Lesson 21: If–Then Moves with Integer Number Cards

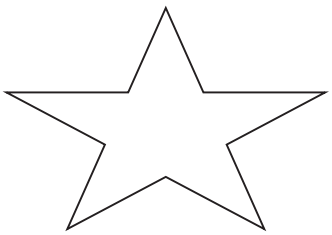
Classwork

Exploratory Challenge: Integer Game Revisited

Let's investigate what happens if a card is added or removed from a hand of integers.

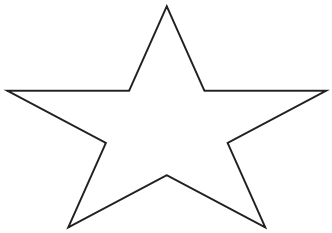
My cards:

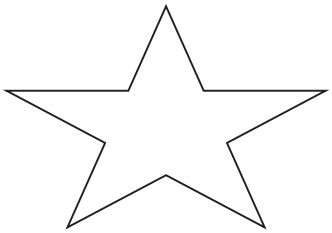
My score:



Event 1

My new score:

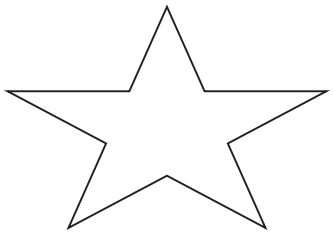


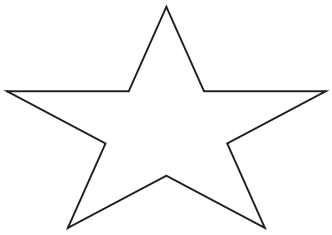


Conclusion:

Event 2

My new score:

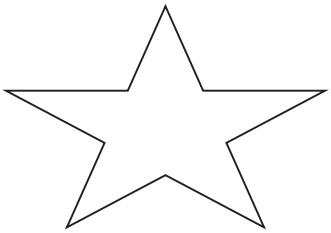




Conclusion:

Event 3

My new score:



Expression:

Conclusion:

Event 4

Expression:

Conclusion:

Exercises

1. The table below shows two hands from the Integer Game and a series of changes that occurred to each hand. Part of the table is completed for you. Complete the remaining part of the table; then summarize the results.

	Hand 1	Result	Hand 2	Result
Original	$1 + (-4) + 2$		$0 + 5 + (-6)$	
Add 4	$1 + (-4) + 2 + 4$			
Subtract 1	$1 + (-4) + 2 + 4 - 1$			
Multiply by 3				
Divide by 2				

2. Complete the table below using the multiplication property of equality.

	Original expression and result	Equivalent expression and result
	$3 + (-5) =$	
Multiply both expressions by -3		
Write a conclusion using if–then		

Lesson Summary

- If a number sentence is true, and the same number is added to both sides of the equation, then the resulting number sentence is true. *(addition property of equality)*
- If a number sentence is true, and the same number is subtracted from both sides of the equation, then the resulting number sentence is true. *(subtraction property of equality)*
- If a number sentence is true, and both sides of the equation are multiplied by the same number, then the resulting number sentence is true. *(multiplication property of equality)*
- If a number sentence is true, and both sides of the equation are divided by the same nonzero number, then the resulting number sentence is true. *(division property of equality)*

Problem Set

1. Evaluate the following numerical expressions.

   a. $2 + (-3) + 7$

   b. $-4 - 1$

   c. $-\frac{5}{2} \times 2$

   d. $-10 \div 2 + 3$

   e. $\left(\frac{1}{2}\right)(8) + 2$

   f. $3 + (-4) - 1$

2. Which expressions from Exercise 1 are equal?

3. If two of the equivalent expressions from Exercise 1 are divided by 3, write an if–then statement using the properties of equality.

4. Write an if–then statement if -3 is multiplied to the following equation: $-1 - 3 = -4$.

5. Simplify the expression. $5 + 6 - 5 + 4 + 7 - 3 + 6 - 3$

   Using the expression, write an equation.

   Rewrite the equation if 5 is added to both expressions.

   Write an if–then statement using the properties of equality.