Mathematics

(www.tiwariacademy.com) (Chapter - 1) (Integers) (Class - VII)

Exercise 1.4

Question 1:

Evaluate each of the following:

(a)
$$(-30) \div 10$$

(b)
$$50 \div (-5)$$

(c)
$$(-36) \div (-9)$$

(d)
$$(-49) \div 49$$

(e)
$$13 \div [(-2) + 1]$$

(f)
$$0 \div (-12)$$

(g)
$$(-31) \div [(-30) \div (-1)]$$

(h)
$$\lceil (-36) \div 12 \rceil \div 3$$

(i)
$$\lceil (-6)+5 \rceil \div \lceil (-2)+1 \rceil$$

Answer 1:

(a)
$$(-30) \div 10 = (-30) \times \frac{1}{10} = \frac{-30 \times 1}{10} = -3$$

(b)
$$50 \div (-5) = 50 \times \left(\frac{-1}{5}\right) = \frac{50 \times (-1)}{5} = -10$$

(c)
$$(-36) \div (-9) = (-36) \times \left(\frac{-1}{9}\right) = \frac{(-36) \times (-1)}{9} = \frac{36}{9} = 4$$

(d)
$$(-49) \div 49 = (-49) \times \frac{1}{49} = \frac{-49}{49} = -1$$

(e)
$$13 \div \left[(-2) + 1 \right] = 13 \div (-1) = 13 \times \left(\frac{-1}{1} \right) = -13$$

(f)
$$0 \div (-12) = 0 \times \left(\frac{-1}{12}\right) = \frac{0}{12} = 0$$

(g)
$$(-31) \div [(-30) \div (-1)] = (-31) \div (-30-1) = (-31) \div (-31) = (-31) \times (\frac{-1}{31}) = \frac{31}{31} = 1$$

(h)
$$\left[(-36) \div 12 \right] \div 3 = \left[(-36) \times \frac{1}{12} \right] \times \frac{1}{3} = \left(\frac{-36}{12} \right) \times \frac{1}{3} = (-3) \times \frac{1}{3} = \frac{-3}{3} = -1$$

(i)
$$[(-6)+5] \div [(-2)+1] = (-6+5) \div (-2+1) = (-1) \div (-1) = (-1) \times \frac{(-1)}{1} = 1$$

Question 2:

Verify that $a \div (b+c) \ne (a \div b) + (a \div c)$ for each of the following values of a,b and c.

(a)
$$a = 12, b = -4, c = 2$$

(b)
$$a = (-10), b = 1, c = 1$$

Answer 2:

(a) Given:
$$a \div (b+c) \ne (a \div b) + (a \div c)$$
 and $a = 12, b = -4, c = 2$

Putting the given values in L.H.S. = $12 \div (-4 + 2)$

=
$$12 \div (-2) = 12 \div \left(\frac{-1}{2}\right) = \frac{-12}{2} = -6$$

Putting the given values in R.H.S. = $[12 \div (-4)] + (12 \div 2)$

$$=\left(12\times\frac{-1}{4}\right)+6=-3+6=3$$

Since, L.H.S. \neq R.H.S.

Hence verified.

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(Chapter - 1) (Integers)

$$a \div (b+c) \neq (a \div b) + (a \div c)$$

$$a = -10, b = 1, c = 1$$

Putting the given values in L.H.S. = $-10 \div (1+1)$

$$= -10 \div (2) = -5$$

Putting the given values in R.H.S. = $[-10 \div 1] + (-10 \div 1)$

$$= -10 - 10 = -20$$

Since, L.H.S. ≠ R.H.S. Hence verified.

Ouestion 3:

Fill in the blanks:

(a)
$$369 \div ___ = 369$$

(e)
$$= -87$$

(g)
$$20 \div _ = -2$$

(b)
$$(-75) \div \underline{\hspace{1cm}} = (-1)$$

(d)
$$(-87) \div \underline{\hspace{1cm}} = 87$$

(f)
$$\pm 48 = -1$$

(h)
$$= -3$$

Answer 3:

(a)
$$369 \div 1 = 369$$

(c)
$$(-206) \div (-206) = 1$$

(e)
$$(-87) \div 1 = -87$$

(g)
$$20 \div (-10) = -2$$

(b)
$$(-75) \div 75 = (-1)$$

(d)
$$(-87) \div (-1) = 87$$

(f)
$$(-48) \div 48 = -1$$

(h)
$$(-12) \div (4) = -3$$

Question 4:

Write five pairs of integers (a,b) such that $a \div b = -3$. One such pair is (6,-2) because $6 \div (-2) = (-3)$.

Answer 4:

(i)
$$(-6) \div 2 = -3$$

(i)
$$(-6) \div 2 = -3$$
 (ii) $9 \div (-3) = -3$

(iii)
$$12 \div (-4) = -3$$

(iv)
$$(-9) \div 3 = -3$$

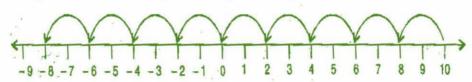
(v)
$$(-15) \div 5 = -3$$

Question 5:

The temperature at noon was 10°C above zero. If it decreases at the rate of 2°C per hour until mid-night, at what time would the temperature be 8°C below zero? What would be the temperature at mid-night?

Answer 5:

Following number line is representing the temperature:



Temperature in (°C)

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The temperature decreases $2^{\circ}C = 1$ hour, the temperature decreases $1^{\circ}C = \frac{1}{2}$ hour

The temperature decreases $18^{\circ}\text{C} = \frac{1}{2} \times 18 = 9 \text{ hours}$

Total time = 12 noon + 9 hours = 21 hours = 9 pm

Thus, at 9 pm the temperature would be 8°C below 0°C.

Ouestion 6:

In a class test (+3) marks are given for every correct answer and (-2) marks are given for every incorrect answer and no marks for not attempting any question.

- (i) Radhika scored 20 marks. If she has got 12 correct answers, how many questions has she attempted incorrectly?
- (ii) Mohini scores (-5) marks in this test, though she has got 7 correct answers. How many questions has she attempted incorrectly?

Answer 6:

- (i) Marks given for one correct answer = 3
 Marks given for 12 correct answers = $3 \times 12 = 36$ Radhika scored 20 marks.

 Therefore, Marks obtained for incorrect answers = 20 36 = -16Now, marks given for one incorrect answer = -2Therefore, number of incorrect answers = $(-16) \div (-2) = 8$ Thus, Radhika has attempted 8 incorrect questions.
- (ii) Marks given for seven correct answers = $3 \times 7 = 21$ Mohini scores = -5Marks obtained for incorrect answers = = -5 - 21 = -26Now, marks given for one incorrect answer = -2Therefore, number of incorrect answers = $(-26) \div (-2) = 13$ Thus, Mohini has attempted 13 incorrect questions.

Question 7:

An elevator descends into a mine shaft at the rate of 6 m/min. If the descent starts from 10 above the ground level, how long will it take to reach -350 m?

Answer 7:

Starting position of mine shaft is 10 m above the ground but it moves in opposite direction so it travels the distance (-350) m below the ground.

So total distance covered by mine shaft = 10 m - (-350) m = 10 + 350 = 360 mNow, time taken to cover a distance of 6 m by it = 1 minute

So, time taken to cover a distance of 1 m by it = $\frac{1}{6}$ minute

Therefore, time taken to cover a distance of 360 m = $\frac{1}{6} \times 360 = 60$ minutes = 1 hour (Since 60 minutes = 1 hour)

Thus, in one hour the mine shaft reaches –350 below the ground.

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