

Properties of Numbers

August 24/25, 2016

Mr. Collin



Warmup

Write an expression to model each statement:

$$3 + \left(\frac{n}{2}\right)$$

$$\frac{x}{2} + 3$$

$$\frac{1}{2}x + 3$$

1) Three more than half a number

2) Two less than twice a number $n \cdot 2 - 2$
 $2n - 2$

3) The square of the sum of a number and seven $(a+7)^2$

4) Eight less than six times a number

$$6a - 8$$



Trade and Grade

- If you received a stamp, you will trade your homework with the person sitting next to you (or someone else near you)
- When you get another person's homework, write your name in the "Corrected By" line at the bottom
 - Please PRINT your real name



Trade and Grade

- You will check the first four answers of this homework (I will check the rest)
- If the answer is incorrect, draw a small line through the number of the problem



Trade and Grade (Yesterday)

1) -15

5) -8

2) 5

6) 1

3) 6

7) 0

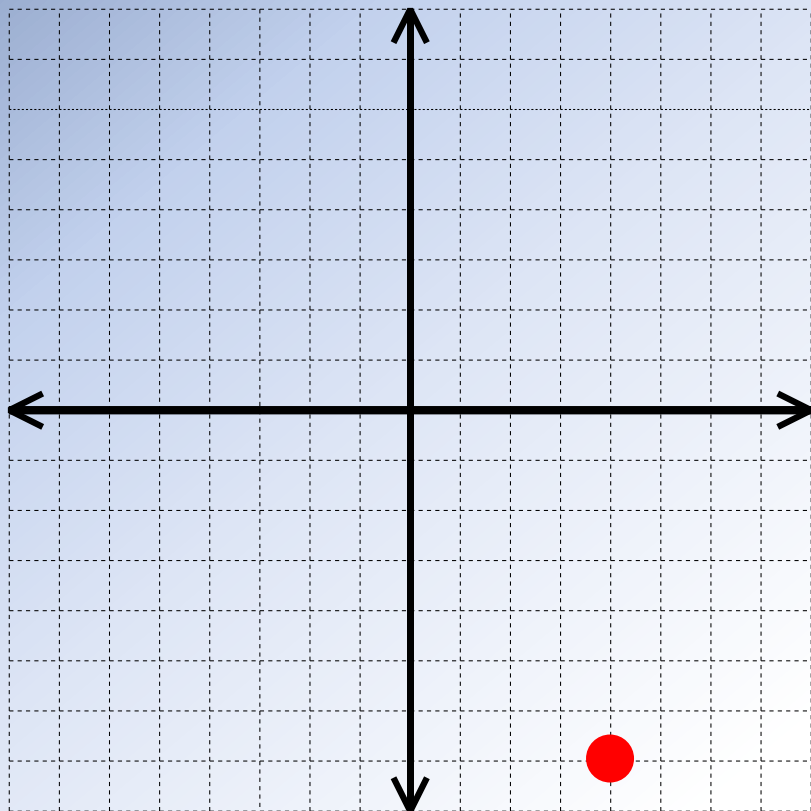
4) 31

8) 3

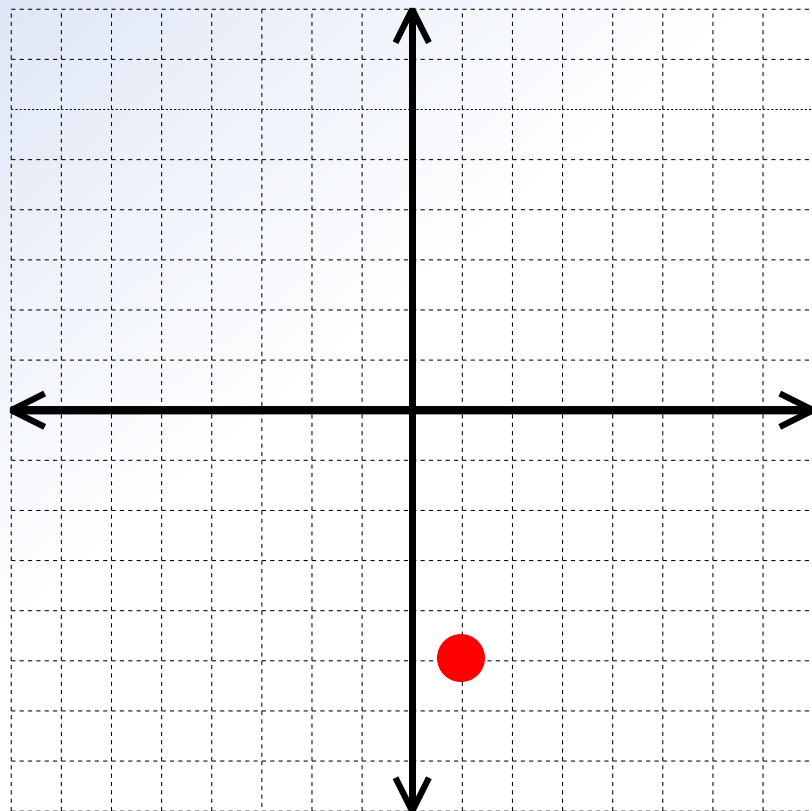


Trade and Grade (Yesterday)

9)



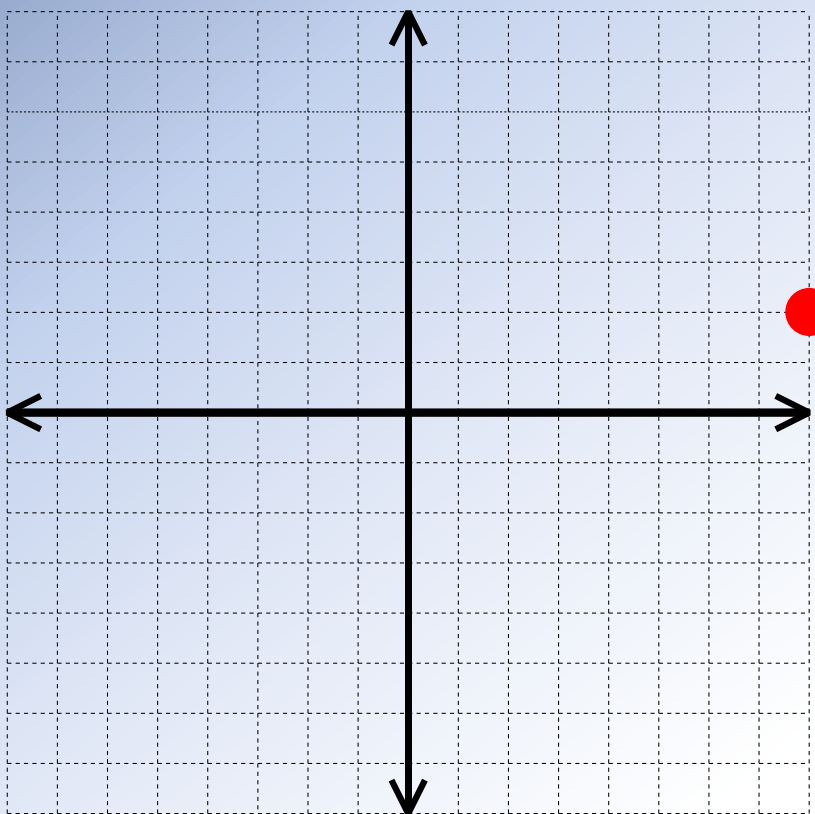
10)



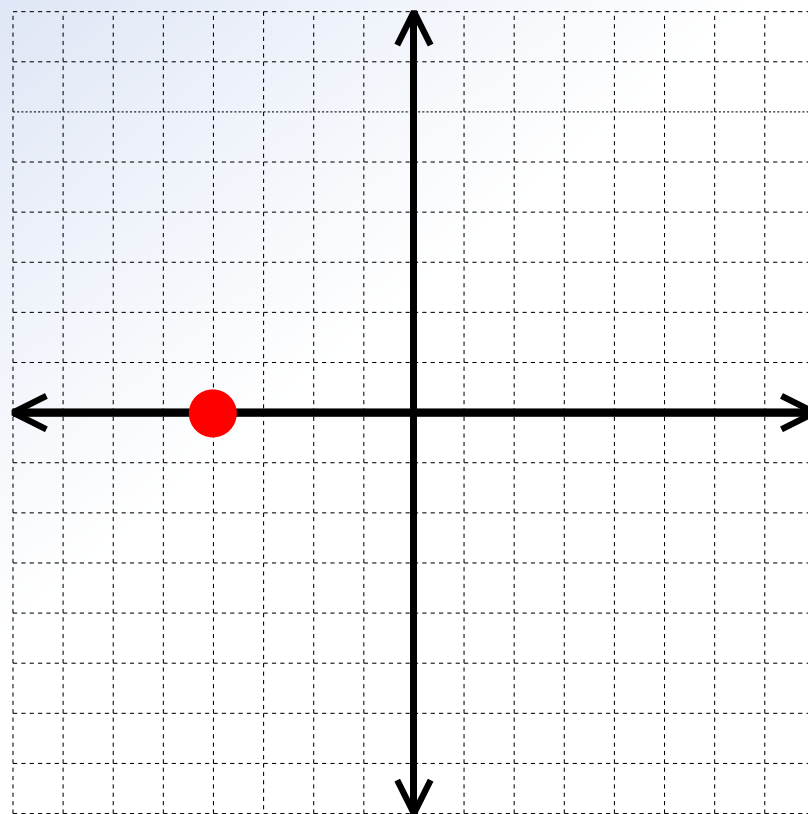


Trade and Grade (Yesterday)

11)



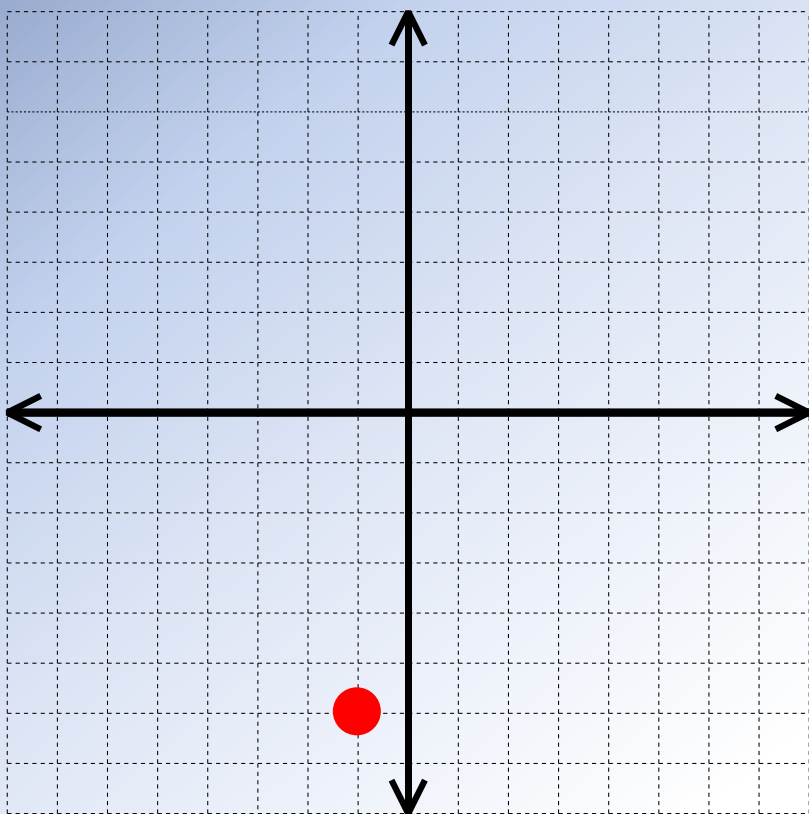
12)



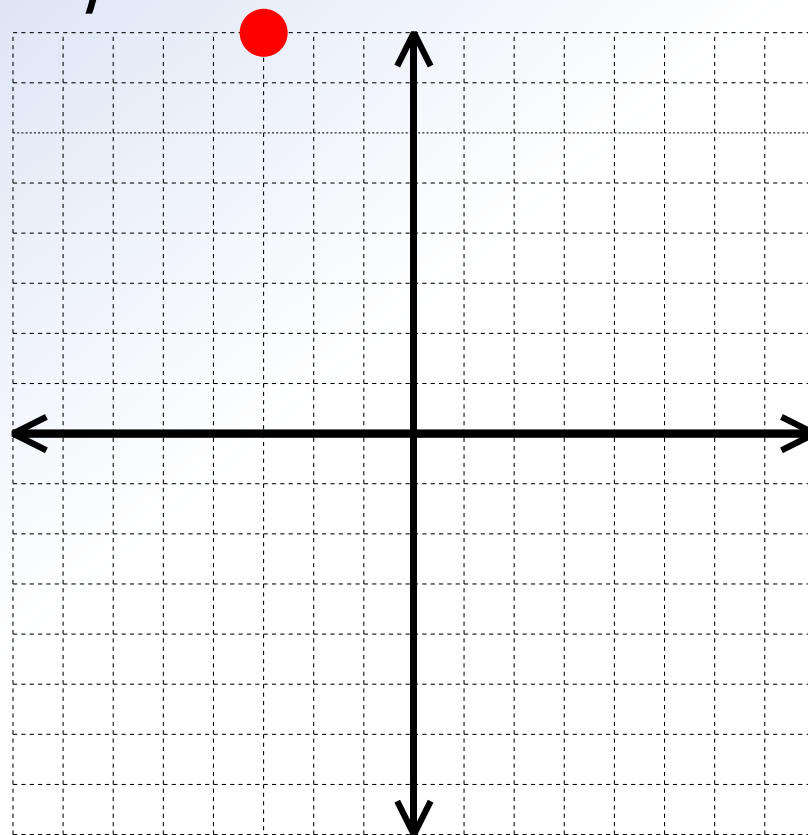


Trade and Grade (Yesterday)

13)



14)





Trade and Grade

- If eight or more answers are correct and there is a stamp on the page, write “4” in the score box
- If seven or fewer answers are correct, then write “2” in the score box



Trade and Grade

1) $5 + 3x$ or $3x + 5$

2) $\frac{1}{2}x$ or $\frac{x}{2}$

3) $2(x + 7)$

4) $2x - 4$

5) $15x$

6) $3x - 6$

7) $\frac{2}{3}x$ or $\frac{2x}{3}$

8) $4x + 5$ or $5 + 4x$

9) $(x + 2)^2$ or
 $(2 + x)^2$

10) $3(x - 4)$

11) \$23

12) $5c + 2s$ or $2s + 5c$

13) $5x + 8y + 12z$



Trade and Grade

- If seven or more answers are correct and there is a stamp on the page, write “4” in the score box
- If six or fewer answers are correct, then write “2” in the score box



Properties of Numbers

- What happens when I change the order of numbers that are added together?
- How about multiplication?
- ~~How about subtraction?~~
- ~~How about division?~~



Commutative Property

- The **commutative property of addition** means that if I add two numbers, it does not matter what order they are in
- The **commutative property of multiplication** says the same thing about multiplying two numbers



How About More Than Two?

- Let's say I want to add a long string of numbers
 - Does it matter what order they are in?
- Does this property work for subtraction, multiplication, and division?



Associative Property

- The **associative property of addition** says that if I am adding several numbers together, I can group them any way I want
 - e.g., $(a + b) + c = a + (b + c)$
- The **associative property of multiplication** says the same about multiplication



Special Numbers

- What happens if I add zero to a number? $7 + 0 = 7$
- What do I have to multiply a number by to make it not change? $7 \cdot 1 = 7$



Identity Properties

- The **additive identity property**:

$$x + 0 = x$$

- The **multiplicative identity property**:

$$x \cdot 1 = x$$



Last One!

- What happens if I multiply a number by zero?
- The **multiplicative property of zero**:

$$x \cdot 0 = 0$$



Now You Try

Which property is used in each example?

1) $15 \cdot 0 = 0$

2) $4m = m(4)$

3) $19 + 0 = 19$

4) $g = 1g$

5) $x + 5 = 5 + x$

6) $3x \cdot 4y \cdot 0 = 0$

7) $(2 + x) + 4 =$
 $2 + (x + 4)$

8) $3(5x) = (3 \cdot 5)x$



Exit Ticket

- I will hand out an exit ticket that you will complete
- You will turn it in as you walk out the door
- Please hand it to me face up so I can see your work

Properties of Numbers

August 26, 2016

Mr. Collin



Warmup

Identify each property used:

1) $1m = m$ Mult. Id Prop.

2) $3 + (k + 4) = (3 + k) + 4$ Assoc. Prop. Add.

3) $(2r)6 = 2(r \cdot 6)$ Assoc. Prop. Mult.

4) $34x \cdot 0y \cdot 18z = 0$ Mult. Prop. Zero

5) $19w = w \cdot 19$ Commut. Prop. Mult.



Trade and Grade

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Trade and Grade

- | | |
|-----------------------|--------------|
| 1) Add. Ident. Prop. | 8) $m + 26$ |
| 2) Comm. Prop. Add. | 9) $21k$ |
| 3) Assoc. Prop. Add. | 10) $32q$ |
| 4) Mult. Ident. Prop. | 11) $r + 19$ |
| 5) Assoc. Prop. Mult. | 12) $d + 27$ |
| 6) Mult. Prop. Zero | 13) $54x$ |
| 7) Comm. Prop. Mult. | |



Trade and Grade

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Math Poker

- I will put you into teams of three or four
- For every question you get correct, your team draws a card
- You may not trade cards with other teams
- Best hand at the end wins



Round One

Evaluate the following:

$$12 - 5(8 - 3)$$

$$**-13**$$



Round Two

Evaluate the following:

$$-18 - (-14) + 7$$

3



Round Three

The highest temperature ever recorded on earth was at Death Valley, California at 134°F . The lowest temperature ever recorded on earth was -128°F in Antarctica. What is the difference between these two temperatures?

262°



Round Four

Which property of numbers allows me to change the following addition problem:

$$8 + 4 + 9 + 11 + 6 + 7 + 2 = ?$$

into:

$$(8 + 2) + (4 + 6) + (11 + 9) + 7 = ?$$

Associative Property of Addition



Round Five

In Australian football, you score six points for every goal, and one point for just missing the goal (called a “behind.”) Write an expression that calculates a team’s score as a function of the number of goals (g) and the number of behinds (b).

$$6g + b$$



Round Six

You are throwing a party and want to buy bottles of soda and bags of chips. Chips are \$3 per bag and soda is \$2 per bottle. You have \$20 and buy five bottles of soda. How many bags of chips can you buy?

3



Round Seven

Evaluate the following:

$$2 - |5 - 9|$$

$$-2$$



Round Eight

You overdraw on your checking account and end up with a balance of $\$-23$. Because of this, the bank charges you $\$5$. What is the final balance in your checking account after the bank adds the additional charge?

$\$-28$