## Lesson 9: Working with Signed Numbers

* Let’s work with signed numbers.

### 9.1: Sorting Expressions

Sort these into two groups, so that the expressions in each group all have the same value.

* $3−5$
* $5+3$
* $4⋅2$
* $-\frac{1}{3}⋅6$
* $5−-3$
* $-4⋅-2$
* $3+-5$
* $\frac{1}{3}⋅-6$

### 9.2: Expanded Form

For each expression given in factored form, write two equivalent expressions in expanded form. If you get stuck, draw a diagram to represent the product. Some blank diagrams are provided—draw additional diagrams as needed.

1. $\left(30+3\right)\left(30−2\right)$
2. $\left(20−1\right)\left(20−1\right)$
3. $\left(100+5\right)\left(100−m\right)$
4. $\left(40−a\right)\left(40+b\right)$
5. $y\left(11−y\right)$
6. $-7\left(3a−1\right)$
7. $\frac{1}{4}\left(-8a+12a\right)$
8. $-x\left(3x−5\right)$

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### 9.3: Factoring and Expanding

In each row, write the equivalent expression. If you get stuck, use a diagram to organize your work. The first row is provided as an example. Diagrams are provided for the first three rows.



| factored | expanded |
| --- | --- |
| $-3\left(5−2y\right)$ | $-15+6y$ |
| $c\left(c−5\right)$ |   |
|   | $8a−4b$ |
| $-3\left(2w−7z\right)$ |   |
| $-\left(3y−2x\right)$ |   |
|   | $12x−14x^{2}$ |
| $n\left(3−10\right)$ |   |
|   | $5y−7y$ |
| $-5x\left(y−2z\right)$ |   |
|   | $wt−tv−5tz$ |
| $-a\left(2b−4c+a\right)$ |   |



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