

Warm-up

Describe each situation below

positive **negative** zero cannot be determined

1. The sum of two positive numbers. positive
2. The difference of two positive numbers. cannot be determined
3. The sum of a number and its opposite. zero
4. The sum of a negative number and zero. **negative**
5. The difference of two negative numbers. cannot be determined

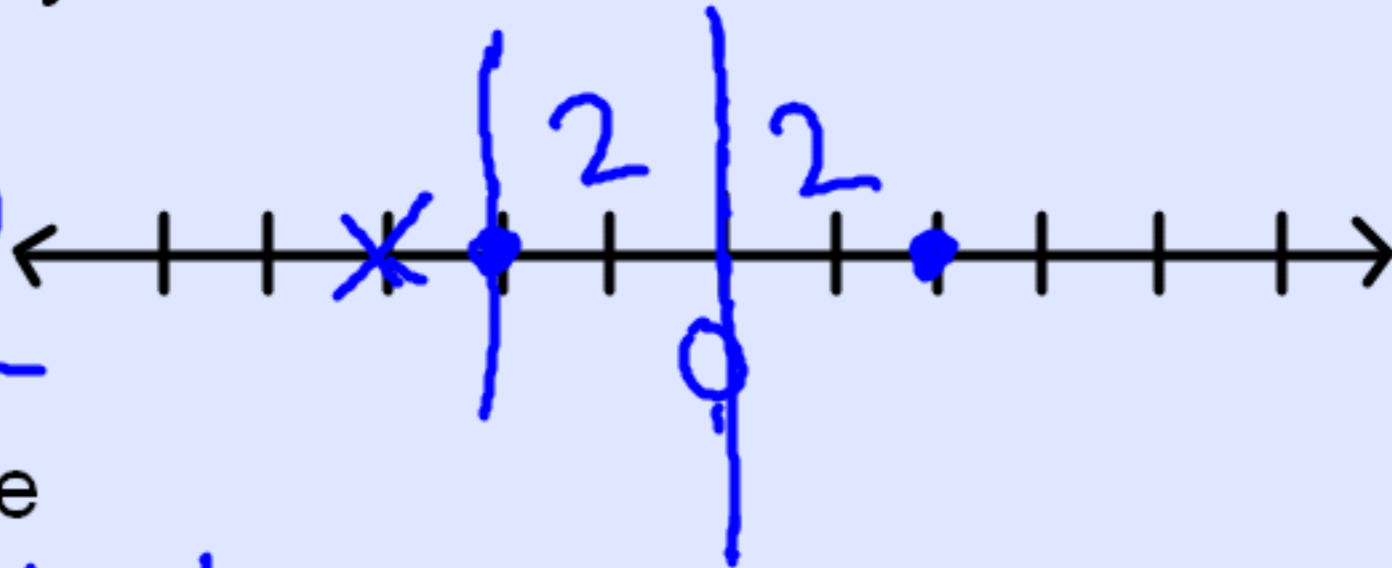
$$\begin{array}{l} 3 - 1 = 2 \\ 3 - 3 = 0 \\ 3 - 4 = -1 \end{array} \quad \begin{array}{l} -3 - -1 = \cancel{-2} - 2 \\ -3 - -4 = 1 \\ -3 - -3 = 0 \end{array}$$

2-2 Using Negative Numbers

Football - loss of yards

$$|-2| = 2$$

Absolute Value



the distance from zero on a number line

Opposites

$$-2 \quad 2$$

Examples

$$|-3| = 3$$

$$|3| = 3$$

$$|1| = 1$$

$$|3| = 3$$

PROMETHEAN

The following rules apply when calculating with positive and negative numbers.

1. The sum of two positive numbers is *positive*
2. The sum of two negative numbers is *negative*
3. The sum of a positive and a negative number is *positive* if the positive number has the greater absolute value, *neg* if the negative number has the greater absolute value, and 0 if the numbers are opposites.
4. The difference of a positive and a negative number is found by adding the opposites of the number being subtracted and then using the sign rules for sums (rules 1-3) above.
5. The product of two positive numbers is *positive*
6. The product of two negative numbers is *positive*
7. The product of a positive and a negative number is *negative*
8. The sign rules given for products also apply to quotients.

Opposites

Examples

$$1. 27.3 + 6.7$$

$$\boxed{34}$$

$$2. -4.8 + (-2)$$

$$\boxed{-6.8}$$

$$3. 15 - (-5)$$

$$\boxed{20}$$

$$15 + 5$$

$$4. -8.1 - (-13.8)$$

$$\boxed{5.7}$$

$$-8.1 + 13.8$$

$$13.8 - 8.1$$

Evaluate each expression for the given values.

1. $-6c + d$, when $c = 4$ and $d = -8$

$$-6(4) + (-8) = -24 + (-8) = -32$$

2. $x^2 - 4y$, when $x = -2$ and $y = 3$

$$(-2)^2 - 4 \cdot 3 = 4 - 12 = -8$$

3. $\frac{3a + 4b}{4}$, when $a = -12$ and $b = 1$

$$\begin{aligned} 3 \cdot -12 + 4 \cdot 1 &= -32 \div 4 = -8 \\ &= \frac{-32}{4} = -8 \end{aligned}$$

Rounding

Three of the numbers can be rounded to the same number.

- | | | | | | |
|----|-----|-------|-------|-------|------|
| 1. | 15 | 24 | 18 | 25 | 20 |
| 2. | 158 | 175 | 149 | 151 | 200 |
| 3. | 12 | 9 | 15 | 8 | 10 |
| 4. | 254 | 284 | 309 | 365 | 300 |
| 5. | 991 | 943 | 985 | 989 | 1000 |
| 6. | 550 | 1,755 | 1,358 | 1,059 | 1000 |