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8th Grade Integers Worksheets

Questions

1. Express the following as positive or negative integers.
   a. Andrew lost 550ft points in a video game.
   b. Groundwater level fell to 45ft.

2. Arrange the following integers in descending order:
   $-71,17,71,23,-32,45,-55$

3. By how much and in which direction, would there be a shift on the number line if the integer 8 is subtracted from (-1)?

4. Give 'True' or 'False' for the following statements, along with explanations.
   a. The result of $(-21) + (21)$ is a positive integer.
   b. Any integer to the right is always smaller than the one on the left on a number line.

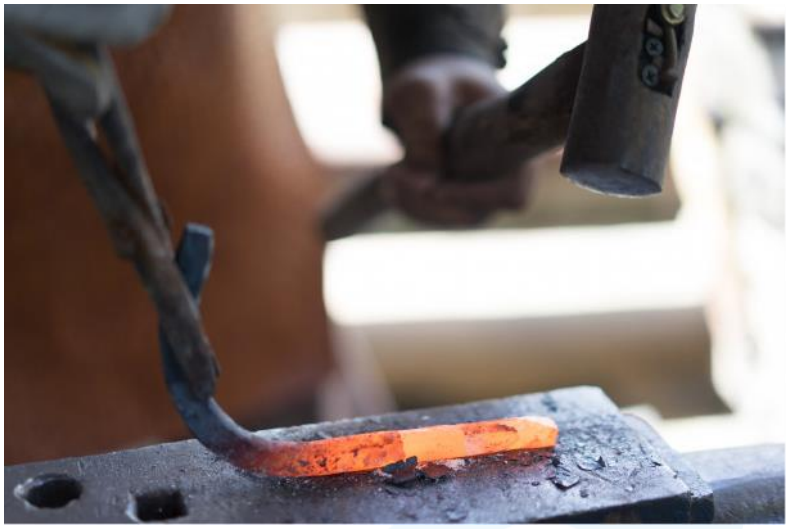
5. For any two integers $p$and $q$show that whether integers are closed under multiplication and division.

6. Simplify, using appropriate properties of integers:
   $-1+\frac{2}{3}-2+\frac{11}{9}$

7. Simplify, using appropriate properties of integers:
   $(23 \div 14)+(41 \div 14)-(8 \div 14)$

8. The temperature of a hot iron rod drops by $8°C$ every hour.

If the temperature of the iron rod is $18°C$, find the temperature after 4 hours.



9. Rice is sold at a profit of$\$4$ per kg and flour is sold at a loss of $\$2$per kg. Find the overall profit and loss if150 kg of rice and 130 kg of flour is sold.

10. Jack is playing a video game in which he wins150 points for a win at the end of a level and loses100points at every foul. If he wins20levels and made12fouls, find the total points earned by him in the whole game.

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ANSWERS

1) (a) (-550) (b)(-45)	2) -71,-55,-32,17,23,45,71	3) 8 units, left
4)a) False b) False	5) Yes	6) -10/9
7) 4	8) -14 Celsius	9) $340 Profit
10) 1800 pts		

SOLUTIONS

Complete solution/explanation

1. Quantities like win points, height above sea level, etc are expressed with positive integers whereas quantities like loose points, depth below sea level, etc are expressed with negative integers.
   a. Andrew lost 550ft points in a video game, which is expressed as (-550)
   b. Groundwater level fell to 45ft, which is expressed as (-45)

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:
   $$-71, -55, -32, 17, 23, 45, 71$$

3. Subtracting 8 from (-1) gives:
   $$(-1) - 8 = (-9)$$
   Therefore, there is a shift of 8 units to the left of (-1) on the number line.

4. a. **False**.
   Let's first simplify the given expression:
   $$(-21) + (21) = -21 + 21 = 0$$
   Since 0 is neither a positive or a negative integer, therefore,

the given statement is wrong.

b. **False**

We know that as we move to the right on the number line, the number increases, and as we move to the left on a number line, the number decreases, therefore, the given statement is not true.

5. The closure property of multiplication and division of integers means that if we multiply or divide any two integers, the result is always an integer.

Let's take examples:

Let $a = (-2). b = 12$

Now, $a \times b = (-2) \times 12 = (-24)$, the result is an integer

and, $a \div b = (-2) \div 12 = (\frac{-2}{12})$, the result is not an integer.

Again,

Let $p = 28, q = (7)$

Now, $p \times q = 28 \times 7 = 196$, the result is an integer.

and, $p \div q = 28 \div 7 = 4$, the result is an integer.

Multiplication of any two integers is always closed for integers, whereas the division of any two integers is not always closed for integers.

6. Let's simplify the given expression:

$$-1 + \frac{2}{3} - 2 + \frac{11}{9}$$

$$= -1 - 2 + \frac{2}{3} + \frac{11}{9} \text{(Using the associative property)}$$

$$= -3 + \frac{6}{9} + \frac{11}{9}$$

$$= -3 + \frac{17}{9}$$

$$= -\frac{27}{9} + \frac{17}{9}$$

$$= \frac{-27+17}{9}$$

$$= \frac{-10}{9}$$

7. Let's simplify the given expression:

$$(23 \div 14) + (41 \div 14) - (8 \div 14)$$

$$= (23 + 41 - 8) \div 14$$

$$= (64 - 8) \div 14$$

$$= 56 \div 14 = 4$$

8. Initial temperature of the iron rod $= 18°C$
   Since the temperature drops by $8°C$ every hour, after 4 hours, drop in temperature $= 4 \times (-8) = (-32)°C$.

   Therefore, the temperature of the hot iron rod after 4 hours
   $= 18 - 32 = (-14)°C$.

9. Price at which rice is sold per kg $= \$4$
   Price if 150 kg of rice $= 4 \times 150 = \$600$
   Price at which flour is sold per kg $= \$2$
   Price if 130 kg of flour $= 2 \times 130 = \$260$

   Since rice is sold at a profit, therefore, the price at which it is sold is expressed as $+600$, and since flour is sold at a loss, therefore, the price at which it is sold is expressed as -260
   Therefore, the overall profit or loss is $= 600 - 260 = \$340$

10. Since Jack can win 150 points for a win at the end of a level and loses 100 points at every fault

Points scored by Jack:
For crossing 20 levels $= 20 \times 150 = 3000$ points
For 12 fouls $= 12 \times (-100) = (-1200)$ points
Total points
$= 3000 + (-1200) = 3000 - 1200 = 1800$ points

Therefore, the total points earned by him in the whole game is 1800 points.

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.