Dividing Polynomials** | | | |
| Multiplies polynomials concretely by determining area of rectangular region  A group of squares with x and x marks  Description automatically generated  “2*x*(3*x* + 1) = 6*x*2 + 2*x*” | Makes connections between multiplication and division to divide polynomials concretely  (6*x*2 + 2*x*) ÷ 2*x* = ?  “I rewrote the division as a multiplication: ? × 2*x* = 6*x*2 + 2*x*.  So, I modelled the dividend where the product would be, the divisor as the factor down the side, then worked backward to determine the quotient (at the top).  A group of squares with x and x marks  Description automatically generated  The quotient is 3*x* + 1.” | Multiplies and divides polynomial expressions symbolically  (−3*x* + 1)(4*x*) = −12*x*² + 4*x*  (−4*x*² + 6*x*) ÷ (2*x*)  =  = −2*x* + 3 | Connects and applies rules of integers, exponents, and order of operations to operations with polynomials  “2[−4*v*(2*v* + 8) + 3*v*(−5*v* + 4)]  = 2[−8*v*2 − 32*v* − 15*v*2 + 12*v*)] = 2[−23*v*2 − 20*v*] = −46*v*2 − 40*v*” |
| **Observations/Documentation** | | | |
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| **Competency: Connecting and Representing** | | | |
| Represents a polynomial with algebra tiles  “This model represents 3x + 2 because I count three x-tiles and two 1-tiles.” | Represents a given polynomial multiplication or division statement with algebra tiles  “I can use an algebra tile template to help me represent the division (4*x*2 − 6*x*) ÷ (−2*x*).” | Represents and simplifies given polynomial multiplication and division statements concretely and symbolically, and connects multiplication and division models through inverse operations      “I can check by multiplying.  (‒2*x*)(‒2*x* + 3) = 4*x*2 ‒ 6*x*.” | Flexibly represents and simplifies polynomial multiplication and division statements involving multi-steps symbolically  “(5*m*² − 4*m* − 3) − 3(2*m*² − 6*m*) +  2(9*m*² − 3*m* − 7)  = 5*m*² − 4*m* − 3 − 6*m*² + 18*m* +  18*m*² − 6*m* − 14  = 17*m*² + 8*m* − 17” |
| **Observations/Documentation** | | | |
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