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8th Grade Integers Worksheets

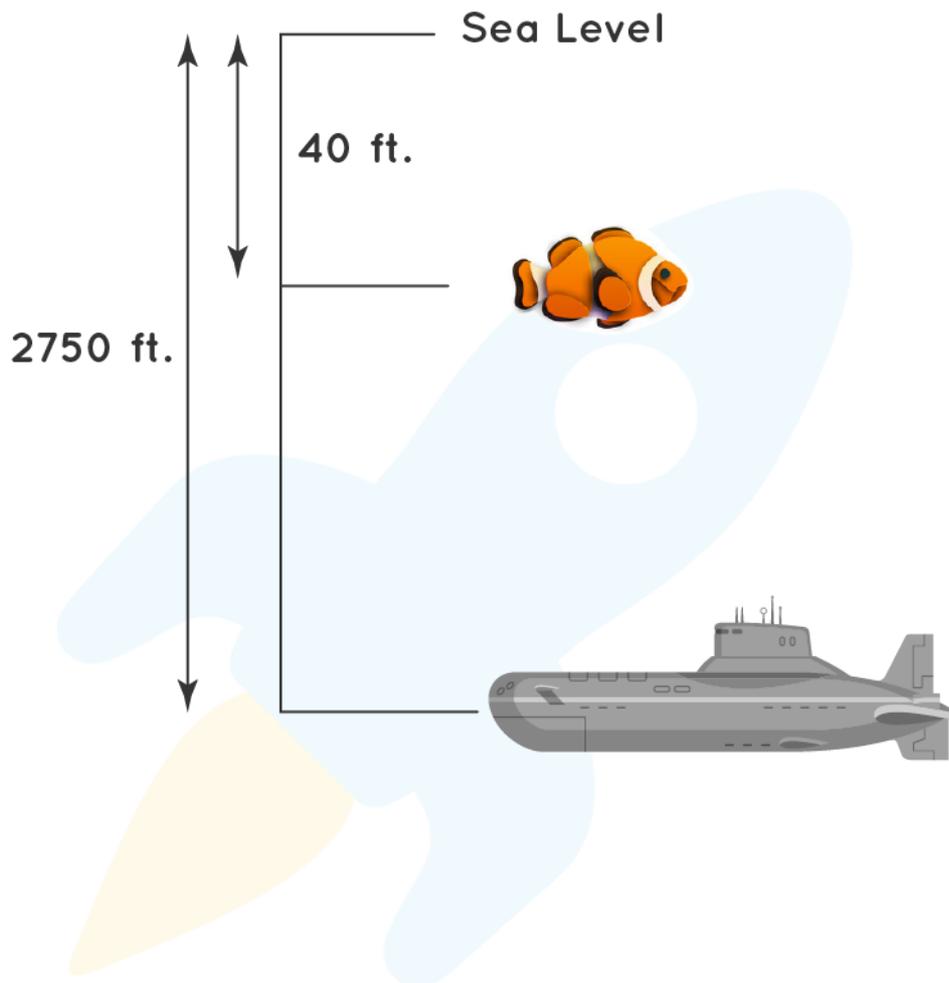
- Express the following as positive or negative integers.
 - An increase in temperature by $50^{\circ}F$.
 - An airplane flying **30,000** feet above the sea level.
- Arrange the following integers in descending order:
3, -6, 8, -2, 25, -65
- By how much and in which direction, would there be a shift on the number line if the integer 17 is added to the integer (-19)?
- Give 'True' or 'False' for the following statements, along with explanations.
 - The result of $(-11) - (-21)$ is a negative integer.
 - Any integer to the right is always greater than the one on the left on a number line.
- For any two integers p and q show that whether integers are closed under addition and subtraction.
- Simplify, using appropriate properties of integers:
$$\frac{39}{-8} \times \frac{29}{42} \times \frac{4}{26} \times \frac{-28}{87}$$
- Simplify, using appropriate properties of integers:
 $(-309) \times 420$
- In an examination, 3 marks are awarded for every correct answer and 1 mark is deducted for every incorrect answer..

If a student gets **15** questions correct and **7** questions incorrect, find the marks scored by him.



9. On Sunday evening, the recorded temperature was $-11^{\circ}F$. If the temperature decreases by $5^{\circ}F$ at midnight and increases again by $1^{\circ}F$ at sunrise, find the temperature at sunrise.

10. A submarine is at **2,750** ft below sea level. A fish floats at **40** ft below sea level. By how much the fish must descend to be **1000** ft above the submarine?



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ANSWERS

1) (a) (+50) (b)(+30000)	2) -65,-6,-2,3,8,25	3) 17 units, right
4)a) False b) True	5) Yes	6) 3
7) -129780	8) 38	9) -15 F
10) 1710ft		

SOLUTIONS

Complete solution/explanation



1. 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**.

2. 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:

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

3. 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.

4. 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:

Points scored by the student:

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 = **2750ft**

Depth of the fish = **40ft**

To be **1000ft** above the submarine, the fish must be at:
 $= 2750 - 1000 = 1750$ ft below sea level.

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

$$= 1750 - 40 = 1710\text{ft}$$

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

