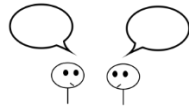


Let's work together.



1. Order the following numbers from least to greatest. Show all necessary work.

$$\begin{array}{cccccccc}
 -|-18| & \sqrt{85} & -3 & 0 & 18 & \sqrt{169} & 9.5 & -\pi \\
 -18 & \approx 9 & & & & 13 & \approx -3.14 & \\
 & & & & & & & \sqrt{81} \quad \sqrt{85} \quad \sqrt{100} \\
 & & & & & & & 9 \quad 9.\underline{\quad} \quad 10 \\
 & & & & & & & 85 \text{ is closer to } 81 \text{ so } \sqrt{85} \\
 & & & & & & & \text{is about } 9.
 \end{array}$$

$$-|-18| \quad -\pi \quad -3 \quad 0 \quad \sqrt{85} \quad 9.5 \quad \sqrt{169} \quad 18$$

2. Which numerical statement(s) represent an inverse property? Circle all that apply.

A. $4 + (-4) = 0$
Inverse +

B. $-3 \cdot 0 = 0$
Zero Product

C. $-17 = 0 + -17$
Identity +

D. $\frac{1}{2} \cdot 2 = 1$
Inverse x

E. $-12 \cdot 1 = -12$
Identity x

F. $(-1)(-1) = 1$
Inverse x
 $-1 \cdot -\frac{1}{1}$
 $(-1)(-1) = 1$
The reciprocal of -1 is -1

3. If $|x| = 12$, determine all values of x . $x = 12$ and -12

For #'s 4 – 7, write and evaluate an integer expression to answer the question.

4. The temperature was 3°C last night. The temperature now is -4°C . What was the change in temperature?

Always begin your expression with the ending temperature. The temperature dropped so the change is negative.

$$\begin{array}{l}
 -4 - 3 \\
 -4 + (-3) \\
 -7
 \end{array}$$

The change in temperature was -7°



5. You owe \$225 on your credit card. You make a \$55 payment and then purchase \$87 worth of clothes at Macys. What is the integer that represents the balance owed on your credit card?

$$\begin{array}{l}
 -225 + 55 - 87 \\
 -170 - 87 \\
 -170 + (-87) \\
 -257
 \end{array}$$

owe \$225 = -225
payment of \$55 = +55
purchase of \$87 = -87

The balance owed on the credit card is \$257
The integer that represents the balance owed is -257

6. A submarine hovers at 240 meters below sea level. If it descends 160 meters and then ascends 390 meters, what is its new position?

$$\begin{array}{l}
 -240 - 160 + 390 \\
 -240 + (-160) + 390 \\
 -400 + 390 \\
 -10
 \end{array}$$

The new position of the submarine is 10 meters below sea level

240 meters below sea level = -240
descends (go down) 160 meters = -160
ascends (go up) 390 meters = +390

7. A deep-sea exploring ship is pulling up a diver at the rate of 25 feet per minute. The diver is currently 200 feet below sea level. How deep was the diver 10 minutes ago?

$$\begin{array}{l}
 -200 - 25(10) \\
 -200 - 250 \\
 -200 + (-250) \\
 -450
 \end{array}$$

The diver was 450 ft. below sea level 10 minutes ago.

The diver is being pulled up, but we need to think about his depth 10 minutes ago, so we need to subtract the distance he climbed in 10 minutes ($25 \times 10 = 250$ feet). Subtract 250 feet from his current depth of -200 ft.

8. Fill in the blank with **always**, **sometimes** or **never**.

- a. The sum of two negative integers is **never** positive.
- b. The product of two negative integers is **always** positive.
- c. The difference between two integers is **sometimes** negative. Ex: $10 - 4 = 6$ and $4 - 10 = -6$
- d. The absolute value of a number is **sometimes** its opposite. Ex: $|-10| = 10$ and $|10| = 10$
- e. The sum of two integers that are opposites is **always** zero.
- f. The square root of a natural number is **sometimes** rational. Ex: $\sqrt{25} = 5$ (rational)
 $\sqrt{15} \approx 3.8729...$ (irrational)

9. Sally says that -9.5 is an integer because it is a negative number. Do you agree or disagree? Explain.

I disagree with Sally. An integer is a whole number or the opposite of a whole number. The number -9.5 is not the opposite of a whole number. The number -9.5 is a decimal. It is a rational number but not an integer.

10. A store sells self-serve frozen yogurt sundaes. Each sundae is weighed in ounces to determine the cost. Which set of numbers best describes the weight of a sundae?

A. integers

B. rational numbers

C. nonnegative integers

D. nonnegative rational numbers

A sundae cannot weigh a negative amount but it can weigh a fraction of an ounce such as 3.5 ounces.

11. Greg says that $-10^2 = 100$. Do you agree or disagree? Explain.

I disagree with Greg. The expression -10^2 says take the opposite of 10^2 which is $-(10 \times 10)$ and that equals -100 . The expression $(-10)^2$ says take -10 and raise it to the second power which is $(-10)(-10)$ and that equals 100 .

12. Evaluate when $a = 9$, $b = -3$ and $c = -1$. Show all necessary work.

$$\begin{aligned} & |-b^2 + ac^6| \\ & | -(-3)^2 + (9)(-1)^6 | \\ & | -9 + (9)(1) | \\ & | -9 + 9 | \\ & | 0 | \\ & \mathbf{0} \end{aligned}$$