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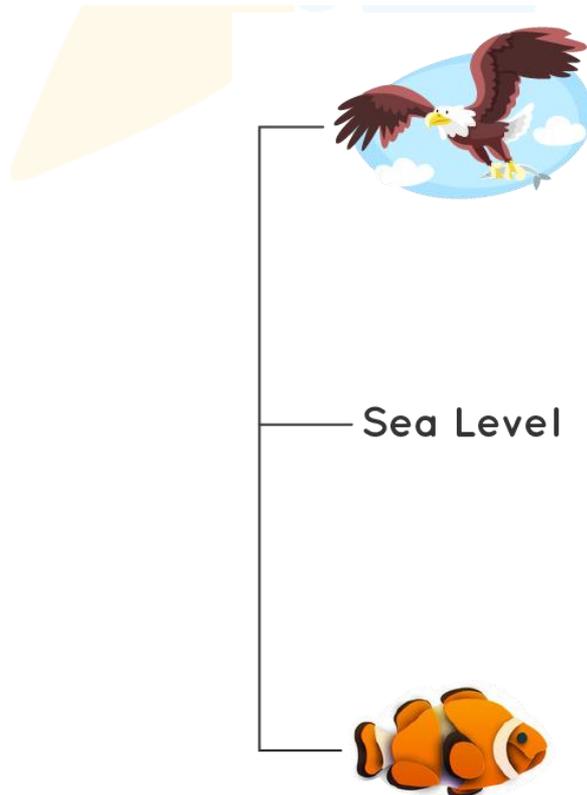
## 8th Grade Integers Worksheets

- Express the following as positive or negative integers.
  - 25,000**ft is the height of a mountain range
  - \$10,000** deposited every month in a bank account
- Arrange the following integers in ascending order:  
**33, -4, 9, 1, 26, -14**
- By how much and in which direction, would there be a shift on the number line if the integer **(-17)** is subtracted from the integer **(-23)**?
- Give 'True' or 'False' for the following statements, along with explanations.
  - Any integer is always smaller than its opposite.
  - If a negative integer is subtracted from a negative integer, then we move to the right side on the number line.
- For any three integers **a, b**, and **c**, prove that integer addition is associative and commutative.
- Simplify, using appropriate properties of integers:  
$$\frac{8}{9} \div \frac{13}{7} - \frac{2}{9} \div \frac{13}{7} + \frac{1}{3} \div \frac{13}{7}$$
- Simplify, using appropriate properties of integers:  
$$(-986) \times 27 + (-14) \times 27$$

8. Andrew deposits 5500\$ and withdrawn 4800\$ alternately every month to a bank. Find the amount in his account after 1 year if he starts by depositing 5500\$ from the first month.



9. A bird is flying 1200 feet above the sea level. At a particular point, it is directly above a fish floating at 400 feet below the sea level. By how much the bird must descend its flight to be as far as from the sea level, as the fish is?



10. If four days ago, it was 26th January. What will be the date after 3 days from today?



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**ANSWERS**

1) (a) (25000) (b)(+10000)	2) -14,-4,1,9,26,33	3) 17 units, right
4)a) False b) True	5) Yes	6) $\frac{7}{13}$
7) -2700	8) 4200ft	9) -15 F
10) 1710ft		

## SOLUTIONS

Complete solution/explanation



- Quantities like increase in temperature, height above sea level, etc are expressed with positive integers whereas quantities like decrease in temperature, depth below sea level, etc are expressed with negative integers.

a. increase in temperature by  $50^{\circ}F$  is expressed as **+50**.

b. **30,000** feet above the sea level is expressed as **+30000**.

- Since we know that as we move to the left on the number line, the numbers decrease and as we move to the right on the number line, the number increases.

As seen on the number line, the integers are arranged in descending order as:

$$(-65), (-6), (-2), 3, 8, 25$$

- Adding **17** to **(-19)** gives:

$$17 + (-19) = (-2)$$

**+ (17)**



Therefore, there is a shift of **17** units to the right of **(-19)** to **(-2)** on the number line.

- a. **False**.

Let's simplify  $(-11) - (-21)$  to see if we get a negative or a positive integer.

$$(-11) - (-21) = (-11) + 21 = 10$$

Since the result is a positive integer, therefore, the given statement is false.

b. **True**

We know that as we move to the right on the number line, the number keeps increasing, therefore, the given statement is true.

5. The closure property of addition and subtraction of integers means that if we add or subtract any two integers, the result is always an integer.

Let's take examples:

$$\text{Let } a = 4, b = 5$$

Now,  $a + b = 4 + 5 = 9$ , the result is an integer

and,  $a - b = 4 - 5 = (-1)$ , the result is an integer.

Again,

$$\text{Let } p = (-3), q = (-9)$$

Now,  $p + q = (-3) + (-9) = -3 - 9 = (-12)$ , the result is an integer.

and,  $p - q = (-3) - (-9) = (-3) + 9 = 6$ , the result is an integer.

Since we saw that the result in both the cases is an integer, therefore, addition and subtraction of integers is closed.

6. Let's simplify the given expression:

$$\frac{39}{-8} \times \frac{29}{42} \times \frac{4}{26} \times \frac{-28}{87}$$

$$= \frac{39}{-8} \times \frac{4}{26} \times \frac{-28}{87} \times \frac{29}{42} \text{ (Using the associative$$

property)

$$= \frac{39 \times 4}{(-8) \times 26} \times \frac{(-28) \times 29}{87 \times 42}$$

$$= \frac{3 \times 1}{(-2) \times 2} \times \frac{(-2) \times 1}{3 \times 3} \text{(Eliminating the common factors)}$$

$$= \frac{6}{(-4)} \times \frac{(-2)}{9}$$

$$= \frac{6 \times (-2)}{(-4) \times 9} \text{(Using the commutative property)}$$

$$= \frac{(-12)}{(-36)}$$

$$= 3 \text{(Eliminating the common factors)}$$

7. Let's simplify the given expression:

$$(-309) \times 420$$

$$= ((-300) + (-9)) \times 420$$

$$= ((-300) \times 420 + (-9)) \times 420$$

$$= (-126000) + (-3780)$$

$$= (-126000 - 3780)$$

$$= (-129780)$$

8. Since **3** marks were awarded for every correct answer and **1** mark is deducted for every incorrect answer:

For **15** correct answers =  $15 \times 3 = 45$  marks

For **7** incorrect answer =  $(-1) \times 7 = (-7)$  marks

Total points =  $45 + (-7) = 45 - 7 = 38$  marks

Therefore, the student scored **38** marks.

9. Temperature recorded on Sunday evening =  $(-11)^{\circ}F$

If the temperature decreases by  $5^{\circ}F$  at midnight,

temperature at midnight =  $(-11)^{\circ}F - 5^{\circ}F = (-16)^{\circ}F$

The temperature increases by  $1^{\circ}F$  at sunrise, temperature at sunrise =  $(-16)^{\circ}F + 1^{\circ}F = (-15)^{\circ}F$

10. Depth of the submarine = **2750**ft

Depth of the fish = **40**ft

To be **1000**ft above the submarine, the fish must be at:

=  $2750 - 1000 = 1750$ ft below sea level.

Since the fish is already **40**ft below the sea level, therefore, it must descend by:

=  $1750 - 40 = 1710$ ft

Therefore, the fish must descend by **1710**ft to be exactly **1000**ft above the submarine.

## FUN FACT

- An integer can be negative, zero or positive.
- A number if expressed in a fractional form is not an integer.
- There are infinite real numbers between any two integers.
- There are zero integers between any two integers.
- We cannot determine the smallest and the largest integers.

