CLASS NOTES-ANSWERS

EXERCISE 1.3

1. Find each of the following products:

(a) 3 × (–1) (b) (–1) × 225 (c) (–21) × (–30)

(d) (–316) × (–1) (e) (–15) × 0 × (–18) (f) (–12) × (–11) × (10)

(g) 9 × (–3) × (– 6) (h) (–18) × (–5) × (– 4) (i) (–1) × (–2) × (–3) × 4

(j) (–3) × (–6) × (–2) × (–1)

Answer:

(a) 3 × (–1) = – 3

(b) (–1) × 225 = –225

(c) (–21) × (–30) = 630

(d) (–316) × (–1) = 316

(e) (–15) × 0 × (–18) = 0

(f) (–12) × (–11) × 10 = 1320

(g) 9 × (–3) × (–6) = 162

(h) (–18) × (–5) × (–4) = –360

(i) (–1) × (–2) × (–3) × 4 = –24

(j) (–3) × (–6) × (–2) × (–1) = 36

2. Verify the following:

(a) 18 × [7 + (–3)] = [18 × 7] + [18 × (–3)]

(b) (–21) × [(– 4) + (– 6)] = [(–21) × (– 4)] + [(–21) × (– 6)]

Answer:

(a) L.H.S = 18 × [7 + (–3)]

= 18 × 4

= 72

R.H.S = [18 × 7] + [18 × (–3)]

= 126 + (–54)

= 72

Hence, L.H.S = R.H.S.

(b) L.H.S = (–21)× [(–4)+ (–6)]

= [(-21)× (-4 - 6)]

= -21× -10

= 210

R.H.S = [(–21)× (–4)] + [(–21)× (–6)]

= [84] + [126]

= 210

Hence, L.H.S = R.H.S

3. (i) For any integer a, what is (–1) × a equal to?

(ii) Determine the integer whose product with (–1) is

(a) –22 (b) 37

Answer:

(i) (–1) × a = –a

When we multiply an integer a with -1, we get the additive inverse of that integer.

(ii) (a) Let x be the required integer

$x \times (-1) = -22$

$x = \frac{-22}{-1}$

∴ x = 22, required integer.

When we multiply the integer 22 with -1, we get the additive inverse of that integer.

(b) Let y be the required integer

$y \times (-1) = 37$

$y = \frac{37}{-1}$

∴ y = -37, the required integer

When we multiply the integer -37 with -1, we get the additive inverse of that integer.

(c) Let z be the required integer

$z \times (-1) = 0$

$z = \frac{0}{-1}$

∴ z = 0, the required integer

The product of a negative integer and zero is zero.

4. Starting from (–1) × 5, write various products showing some pattern to show (–1) × (–1) = 1.

Answer:

(-1) x 5 = -5

(-1) x 4 = -4

(-1) x 3 = -3

(-1) x 2 = -2

(-1) x 1 = -1

(-1) x 0 = 0

(-1) x (-1) = 1

5. Find the product, using suitable properties:

(a) 26 × (– 48) + (– 48) × (–36)

(b) 8 × 53 × (–125)

(c) 15 × (–25) × (– 4) × (–10)

(d) (– 41) × 102

(e) 625 × (–35) + (– 625) × 65

(f) 7 × (50 – 2)

(g) (–17) × (–29)

(h) (–57) × (–19) + 57

Answer:

(a) Using distributive property, we get

(a × b) + (b × c) = b × (a + c)

= (- 48) × [26 + (- 36)]

= (- 48) × (-10)

= 480

(b) Using associative property, we get

$(a \times b) \times c = a \times (b \times c)$

= 8 × [53 × (–125)]

= 8 × (–6625)

= –53000

(c) Using associative property, we get

= 15 × [(–25) × (–4) × (–10)]

= 15 × [100 ×(–10)]

= 15 × [-1000]

= –15000

(d) Using distributive law, we get

a × (b + c) = (a × b) + (a × c)

= (- 41) × (100 + 2)

= [(- 41) × 100] + [(- 41) × 2]

= (- 4100) + (- 82)

= - 4182

(e) Using distributive property, we get

(a × b) + (a × c) = a (b + c)

= 625 × [(- 35) +(- 65)]

= 625 × [-100]

= - 62500

(f) Using distributive property, we get

(a × b) + (a × c) = a (b + c)

7× (50 - 2) = 7× 50 - 7× 2

= 350 -14

= 336

(g) Using distributive property, we get

(a × b) + (a × c) = a (b + c)

(–17) × (–29) = (-17) × [(- 30) +1]

= [(-17) × (- 30)] + [(-17) × 1]

= 510 + (-17)

= 493

(h) Using distributive property, we get

$(a \times b) + (a \times c) = a \times (b + c)$

$= [(-57) \times (-19)] + [57 \times 1]$

$= (57 \times 19) + (57 \times 1)$

$= 57 \times (19+1)$

$= 57 \times 20$

$= 1140$

6. A certain freezing process requires that room temperature be lowered from 40°C at the rate of 5°C every hour. What will be the room temperature 10 hours after the process begins?

Answer: Present temperature of room = 40°c

Decrease in temperature after every hour = 5°c

Temperature of room after 10 hours

$= 40^{o}c + [10 \times (-5)°c]$

$= 40^{o}c - 50^{o}\ c$

$= -10^{o}c$

Thus, the room temperature after 10 hours is –10°c, after the process begins.

7. In a class test containing 10 questions, 5 marks are awarded for every correct answer and (–2) marks are awarded for every incorrect answer and 0 for questions not attempted.

(i) Mohan gets four correct and six incorrect answers. What is his score?

(ii) Reshma gets five correct answers and five incorrect answers, what is her score?

(iii) Heena gets two correct and five incorrect answers out of seven questions she attempts. What is her score?

Answer:

Total number of questions = 10

Marks awarded for every correct answer = 5

Marks awarded for every incorrect answer = (–2)

Marks for not attempted question = 0

(i) Marks for 4 correct answers = 4 × 5 = 20

Marks for 6 incorrect answers = 6 × (–2) = –12

∴ Total score of Mohan = Marks for correct answers + marks for incorrect answers

= 20 + (–12)

= 8

Thus, Mohan gets 8 marks in the class test.

(ii) Marks for 5 correct answers = 5 × 5 = 25

Marks for 5 incorrect answers = 5 × (–2)

= –10

∴ Total score of Reshma = Marks for correct answers + marks for incorrect answers

= 25 + (–10)

= 15

Thus, Reshma gets 15 marks.

(iii) Marks for correct answers = 2 × 5 = 10

Marks for 5 incorrect answers = 5 × (–2) = –10

Marks for not attempted questions = 3 × 0 = 0

Total score of Heena = Marks for correct answers + marks for incorrect answers + marks for not attempted questions

= 10 + (–10) + 0

= 0

8. A cement company earns a profit of ₹ 8 per bag of white cement sold and a loss of ₹ 5 per bag of grey cement sold.

(a) The company sells 3,000 bags of white cement and 5,000 bags of grey cement in a month. What is its profit or loss?

(b) What is the number of white cement bags it must sell to have neither profit nor loss, if the number of grey bags sold is 6,400 bags.

Answer:

Profit on one white cement bag = ₹ 8

Loss on one grey cement bag = Rs -5

(a) Profit on 3,000 bags of white cement

= 3,000 × 8

= Rs 24,000

Loss on 5,000 bags of gray cement

= 5,000 × (-5)

= - Rs 25,000

Total profit/ loss = Profit + Loss

= (-25,000) + 24,000

= -1,000

∴ The company have a loss of Rs 1000.

(b) Number of gray bags sold = 6400

Loss on selling 6400 gray cement bags = (-5) × 6400

= - 32000

Let the number of white bags = x

Profit on selling x white cement bags

= 8 × x

= 8x

Company must sell the cement bags to have neither profit nor loss.

i.e., Profit + Loss = 0

8x + (-32000) = 0

8x = 32000

$x = \frac{32000}{8} = 4000$

∴ 4000 bags of white cement have neither profit nor loss.

9. Replace the blank with an integer to make it a true statement.

(a) (–3) × _____ = 27

(b) 5 × _____ = –35

(c) _____ × (– 8) = –56

(d) _____ × (–12) = 132

Answer:

(a) (-3) × (-9) = 27

(b) 5 × (-7) = -35

(c) 7 × (-8) = -56

(d) (-11) × (-12) = 132