1. Integers

Exercise 1.1

Solution 1:

Solution-01:-

(i) we have,

$12 \times 7 = 84$.

[The Product of two Integers of like signs is equal to the product of their absolute value]

(ii) we have,

$(-15 \times 8$

$= -(15 \times 8)$

$= -120$.

[The Product of two integers of opposite signs is equal to the additive inverse of the product of their absolute values]

(iii) we have,

$(-25) \times (-9)$

$= +(25 \times 9)$

$= 225$

$(-25) \times (-9) = 225$

(iv) $125 \times (-8)$

$= -(125 \times 8)$

$= -1000 = -1000$

$125 \times (-8) = -1000 = -1000$

Solution 2:

Solution-02:-

(i) we have,

$3 \times (-8) \times 5$.

$= -(3 \times 8) \times 5$

$= (-24) \times 5$

$= -(24 \times 5)$

$= -120$.

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

$= -27 \times (-6)$

$= +(27 \times 6)$

$= 162$.

(iii) $(-2) \times 36 \times (-5) = -(2 \times 36) \times (-5)$

$= (-72) \times (-5)$

$= (72 \times 5)$

$= 360$.

(iv) $(-2) \times (-4) \times (-6) \times (-8) = +(2 \times 4) \times (6 \times 8)$

$= 8 \times 48$

$= 384$.

Solution 3:

Solution-03:-

(i) $1487 \times 327 + (-487) \times 327$

$= 486249 - 159249$

$= 327000$.

(ii) $28945 \times 99 - (-28945)$

$= 2865555 - 28945$

$= 2894500$.

Solution 4:

04 | Yes.

X	-4	-3	-2	-1	0	1	2	3	4
-4	16	12	8	4	0	-4	-8	-12	-16
-3	12	9	6	3	0	-3	-6	-9	-12
-2	8	6	4	2	0	-2	-4	-6	-8
-1	4	3	2	1	0	-1	-2	-3	-4.
0	0	0	0	0	0	0	0	0	0
1	-4	-3	-2	1	0	1	2	3	4
2	-8	-6	-4	2	0	2	4	6	8
3	-12	-9	-6	3	0	3	6	9	12
4	-16	-12	-8	4	0	4	8	12	16

Solution 5:

Solution-06:-

(i) $58 \times (-1) = -(58 \times 1)$

$= -58$

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

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

$= 225$.

Solution 6:

Solution-06:-

06. (i) negative positive [+ve]   [∵ -ve × -ve = +ve]

(ii) negative   [-ve × +ve = -ve]

(iii) negative value.

Solution 7:

Solution -07:-

(i) $(8+9) \times 10 = 17 \times 10$

$= 170$

$8 + 9 \times 10 = 8 + 90 = 98$

$(8+9) \times 10 > 8 + 9 \times 10.$

(ii) $(8-9) \times 10 = (-1) \times 10$

$= -(1 \times 10)$

$= -10$

$8 - 9 \times 10 = 8 - 90$

$= -82$

$-10 > -82$

$(8-9) \times 10 > 8 - 9 \times 10.$

(iii) $\{(-2) - 5\} \times \{-6\} = (-7) \times (-6)$

$= (7 \times 6)$

$= 42$

$-2 - 5 \times (-6) = -2 + (5 \times 6)$

$= 30 - 2$

$= 28$

$\{(-2) - 5\} \times (-6) > -2 - 5 \times (-6)$

Solution 8:

Solution 8:

(i) $a \times (-1) = -30$

When multiplied by a negative integer, 'a' gives a negative integer. Hence, 'a' should be a positive integer.

$a = 30.$

(ii) $a \times (-1) = 30$

When multiplied by a negative integer, 'a' gives a positive integer. Hence, 'a' should be a negative integer.

$a = -30.$

Solution 9:

Solution -09:-

(i) LHS $= 19 \times \{7 + (-3)\}$

$= 19 \times \{7 - 3\}$

$= 19 \times 4$

$= 76$

RHS $= 19 \times 7 + 19 \times (-3)$

$= 133 - 57$

$= 76$

$\therefore$ LHS = RHS.

Solution 10:

Solution -10 :-

(i) True

(ii) True

(iii) False

(iv) False

(v) False

(vi) True.

Exercise 1.2

Solution 1:

Exercise-1.2

Solution-01:-

1>(i) $\dfrac{102}{17} = \dfrac{|102|}{|17|} = \dfrac{102}{17} = 6$

(ii) we have,

$\dfrac{|-85|}{|5|} = -\dfrac{85}{5} = -17$

(iii) we have,

$\dfrac{|-161|}{|-23|} = \dfrac{161}{23} = 7$

(iv) we have

$\dfrac{76}{-19} = \dfrac{|76|}{|-19|} = -\dfrac{76}{19} = -4.$

(v) $\dfrac{17654}{-17654} = -\dfrac{17654}{17654}$

$= -1.$

(vi) $\dfrac{-729}{-27} = +\dfrac{729}{27}$

$= 27.$

1.(vii) :- $\dfrac{21590}{-10}$

$= \dfrac{|21590|}{|-10|}$

$= -\dfrac{21590}{10}$

$= -2159$

(viii) $\dfrac{0}{-135}$

$= 0.$

Solution 2:

(i) $296 \div -148 = -\dfrac{|296|}{|-148|} = -\dfrac{|296|}{|148|} = -\dfrac{296}{148} = -2$

$\therefore 296 \div (-2) = -148$

(ii) $-88 \div 11 = -\dfrac{|-88|}{|11|} = -\dfrac{|88|}{|11|} = -\dfrac{88}{11} = -8$

$\therefore -88 \div -8 = 11$

(iii) $84 \div 12 = \dfrac{|84|}{|12|} = \dfrac{84}{12} = 7$

$\therefore 84 \div 7 = 12$

(iv) $25 \times (-5) = -125$

$\therefore -125 \div -5 = 25$

(v) $156 \times (-2) = -312$

$\therefore -312 \div 156 = -2$

(vi) $567 \times (-1) = -567$

$\therefore -567 \div 567 = -1$

Solution 3:

Solution - 03

(i) True
(ii) True
(iii) False
(iv) False
(v) False.
(vi) True

Exercise 1.3

Solution 1:

Solution-01.

$36 \div 6 + 3 = 36 \div 9$

$= \dfrac{36}{9}$

$= \dfrac{|36|}{|9|}$

$= 4.$

Solution 2:

Solution -02:-

$24 + 15 \div 3 = 39 \div 3$

$= \dfrac{|39|}{|3|}$

$= 13.$

Solution 3:

Solution-03:-

$$120 - 20 \div 4 = 100 \div 4$$
$$= \frac{|100|}{|4|}$$
$$= 25.$$
$$\therefore 120 - 20 \div 4 = 25.$$

Solution 4:

Solution-04:-

$$32 - (3 \times 5) + 4 = 32 - 15 + 4$$
$$= 17 + 4$$
$$= 21.$$

Solution 5:

Solution-05:-

$$3 - (5 - 6 \div 3) = 3 - (5 - 2)$$
$$= 3 - 3$$
$$= 0.$$

Solution 6:

Solution-06:-

$$21 - 12 \div 3 \times 2 = 21 - \frac{12}{3} \times 2$$
$$= 21 - 4 \times 2$$
$$= 21 - 8$$
$$= 13.$$

Solution 7:

solution-07:-

$$16 + 8 \div 4 - 2 \times 3$$
$$= 16 + 2 - 6$$
$$= 18 - 6$$
$$= 12$$
$$\therefore 16 + 8 \div 4 - 2 \times 3 = 12.$$

Solution 8:

Solution-08:-

$$28 - 5 \times 6 + 2 = 28 - (5 \times 6) + 2$$
$$= 28 - 30 + 2$$
$$= 30 - 30$$
$$= 0.$$

Solution 9:

Solution-09:-

$$(-20) \times (-1) + (-28) \div 7 = 20 + \frac{|-28|}{|7|}$$
$$= 20 - \frac{28}{7}$$
$$= 20 - 4$$
$$= 16.$$

Solution 10:

Solution -10:-

$(-2) + (-8) \div (-4) = -2 + \dfrac{|-8|}{|-4|}$

$= -2 + 2$

$= 0$.

Solution 11:

Solution -11 :-

$-15 + 4 \div (5-3) = -15 + 4 \div 2$

$= -15 + 2$

$= -13$

$\therefore -15 + 4 \div (5-3) = -13$.

Solution 12:

Solution -12:-

$(-40) \times (-1) + (-28) \div 7 = 40 + (-4)$

$= 40 - 4$

$= 36$.

Solution 13:

Solution -13:-

$(-3) + (-8) \div (-4) - 2 \times (-2) = (-3) + \dfrac{(-8)}{(-4)} - 2 \times (-2)$

$= -3 + 2 + 4$

$= 6 - 3$

$= 3$.

Solution 14:

Solution -14:-

$(-3) \times (-4) \div (-2) + (-1) = 12 \div (-2) + (-1)$

$= -6 - 1$

$= -7$

$\therefore (-3) \times (-4) \div (-2) + (-1) = -7$.

Exercise 1.4

Solution 1:

Exercise -1.4

Solution -01:-

$3 - (5 - 6 \div 3)$

$= 3 - [5 - 2]$

$= 3 - 3$

$= 0$.

$3 - (5 - 6 \div 3) = 0$.

Solution 2:

Solution -02:-

$-25 + 14 \div (5 - 3) = -25 + 14 \div (2)$

$= -25 + \dfrac{14}{2}$

$= -25 + 7$

$= -18$

$\therefore -25 + 14 \div (5-3) = -18.$

Solution 3:

Solution-03:-

$25 - \dfrac{1}{2} \{ 5 + 4 - (3 + 2 - \overline{1+3}) \}$

$= 25 - \dfrac{1}{2} \{ 5 + 4 - (5 - 4) \}$

$= 25 - \dfrac{1}{2} \{ 5 + 4 - 1 \}$

$= 25 - \dfrac{1}{2} \{ 8 \} = 25 - 4 = 21.$

$\therefore 25 - \dfrac{1}{2} \{ 5 + 4 - (3 + 2 - \overline{1+3}) \} = 21.$

Solution 4:

Solution -04:-

$27 - \{ 38 - \{ 46 - (15 - \overline{3-2}) \}]$

$= 27 - [38 - \{ 46 - (15 - 11) \}]$

$= 27 - [38 - \{ 46 - 4 \}]$

$= 27 - [38 - 42]$

$= 27 - [-4]$

$= 27 + 4$

$= 31.$

$\therefore 27 - \{ 38 - \{ 46 - (15 - \overline{3-2}) \}] = 31.$

Solution 5:

Solution-05:-

$36 - [18 - \{ 14 - (15 - 4 \div 2 \times 2) \}]$

$= 36 - [18 - \{ 14 - (11 \div 2 \times 2) \}]$

$= 36 - [18 - \{ 14 - \dfrac{11}{2} \times 2 \}]$

$= 36 - [18 - \{ 14 - 11 \}]$

$= 36 - [\{ 18 - 3 \}]$

$= 36 - 15$

$= 21.$

$36 - [18 - \{ 14 - (15 - 4 \div 2 \times 2) \}] = 21.$

Solution 6:

Solution -06:-

we have,

$45 - [38 - \{60 \div 3 - (6 - 9 \div 3) \div 3\}]$

$= 45 - [38 - \{20 - (6 - 3) \div 3\}]$

$= 45 - [38 - \{20 - 3 \div 3\}]$

$= 45 - [38 - \{20 - 1 \}]$

$= 45 - [38 - \{19\}]$

$= 45 - [38 - 19]$

$= 45 - [19]$

$= 45 - 19 = 26.$

$\therefore 45 - [38 - \{60 \div 3 - (6 - 9 \div 3) \div 3\}] = 26$

Solution 7:

Solution -07:-

we have,

$23 - [23 - \{23 - (23 - \overline{23 - 23})\}]$

$= 23 - [23 - \{23 - (23 - 0)\}]$

$= 23 - [23 - \{23 - 23\}]$

$= 23 - [23 - 0]$

$= 23 - [23]$

$= 23 - 23$

$= 0.$

$\therefore 23 - [23 - \{23 - (23 - \overline{23 - 23})\}] = 0.$

Solution 8:

Solution -08:-

$2550 - [510 - \{270 - (90 - \overline{80 + 70})\}]$

$= 2550 - [510 - \{270 - (90 - 150)\}]$

$= 2550 - [510 - \{270 - (-60)\}]$

$= 2550 - [510 - 330] \qquad \{270 - (-60) = 270 + 60 = 330\}$

$= 2550 - [180]$

$= 2550 - 180$

$= 2370$

$\therefore 2550 - [510 - \{270 - (90 - \overline{80 + 90})\}] = 2370.$

Solution 9:

Solution-09:-

$$4 + \frac{1}{5}\left[\left\{-10 \times (25 - \overline{13-3})\right\} \div (-5)\right]$$

$$= 4 + \frac{1}{5}\left[\left\{-10 \times (25 - 10)\right\} \div (-5)\right]$$

$$= 4 + \frac{1}{5}\left[\left\{-10 \times (15)\right\} \div (-5)\right]$$

$$= 4 + \frac{1}{5}\left[\left\{-150\right\} \div (-5)\right]$$

$$= 4 + \frac{1}{5}\left\{\frac{150}{5}\right\}$$

$$= 4 + \frac{1}{5}\left\{30\right\}$$

$$= 4 + 6 = 10$$

$$\therefore \; 4 + \frac{1}{5}\left[\left\{-10 \times (25 - \overline{13-3})\right\} \div (-5)\right] = 10.$$

Solution 10:

Solution-10:-

we have,

$$29 - \frac{1}{4}\left\{-5 - (-48) \div (-16)\right\}$$

$$= 22 - \frac{1}{4}\left\{-5 \mp \frac{(-48)}{(-16)}\right\}$$

$$= 22 - \frac{1}{4}\left\{-5 - \frac{|-48|}{|-16|}\right\}$$

$$= 22 - \frac{1}{4}\left\{-5 - \frac{48}{16}\right\}$$

$$= 22 - \frac{1}{4}\left\{-5 - 3\right\}$$

$$= 22 - \frac{1}{4}\left\{-8\right\}$$

$$= 22 + \frac{8}{4} = 22 + 2 = 24.$$

$$\therefore \; 22 - \frac{1}{4}\left\{-5 - (-48) \div (-16)\right\} = 24.$$

Solution 11:

On applying the BODMAS rule, we get:

$$63 - (-3)\{-2 - \overline{8-3}\} \div 3\{5 + (-2)(-1)\}$$
= 63 − (− 3){− 2 − 5} ÷ 3{5 + 2}   (On simplifying vinculum)
= 63 − (− 3)(− 7) ÷ 3 × 7   (On simplifying braces)
= 63 − (**21 ÷ 21**)
= 63 − 1
= 62

Solution 12:

Solution-12:-

$$[29 - (-2)\{6 - (7-3)\}] \div [3 \times \{5 + (-3) \times (-2)\}]$$

$$= [29 - (-2)\{6 - 4\}] \div [3 \times \{5 + (3 \times 2)\}]$$

$$= [29 - (-2)\{2\}] \div [3 \times \{5 + 6\}]$$

$$= [29 + 4] \div [3 \times \{11\}]$$

$$= 33 \div 33$$

$$= 1.$$

$$[29 - (-2)\{6 - (7-3)\}] \div [3 \times \{5 + (-3) \times (-2)\}] = 1.$$

Solution 13:

Solution-13 :-

(i) Nine multiplied by the sum of two and five → $9(2+5)$

(ii) Twelve divided by the sum of one and three → $12 \div (1+3)$

(iii) Twenty divided by the difference of seven & two → $20 \div (7-2)$

(iv) Eight (8) subtracted from the product of two & three
→ $2 \times 3 - 8$.

(V). Forty divided by one more than the sum of
nine and ten → $[40 \div \{1 + (9+10)\}]$

(VI) Two multiplied by one less than the difference
of nineteen and six → $2 \times \{(19-6) - 1\}$.