CLASS NOTES-ANSWERS

EXERCISE 1.4

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) $(-31) \div [(-30) + (-1)]$ (h) $[(-36) \div 12] \div 3$

    (i) $[(- 6) + 5)] \div [(-2) + 1]$

Answer:

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

    (b) $50 \div (-5) = \frac{50}{(-5)} = -10$

    (c) $(-36) \div (-9) = \frac{(-36)}{(-9)} = 4$

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

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

    (f) $0 \div (-12) = \frac{0}{(-12)} = 0$

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

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

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

2. Verify that $a \div (b + c) \neq (a \div b) + (a \div c)$ 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:

(a) L.H.S = a ÷ (b + c)

= 12 ÷ (-4 + 2)

= 12 ÷ (-2)

$= \frac{12}{(-2)}$

= -6

R.H.S = (a ÷ b) + (a ÷ c)

= (12 ÷ -4) + (12 ÷ 2)

$= \frac{12}{(-4)} + \frac{12}{2}$

= -3 + 6

= 3

(-6) ≠ 3

L.H.S ≠ R.H.S

∴ a ÷ (b + c) ≠ (a ÷ b) + (a ÷ c)

(b) L.H.S = a ÷ (b + c)

= (–10) ÷ (1 + 1)

= (-10) ÷ 2

$= \frac{(-10)}{2}$

= -5

R.H.S = (a ÷ b) + (a ÷ c)

= (-10 ÷ 1) + (-10 ÷ 1)

$$= \frac{(-10)}{1} + \frac{(-10)}{1}$$

$$= (-10) + (-10)$$

$$= -20$$

$$(-5) \neq (-20)$$

L.H.S ≠ R.H.S

∴ a ÷ (b + c) ≠ (a ÷ b) + (a ÷ c)

3. Fill in the blanks:

(a) 369 ÷ _____ = 369   (b) (–75) ÷ _____ = –1

(c) (–206) ÷ _____ = 1   (d) – 87 ÷ _____ = 87

(e) _____ ÷ 1 = – 87   (f) _____ ÷ 48 = –1

(g) 20 ÷ _____ = –2   (h) _____ ÷ (4) = –3

Answer:

(a) 369 ÷ _1_ = 369

(b) (–75) ÷ _75_ = 1

(c) (–206) ÷ _(–206)_ = 1_

(d) – 87 ÷ _-1_ = 87

(e) _(-87)_ ÷ 1 = – 87

(f) _(-48)_ ÷ 48 = –1

(g) 20 ÷ _(-10)_ = –2

(h) _(-12)_ ÷ (4) = –3

4. Write five pairs of integers (a, b) such that a ÷ b = –3.

One such pair is (6, –2) because 6 ÷ (–2) = (–3).

Answer: i) (–9) ÷ 3 = (–3)

ii) 12 ÷ (–4) = (–3)

iii) (–15) ÷ 5= (–3)

iv) 18 ÷ (–6) = (–3)

v) (–27) ÷ 9= (–3)

5. The temperature at 12 noon was 10°C above zero. If it decreases at the rate of 2°C per hour until midnight, at what time would the temperature be 8°C below zero? What would be the temperature at mid-night?

Answer: The temperature at 12 noon = 10°C

Change in temperature per hour = -2°C

a) Temperature at 1:00 PM = 10°C + (-2°C) = 8°C

Temperature at 2:00 PM = 8°C + (-2°C) = 6°C

Temperature at 3:00 PM = 6°C + (-2°C) = 4°C

Temperature at 4:00 PM = 4°C + (-2°C) = 2°C

Temperature at 5:00 PM = 2°C + (-2°C) = 0°C

Temperature at 6:00 PM = 0°C + (-2°C) = -2°C

Temperature at 7:00 PM = -2°C + (-2°C) = -4°C

Temperature at 8:00 PM = -4°C + (-2°C) = -6°C

Temperature at 9:00 PM = -6°C + (-2°C) = -8°C

∴   The temperature will be 8°C below zero at 9:00 PM

b) The temperature at 12 noon = 10°C

From 12 noon to midnight (12 A.M.), it will take 12 hours

Change in temperature per hour = -2°C

Change in temperature in 12 hours = 12 × (-2) = -24°C

At midnight, the temperature will be = 10 + (-24) = -14°C

Therefore, the temperature at midnight will be 14ºC below 0.

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: Marks for every correct answer = 3

Marks for every incorrect answer = –2

Marks for not attempting any question = 0

(i) Total score of Radhika = 20

Number of correct answers given by Radhika = 12

Marks obtained for 12 correct answers = 3 × 12 = 36

Marks obtained for incorrect answers

= Total score - Marks obtained for 12 correct answers

= 20 – 36

= –16

Marks obtained for every incorrect answer = –2

Thus, number of incorrect answers

= (–16) ÷ (–2)

= 8

∴ She attempted 8 questions wrongly.

(ii) Total score of Mohini = –5

Number of correct answers given by Mohini = 7

Marks obtained for 7 correct answers = 7× 3 = 21

Marks obtained for incorrect answers

= Total score - marks obtained for 7 correct answers

= –5 – 21

= –26

Marks obtained for every incorrect answer = –2

Thus, number of incorrect answers

= (–26) ÷ (–2)

= 13

∴ She attempted 13 questions wrongly.

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

Answer: Total distance covered by an elevator

= 10 - (-350)m

= 10 + (350)

= 360 m

So, time taken to cover a distance of 6 m = 1 minute

Therefore, time taken to cover 360m

= 360 ÷ 6

= 60 minutes

= 1 hour

Thus, the elevator will reach –350 m from 10 m in 1 hour.