

(#) Properties of multiplication of integers $\Rightarrow$

(i) Commutativity $\rightarrow$ $\boxed{a \times b = b \times a}$

(ii) multiplication by zero $\rightarrow$ $\boxed{a \times 0 = 0 \times a = 0}$

(iii) multiplicative Identity $\rightarrow$ $\boxed{a \times 1 = 1 \times a = a}$

(iv) Associativity $\rightarrow$ $\boxed{(a \times b) \times c = a \times (b \times c)}$

(v) Distributive Property $\Rightarrow$

$$\boxed{a \times (b + c) = a \times b + a \times c}$$

and

$$\boxed{a \times (b - c) = a \times b - a \times c}$$

-	x	-	=	+
-	x	+	=	-
+	x	-	=	-
+	x	+	=	+

Q:-① Find each of the following products:

(a) $3 \times (-1) = -3$ (b) $(-1) \times 225 = -225$

(c) $(-21) \times (-30) = 630$ (d) $(-316) \times (-1) = 316$

(e) $(-15) \times 0 \times (-18) = 0$ (f) $(-12) \times (-11) \times (10) = 12 \times 11 \times 10 = 1320$

(g) , (h) , (i) , (j) $\Rightarrow$ for your home work.

 X

Q:- (2) Verify the following!

BODMAS

Soln:-
(a)

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

$$18 \times [7 - 3] = 126 + (-54)$$

$$18 \times 4 = 126 - 54$$

$$\boxed{72 = 72}$$

Hence verified

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

$$(-21) \times [-4 - 6] = 84 + 126$$

$$(-21) \times (-10) = 210$$

$$\boxed{210 = 210}$$

Hence verified

Q:- (3) (i) For any integer a, what is $(-1) \times a$ equal to?

Soln:-

$$\boxed{(-1) \times a = -a}$$

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

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

(a) -22

Soln:-

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

(b) 37

Soln:-

$$37 \times (-1) = -37$$

(c) 0

Soln:-

$$0 \times (-1) = 0$$

Solⁿ:- (4)

$$(-1) \times 5 = -5$$

$$(-1) \times 4 = -4$$

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

$$(-1) \times 2 = -2$$

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

$$(-1) \times 0 = 0$$

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

Solⁿ:- (5)

(a)

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

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

$$= (-48) \times (-10)$$

$$= 480$$

{ By Distributive prop.

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

Here $a = -48$

$$b = 26$$

$$c = -36$$

(b)

$$\underline{8 \times 53 \times (-125)}$$

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

$$= 53 \times (-1000)$$

$$= -53000$$

{ By Commutative prop.

$$a \times b = b \times a$$

$$(\cancel{a \times b}) \times c = \cancel{a \times (b \times c)}$$

Here $\cancel{a = 8 \times 53}$

$$\cancel{b = -125}$$

(c)

$$15 \times (-25) \times (-4) \times (-10)$$

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

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

$$= 15 \times (-1000)$$

$$= -15000$$

{ By Commutative Prop. }

(d)

$$(-41) \times 102$$

$$= (-41) \times (100 + 2)$$

$$= [-41 \times 100] + [(-41) \times 2]$$

$$= -4100 - 82$$

$$= -4182$$

{ By distribution prop. }

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

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

$$\left\{ \begin{array}{l} \text{By distribution prop} \\ a \times b + a \times c = a \times (b+c) \\ \\ a = 625 \\ b = -35 \\ c = -65 \end{array} \right.$$

$$\begin{aligned}
 (5) \quad & 7 \times (50-2) \\
 &= 7 \times 50 - 7 \times 2 \\
 &= 350 - 14 \\
 &= 336
 \end{aligned}$$

$$\left\{ \begin{array}{l} \text{By distribution prop.} \\ a \times (b-c) = a \times b - a \times c \\ \\ \text{here } a = 7 \\ b = 50 \\ c = 2 \end{array} \right.$$

$$\begin{aligned}
 (g) \quad & (-17) \times (-29) \\
 &= (-29) \times (-17) \\
 &= 493
 \end{aligned}$$

$$\left\{ \begin{array}{l} \text{by commutative prop.} \\ a \times b = b \times a \end{array} \right.$$

$$\begin{aligned}
 (h) \quad & (-57) \times (-19) + 57 \\
 &= (-57) \times (-19) + 57 \times 1 \\
 &= 57 \times 19 + 57 \times 1 \\
 &= 57 \times (19+1) \\
 &= 57 \times 20 \\
 &= 1140
 \end{aligned}$$

$$\left\{ \begin{array}{l} \text{By Distribution prop.} \\ a \times b + a \times c = a \times (b+c) \end{array} \right.$$

= x =

Soln:- (6) Given:- Present room temperature = 40°C

$$\begin{aligned}\text{change in temp. after 10 hours} &= 10 \times (-5) \\ &= -50^{\circ}\text{C}\end{aligned}$$

So,

$$\begin{aligned}\text{Temperature after 10 hours} &= 40^{\circ}\text{C} + (-50^{\circ}\text{C}) \\ &= 40 - 50 \\ &= -10^{\circ}\text{C}\end{aligned}$$

Soln:- (7) (i) Mohan obtained marks for correct ans = $4 \times 5 = 20$
————— || ————— Incorrect ans = $6 \times (-2) = -12$

So, mohan score

$$\begin{aligned}&= 20 + (-12) \\ &= 20 - 12 \\ &= 8\end{aligned}$$

(ii) Reshma obtained marks for correct ans = $5 \times 5 = 25$
————— || ————— Incorrect ans = $\frac{5 \times (-2)}{-2 \times 5} = -10$

So, Reshma score

$$\begin{aligned}&= 25 + (-10) \\ &= 25 - 10 \\ &= 15\end{aligned}$$

(iii) Heena obtained marks for correct ans = $5 \times 2 = 10$
————— || ————— Incorrect ans = $(-2) \times 5 = -10$
————— || ————— for question not attempts = $0 \times 3 = 0$

So, Heena score

$$\begin{aligned}&= 10 + (-10) + 0 \\ &= 10 - 10 \\ &= 0\end{aligned}$$

= X =

Soln!-(8)

(a) Profit earned by selling white bag = $8 \times 3000 = 24000$

Loss incurred by selling grey bag = $5 \times 5000 = 25000$

So Loss > Profit

$$\begin{aligned}\text{Total loss} &= 25000 - 24000 \\ &= 1000\end{aligned}$$

(b) Let white cement bags to be sold be x

Loss incurred = $6400 \times 5 = 32000$

Profit earned = $8 \times x = 8x$

Loss = Profit

$$32000 = 8x$$

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

$$\boxed{4000 = x}$$

So white cement bags are 4000.

Soln!-(9)

(a) $(-3) \times (-9) = 27$

(b) $5 \times (-7) = -35$

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

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

= x