## Unit 7 Lesson 7: Rewriting Quadratic Expressions in Factored Form (Part 2)

### 1 Sums and Products (Warm up)

#### Student Task Statement

1. The product of the integers 2 and -6 is -12. List all the other pairs of integers whose product is -12.
2. Of the pairs of factors you found, list all pairs that have a positive sum. Explain why they all have a positive sum.
3. Of the pairs of factors you found, list all pairs that have a negative sum. Explain why they all have a negative sum.

### 2 Negative Constant Terms

#### Student Task Statement

1. These expressions are like the ones we have seen before.

| * factored form
 | * standard form
 |
| --- | --- |
| * $\left(x+5\right)\left(x+6\right)$
 | *
 |
| *
 | * $x^{2}+13x+30$
 |
| * $\left(x−3\right)\left(x−6\right)$
 | *
 |
| *
 | * $x^{2}−11x+18$
 |

* Each row has a pair of equivalent expressions.
* Complete the table. If you get stuck, consider drawing a diagram.
1. These expressions are in some ways unlike the ones we have seen before.

| * factored form
 | * standard form
 |
| --- | --- |
| * $\left(x+12\right)\left(x−3\right)$
 | *
 |
| *
 | * $x^{2}−9x−36$
 |
| *
 | * $x^{2}−35x−36$
 |
| *
 | * $x^{2}+35x−36$
 |

* Each row has a pair of equivalent expressions.
* Complete the table. If you get stuck, consider drawing a diagram.
1. Name some ways that the expressions in the second table are different from those in the first table (aside from the fact that the expressions use different numbers).

### 3 Factors of 100 and -100

#### Student Task Statement

1. Consider the expression $x^{2}+bx+100$.
* Complete the first table with all pairs of factors of 100 that would give positive values of $b$, and the second table with factors that would give negative values of $b$.
* For each pair, state the $b$ value they produce. (Use as many rows as needed.)
* positive value of $b$

| * factor 1
 | * factor 2
 | * $b$ (positive)
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* negative value of $b$

| * factor 1
 | * factor 2
 | * $b$ (negative)
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1. Consider the expression $x^{2}+bx−100$.
* Complete the first table with all pairs of factors of -100 that would result in positive values of $b$, the second table with factors that would result in negative values of $b$, and the third table with factors that would result in a zero value of $b$.
* For each pair of factors, state the $b$ value they produce. (Use as many rows as there are pairs of factors. You may not need all the rows.)
* positive value of $b$

| * factor 1
 | * factor 2
 | * $b$ (positive)
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* negative value of $b$

| * factor 1
 | * factor 2
 | * $b$ (negative)
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* zero value of $b$

| * factor 1
 | * factor 2
 | * $b$ (zero)
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1. Write each expression in factored form:
	1. $x^{2}−25x+100$
	2. $x^{2}+15x−100$
	3. $x^{2}−15x−100$
	4. $x^{2}+99x−100$



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