



PUBLIC SCHOOL DARBHANGA

Session (2020-21)

CLASS 7

Mathematics

Integers (Worksheet no.3) (answer key)

1. Find each of the following products:

(a) $3 \times (-1)$ Solution:-

By the rule of Multiplication of integers,

$$= 3 \times (-1)$$

$$= -3$$

$$\dots [\because (+ \times - = -)]$$

By the rule of Multiplication of integers,

$$\dots [\because (- \times + = -)]$$

By the rule of Multiplication of integers,

$$\dots [\because (- \times - = +)]$$

By the rule of Multiplication of integers,

$$\dots [\because (- \times - = +)]$$

(b) $(-1) \times 225$ Solution:-

$$= (-1) \times 225$$

$$= -225$$

(c) $(-21) \times (-30)$ Solution:-

$$= (-21) \times (-30)$$

$$= 630$$

(d) $(-316) \times (-1)$ Solution:-

$$\begin{aligned} &= (-316) \times (-1) \\ &= 316 \end{aligned}$$

(e) $(-15) \times 0 \times (-18)$ Solution:-

By the rule of Multiplication of integers,

$$\begin{aligned} &= (-15) \times 0 \times (-18) \\ &= 0 \end{aligned}$$

∴ Any integer is multiplied with zero and the answer is zero itself.

(f) $(-12) \times (-11) \times (10)$

By the rule of multiplication,

$$= (-12) \times (-11) \times (10)$$

First multiply the two numbers having same sign,

$$\begin{aligned} &= 132 \times 10 && \dots [\because (- \times - = +)] \\ &= 1320 \end{aligned}$$

(g) $9 \times (-3) \times (-6)$ Solution:-

By the rule of Multiplication of integers,

$$= 9 \times (-3) \times (-6)$$

$$\dots [\because (- \times - = +)]$$

By the rule of Multiplication of integers,

First multiply the two numbers having same sign,

$$\begin{aligned} &\dots [\because (- \times - = +)] \\ &\dots [\because (+ \times - = -)] \end{aligned}$$

First multiply the two numbers having same sign,
 $= 9 \times 18$
 $= 162$

By the rule of Multiplication of integers,

$$= [(-1) \times (-2)] \times [(-3) \times 4]$$

$$\dots [\because (- \times - = +), (- \times + = -)]$$

(h) $(-18) \times (-5) \times (-4)$ Solution:-

$$= (-18) \times (-5) \times (-4)$$

$$= 90 \times -4$$

$$= -360$$

(i) $(-1) \times (-2) \times (-3) \times 4$ Solution:-

$$= 2 \times (-12)$$

$$= -24$$

(j) $(-3) \times (-6) \times (-2) \times (-1)$ Solution:-

By the rule of Multiplication of integers,

$$= [(-3) \times (-6)] \times [(-2) \times (-1)]$$

First multiply the two numbers having same sign,

$$= 18 \times 2$$

... [$\because (- \times - = +)$]

$$= 36$$

1. Verify the following:

(a) $18 \times [7 + (-3)] = [18 \times 7] + [18 \times (-3)]$ Solution:-

From the given equation,

Let us consider the Left Hand Side (LHS) first = $18 \times [7 + (-3)]$

$$= 18 \times [7 - 3]$$

$$= 18 \times 4$$

$$= 72$$

Now, consider the Right Hand Side (RHS) = $[18 \times 7] + [18 \times (-3)]$

$$= [126] + [-54]$$

$$= 126 - 54$$

By

$$= 72$$

Hence, the given equation is verified.

$$(b) (-21) \times [(-4) + (-6)] = [(-21) \times (-4)] + [(-21) \times (-6)]$$

$$\begin{aligned} \text{Let us consider the Left Hand Side (LHS) first} &= (-21) \times [(-4) + (-6)] \\ &= (-21) \times [-4 - 6] \\ &= (-21) \times [-10] \\ &= 210 \end{aligned}$$

$$\begin{aligned} \text{Now, consider the Right Hand Side (RHS)} &= [(-21) \times (-4)] + [(-21) \times (-6)] \\ &= [84] + [126] \\ &= 210 \end{aligned}$$

Hence, the given equation is verified.

comparing LHS and RHS, $72 = 72$
 $72 \text{ LHS} = \text{RHS}$

Solution:-

From the given equation,

By comparing LHS and RHS, $210 = 210$
 $\text{LHS} = \text{RHS}$

2. (i) For any integer a, what is $(-1) \times a$ equal to?

Solution:- $(-1) \times a = -a$

Because, when we multiplied any integer a with -1, then we get additive inverse of that integer.

(ii). Determine the integer whose product with (-1) is (a) -22 Solution:-

Now, multiply -22 with (-1) , we get

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

$$= 22$$

Because, when we multiplied integer -22 with -1, then we get additive inverse of that integer.

Because, when we multiplied integer 37 with -1, then we get additive inverse of that integer.

Because, the product of negative integers and zero give zero only.

3. Starting from $(-1) \times 5$, write various products showing some pattern to show $(-1) \times (-1) =$

Solution:-

Now, multiply 37 with (-1), we get
 $= 37 \times (-1)$
 $= -37$

(c) 0

Solution:-

Now, multiply 0 with (-1), we get
 $= 0 \times (-1)$
 $= 0$

1.

Solution:-

The various products are,
 $= -1 \times 5 = -5$
 $= -1 \times 4 = -4$
 $= -1 \times 3 = -3$
 $= -1 \times 2 = -2$
 $= -1 \times 1 = -1 =$
 $-1 \times 0 = 0$
 $= -1 \times -1 = 1$

We concluded that the product of one negative integer and one positive integer is negative integer. Then, the product of two negative integers is a positive integer.

4. Find the product, using suitable properties:

(a) $26 \times (-48) + (-48) \times (-36)$ Solution:-

The given equation is in the form of Distributive law of Multiplication over Addition.

$$= a \times (b + c) = (a \times b) + (a \times c) \text{ Let,}$$

$$a = -48, b = 26, c = -36 \text{ Now,}$$

$$= 26 \times (-48) + (-48) \times (-36)$$

$$= -48 \times (26 + (-36))$$

$$\dots [\because (- \times - = +)]$$

$$= -48 \times (26$$

$$- 36)$$

$$= -48 \times (-$$

$$10)$$

$$= 480$$

The given equation is in the form of Commutative law of Multiplication.

The given equation is in the form of Commutative law of Multiplication.

(b) $8 \times 53 \times (-125)$ Solution:-

$$= a \times b = b \times a \text{ Then,}$$

$$= 8 \times [53 \times (-125)] =$$

$$8 \times [(-125) \times 53] =$$

$$[8 \times (-125)] \times 53$$

$$= [-1000] \times 53$$

$$= -53000$$

(c) $15 \times (-25) \times (-4) \times (-10)$ Solution:-

$$= a \times b = b \times a \text{ Then,}$$

$$= 15 \times [(-25) \times (-4)] \times (-10)$$

$$= 15 \times [100] \times (-10)$$

$$= 15 \times [-1000]$$

$$= - 15000$$

(d) $(- 41) \times 102$ Solution:-

The given equation is in the form of Distributive law of Multiplication over Addition. $= a \times (b + c) = (a \times b) + (a \times c)$

$$\begin{aligned} &= (-41) \times (100 + 2) \\ &= (-41) \times 100 + (-41) \times 2 \\ &= - 4100 - 82 \\ &= - 4182 \end{aligned}$$

(e) $625 \times (-35) + (- 625) \times 65$ Solution:-

The given equation is in the form of Distributive law of Multiplication over Addition.

$$\begin{aligned} &= a \times (b + c) = (a \times b) + (a \times c) \\ &= 625 \times [(-35) + (-65)] \\ &= 625 \times [-100] \\ &= - 62500 \end{aligned}$$

The given equation is in the form of Distributive law of Multiplication over Subtraction.

The given equation is in the form of Distributive law of Multiplication over Addition.

(f) $7 \times (50 - 2)$ Solution:-

$$\begin{aligned} &= a \times (b - c) = (a \times b) - (a \times c) \\ &= (7 \times 50) - (7 \times 2) \\ &= 350 - 14 \\ &= 336 \end{aligned}$$

(g) $(-17) \times (-29)$ Solution:-

$$\begin{aligned} &= a \times (b + c) = (a \times b) + (a \times c) \\ &= (-17) \times [-30 + 1] \\ &= [(-17) \times (-30)] + [(-17) \times 1] \end{aligned}$$

$$= [510] + [-17]$$

$$= 493$$

(h) $(-57) \times (-19) + 57$ Solution:-

The given equation is in the form of Distributive law of Multiplication over Addition.

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

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

$$= 57 [19 + 1]$$

$$= 57 \times 20$$

$$= 1140$$

5. 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?

Solution:-

From the question, it is given that

Let us take the lowered temperature as negative, Initial temperature
 $= 40^\circ\text{C}$

Change in temperature per hour $= -5^\circ\text{C}$

Change in temperature after 10 hours $= (-5) \times 10 = -50^\circ\text{C}$

$$\therefore \text{The final room temperature after 10 hours of freezing process} = 40^\circ\text{C} + (-50^\circ\text{C})$$

$$= -10^\circ\text{C}$$

6. 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? Solution:-

From the question,

Marks awarded for 1 correct answer $= 5$ Then,

Total marks awarded for 4 correct answer $= 4 \times 5 = 20$ Marks awarded

for 1 wrong answer $= -2$

Then,

Total marks awarded for 6 wrong answer $= 6 \times -2 = -12$ \therefore Total

$$\text{score obtained by Mohan} = 20 + (-12)$$

$$= 20 - 12$$

$$= 8$$

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

From the question,

Marks awarded for 1 correct answer $= 5$ Then,

Total marks awarded for 5 correct answer $= 5 \times 5 = 25$

Marks awarded for 1 wrong answer $= -2$ Then,

Total marks awarded for 5 wrong answer $= 5 \times -2 = -10$ \therefore Total

$$\text{score obtained by Reshma} = 25 + (-10)$$

$$= 25 - 10$$

$$= 15$$

(iii) Heena gets two correct and five incorrect answers out of seven questions she attempts.

What is her score?

Solution:- From

the question,

Marks awarded for 1 correct answer = 5 Then,

Total marks awarded for 2 correct answer = $2 \times 5 = 10$ Marks

awarded for 1 wrong answer = -2

Then,

Total marks awarded for 5 wrong answer = $5 \times -2 = -10$ Marks awarded

for questions not attempted is = 0

∴ Total score obtained by Heena = $10 + (-10)$

$$= 10 - 10$$

$$= 0$$

7. 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?

Solution:-

We denote profit in positive integer and loss in negative integer, From the question,

Cement company earns a profit on selling 1 bag of white cement = ₹ 8 per bag Then,

Cement company earns a profit on selling 3000 bags of white cement = $3000 \times ₹ 8$

$$= ₹ 24000$$

Loss on selling 1 bag of grey cement = - ₹ 5 per bag Then, Loss

on selling 5000 bags of grey cement = $5000 \times - ₹ 5$

$$= - ₹ 25000$$

Total loss or profit earned by the cement company = profit + loss

$$= 24000 + (-25000)$$

$$= - ₹ 1000 \text{ Thus,}$$

a loss of ₹ 1000 will be incurred by the company.

(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.

Solution:-

We denote profit in positive integer and loss in negative integer, From the question,

Cement company earns a profit on selling 1 bag of white cement = ₹ 8 per bag Let the number of white cement bags be x.

Then,

$$\begin{aligned} \text{Cement company earns a profit on selling } x \text{ bags of white cement} &= (x) \times ₹ 8 \\ &= ₹ 8x \end{aligned}$$

Loss on selling 1 bag of grey cement = - ₹ 5 per bag Then,

$$\begin{aligned} \text{Loss on selling 6400 bags of grey cement} &= 6400 \times - ₹ 5 \\ &= - ₹ 32000 \end{aligned}$$

According to the question,
Company must sell to have neither profit nor loss.

$$\begin{aligned} &= \text{Profit} \\ &+ \text{loss} = \\ &0 \\ &= 8x + (- \\ &32000) \\ &= 0 \end{aligned}$$

By sending -32000 from LHS to RHS it becomes 32000

$$\begin{aligned} &= 8x = \\ &32000 \\ &= x = \\ &32000/8 \\ &= x = \end{aligned}$$

Hence, the 4000 bags of white cement have neither profit nor loss.

8. Replace the blank with an integer to make it a true statement. (a) (-3) ×

4000

 = 27 **Solution:-**

Let us assume the missing integer be x, Then,

$$\begin{aligned} &= (-3) \times (x) = 27 \\ &= x = - (27/3) \\ &= x = -9 \end{aligned}$$

Let us substitute the value of x in the place of blank,

$$= (-3) \times (-9) = 27 \quad \dots [\because (- \times - = +)]$$

(b) 5 × = -35 Solution:-

Let us assume the missing integer be x, Then,

$$\begin{aligned} &= (5) \times (x) = -35 \\ &= x = - (-35/5) = \\ &x = -7 \end{aligned}$$

Let us substitute the value of x in the place of blank,

... [$\because (+ \times - = -)$]

$$= (5) \times (-7)$$

$$= -35$$

$$\times (-8) = -56$$

Let us assume the missing integer be x,

Let us substitute the value of x in the place of blank,

... [$\because (+ \times - = -)$]

$$\times (-12) = 132$$

Let us assume the missing integer be x,

(c)_Solution:-

Then,

$$= (x) \times (-8) = -56$$

$$= x = (-56/-8)$$

$$= x = 7$$

$$= (7) \times (-8) = -56$$

(d)_Solution:-

Then,

$$= (x) \times (-12) = 132$$

$$= x = - (132/12)$$

$$= x = - 11$$

Let us substitute the value of x in the place of blank, =

$$(-11) \times (-12) = 132.$$

