

EXERCISE 1A

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1. Evaluate

i. $15+(-8)$

Solution: -

Using the rule for addition of integers with unlike signs, we have to do subtraction:

The above question can be written as,

$$= (15-8) \quad \dots [:(+\times == -)]$$

Then,

$$= 15-8$$

$$= +7$$

(Though we have done subtraction, we assign bigger number sign for the answer)

ii. $(-16)+9$

Solution:-

Using the rule for addition of integers with unlike signs, we have to do subtraction:

$$= -16+9$$

$$= -(16-9)$$

(Take out the -ve sign outside and do subtract smaller from bigger number)

$$= -7$$

(Though we have done subtraction, we assign bigger number sign for the answer)

iii. $(-7)+(-23)$

Solution:-

Using the rule for addition of integers with same signs, we have to do addition:

The above question can be written as,

$$= (-7-23) \quad \dots [:(+\times == -)]$$

Then,

$$= -7-23$$

$$= -30$$

(Though we have done subtraction, we assign bigger number sign for the answer)

iv. $(-32)+47$

Solution:-

Using the rule for addition of integers with unlike signs, we have to do subtraction:

$$= -32+47$$

$$= -(32-47)$$

(Take out the -ve sign outside and do subtract smaller from bigger number)

$$= +15$$

(Though we have done subtraction, we assign bigger number sign for the answer)

v. $53+(-26)$

Solution:-

Using the rule for addition of integers with unlike signs, we have to do subtraction:

The above question can be written as,
$$= (53-26) \quad \dots [:(+\times == -)]$$
$$=53-26$$
$$=+27$$

(Though we have done subtraction, we assign bigger number sign for the answer)

vi. **$(-48)+(-36)$**

Solution:-

Using the rule for addition of integers with same signs, we have to do addition:

The above question can be written as,
$$= (-48-36) \quad \dots [:(+\times == -)]$$
$$=-(48+36)$$

(Take out the -ve sign as common and do the addition)

$$=-84$$

(Though we have done addition, we have to assign bigger number sign for the answer)

2. Find the sum of

i. **153 and -302**

Solution:-

We know that,

The above question can be written as,
$$= [153+ (-302)]$$

Then,

Using the rule for addition of integers with unlike signs, we have to do subtraction:

$$=153-302$$
$$=-149$$

ii. **1005 and -277**

Solution:-

We know that,

The above question can be written as,
$$= [1005+ (-277)]$$

Then,

Using the rule for addition of integers with unlike signs, we have to do subtraction:

$$=1005-277$$
$$=728$$

iii. **-2035 and 297**

Solution:-

We know that,

The above question can be written as,
$$= [-2035+297]$$

Then,

Using the rule for addition of integers with unlike signs, we have to do subtraction:

$$=-(2035-297)$$

(Take out the -ve sign outside and do subtract smaller from bigger number)

$$=-1738$$

iv. **-489 and -324**

Solution:-

We know that,

The above question can be written as,

$$=[(-489) + (-324)]$$

Then,

Using the rule for addition of integers with same signs, we have to do addition:

$$=-489-324$$

$$=-(489+324)$$

(Take out the -ve sign as common and do the addition)

$$=-813$$

v. **-1000 and 438**

Solution:-

We know that,

The above question can be written as,

$$=[-1000+438]$$

Then,

Using the rule for addition of integers with unlike signs, we have to do subtraction:

$$=-(1000-438)$$

(Take out the -ve sign outside and do subtract smaller from bigger number)

$$=-562$$

vi. **-238 and 500**

Solution:-

We know that,

The above question can be written as,

$$=[-238+500]$$

Then,

Using the rule for addition of integers with unlike signs, we have to do subtraction:

$$=-(238-500)$$

(Take out the -ve sign outside and do subtract smaller from bigger number)

$$=262$$

3. Find the additive inverse of:

i. **-83**

Solution:-

$$=83$$

(\because Additive inverse of the integer is the change of sign i.e. positive to negative and negative to positive with the same number)

ii. **256**

Solution:-

$$=-256$$

(\because Additive inverse of the integer is the change of sign i.e. positive to negative and negative to positive with the same number)

iii. **0**

Solution:-

$$=0$$

(\because Additive inverse of zero is itself only)

iv. **-2001**

Solution:-

$$=2001$$

(\because Additive inverse of the integer is the change of sign i.e. positive to negative and negative to positive with the same number)

4. Subtract:

i. **28 from -42**

Solution:-

$$=-42-(+28)$$

$$=-42-28$$

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

$$=-(42+28)$$

(Take out the $-ve$ sign outside and do subtract smaller from bigger number)

$$=-70$$

[\because We have to assign bigger number sign for the answer]

ii. **-36 from 42**

Solution:-

$$=42-(-36)$$

$$=42+36$$

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

$$=78$$

[\because We have to assign bigger number sign for the answer]

iii. **-37 from -53**

Solution:-

$$=-53-(-37)$$

$$=-53+37$$

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

$$=-(53-37)$$

(Take out the $-ve$ sign outside and do subtract smaller from bigger number)

$$=-16$$

[\because We have to assign bigger number sign for the answer]

iv. **-66 from -34**

Solution:-

$$=-34-(-66)$$

$$=-34+66$$

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

$$=-(34-66)$$

(Take out the $-ve$ sign outside and do subtract smaller from bigger number)

$$=32$$

[∴ We have to assign bigger number sign for the answer]

v. **318 from 0**

Solution:-

$$=0-318$$

$$=-318$$

[∴ We have to assign bigger number sign for the answer]

vi. **-153 from -240**

Solution:-

$$=-240-(-153)$$

$$=-240+153 \quad \dots [\because (- \times - = +)]$$

$$=-(240-153)$$

(Take out the -ve sign outside and do subtract smaller from bigger number)

$$=-87$$

[∴ We have to assign bigger number sign for the answer]

vii. **-64 from 0**

Solution:-

$$=0-(-64)$$

$$=0+64 \quad \dots [\because (- \times - = +)]$$

$$=64$$

[∴ We have to assign bigger number sign for the answer]

viii. **-56 from 144**

Solution:-

$$=144-(-56)$$

$$=144+56 \quad \dots [\because (- \times - = +)]$$

$$=200$$

[∴ We have to assign bigger number sign for the answer]

5. Subtract the sum of -1032 and 878 from -34

Solution:-

Firstly we have to find the sum of -1032 and 878

$$=-1032+878$$

$$=-(1032-878)$$

(Take out the -ve sign outside and do subtract smaller from bigger number)

$$=-154$$

Now Subtract -154 from -34

$$=-34-(-154)$$

$$=-34+154 \quad \dots [\because (- \times - = +)]$$

$$=-(34-154)$$

(Take out the -ve sign outside and do subtract smaller from bigger number)

$$=120$$

[∴ We have to assign bigger number sign for the answer]

6. Subtract -134 from the sum of 38 and -87
Solution:-

Firstly we have to find the sum of 38 and -87

$$= 38 - 87$$

$$= -49$$

Now Subtract -134 from -49

$$= -49 - (-134)$$

$$= -49 + 134 \quad \dots [\because (- \times - = +)]$$

$$= -(49 - 134)$$

(Take out the -ve sign outside and do subtract smaller from bigger number)

$$= 85$$

 [\because We have to assign bigger number sign for the answer]

7. Fill in the blanks:

i. $\{(-13)+27\}+(-41) = (-13) + \{27+ (\dots)\}$

Solution:-

 The arrangement of above integers is in the form of Associative law of Addition $[(a+b) + c = a + (b+c)]$

Let,

$$a = -13, b = 27, c = -41$$

$$\therefore \{(-13) + 27\} + (-41) = (-13) + \{27 + (-41)\}$$

ii. $(-26)+\{(-49)+(-83)\}=\{(-26)+(-49)\}+(\dots)$

Solution:-

 The arrangement of above integers is in the form of Associative law of Addition $[(a+b) + c = a + (b+c)]$

Let,

$$a = -26, b = -49, c = -83$$

$$\therefore (-26) + \{(-49) + (-83)\} = \{(-26) + (-49)\} + (-83)$$

iii. $53+(-37) = (-37) + (\dots)$

Solution:-

 The arrangement of above integers is in the form of Commutative law of addition $[a+b=b+a]$

Let,

$$a = 53, b = -37$$

$$\therefore 53 + (-37) = (-37) + (53)$$

iv. $(-68)+(-76) = (\dots)+(-68)$

Solution:-

 The arrangement of above integers is in the form of Commutative law of addition $[a+b=b+a]$

Let,

$$a = -68, b = -76$$

$$\therefore (-68) + (-76) = (-76) + (-68)$$

v. $(-72) + (\dots) = -72$

Solution:-

 The arrangement of above integers is in the form of Additive property of addition $[a+b=c]$

Let,

$$a = -72, b = x$$

Then,

$$= -72 + (x) = -72$$

$$= (x) = -72 + 72$$

[\because By sending -72 from left hand side to right hand side, so it changes to $+72$]

$$= (x) = 0$$

$$\therefore (-72) + (0) = -72$$

vi. $-(-83) = \dots\dots$

Solution:-

$$= 83 \quad [\because (- \times - = +)] \quad [\text{Additive Inverse}]$$

vii. $(-60) - (\dots\dots) = -59$

Solution:-

The arrangement of above integers is in the form of Closure property of subtraction $[a + b = c]$

Let,

$$a = -60, b = x$$

Then,

$$= (-60) - (x) = -59$$

$$= (-60) + 59 = x$$

[\because by sending $-x$ from left hand side to right hand side, so it changes to x and -59 from right hand side to left hand side, so it changes to 59]

$$= x = -1$$

$$\therefore (-60) - (-1) = -59$$

viii. $(-31) + (\dots\dots) = -40$

Solution:-

The arrangement of above integers is in the form of Closure property of addition $[a + b = c]$

Let,

$$a = -31, b = x$$

Then,

$$= (-31) + (x) = -40$$

$$= (x) = (-40) + (31)$$

[\because By sending -31 from left hand side to right hand side, so it changes to 31]

$$= x = -9$$

$$\therefore (-31) + (-9) = -40$$

8. Simplify: $\{-13 - (-27)\} + \{-25 - (-40)\}$

Solution:-

$$= \{-13 + 27\} + \{-25 + 40\} \quad \dots \quad [\because (- \times - = +)]$$

$$= \{14\} + \{15\}$$

$$= 29$$

9. Find $36 - (-64)$ and $(-64) - 36$. Are they equal

Solution:-

From the commutative law of Subtraction $[a-b = b-a]$

Let,

$$a=36, b=-64$$

Left hand side (LHS),

$$= \{36 - (-64)\}$$

$$= \{36+64\}$$

$$= 100$$

Right hand side (RHS),

$$= (-64-36)$$

$$= -(64+36)$$

(Take out the $-ve$ sign outside and do subtract smaller from bigger number)

$$=-100$$

By comparing LHS and RHS,

LHS \neq RHS

10. If $a = -8$, $b = -7$, $c = 6$, verify that $(a+b) + c = a + (b+c)$

Solution:-

From the Associative law of Addition

$$= \{-8 + (-7)\} + 6 = -8 + \{(-7) + 6\}$$

Left hand side (LHS),

$$= \{-8 + (-7)\} + 6$$

$$= \{-8-7\} + 6$$

$$= \{-15\} + 6$$

$$= -9$$

Right hand side (RHS),

$$= -8 + \{(-7) + 6\}$$

$$= -8 + \{-7+6\}$$

$$= -8 + \{-1\}$$

$$= -8-1$$

$$= -9$$

By comparing LHS and RHS,

LHS=RHS

11. If $a=-9$ and $b=-6$, show that $(a-b) \neq (b-a)$

Solution:-

From the Commutative law of Subtraction

Left hand side (LHS),

$$= \{(-9)-(-6)\}$$

$$= \{-9+6\}$$

$$= \{-9-6\}$$

(Take out the $-ve$ sign outside and do subtract smaller from bigger number)

$$= \{-3\}$$

$$= -3$$

Right hand side (RHS),

$$= \{(-6)-(-9)\}$$

$$= \{-6+9\}$$

$$= \{-6-9\}$$

(Take out the -ve sign outside and do subtract smaller from bigger number)

$$=-\{-3\}$$

$$=3$$

By comparing LHS and RHS

LHS \neq RHS

12. The sum of two integers is -16. If one of them is 53, find the other.

Solution:-

By assuming Closure property of addition $[a+b=c]$,

Let,

$$a=53, \text{ assume } b=x, c=-16$$

$$=53+x=-16$$

$$=x=-16-53$$

(\because By sending 53 from left hand side to the right hand side, it changes to -53)

$$=x=-69$$

The other integer we got by calculation is -69

13. The sum of two integers is 65. If one of them is -31, find the other

Solution:-

By assuming Closure property of addition $[a+b=c]$,

Let,

$$a=-31, \text{ assume } b=x, c=65$$

$$=-31+x=65$$

$$=x=65+31$$

(\because By sending -31 from left hand side to the right hand side, it changes to 31)

$$=x=96$$

The other integer we got by calculation is 96

14. The difference of an integer a and (-6) is 4. Find the value of a.

Solution:-

By assuming Closure property of Subtraction $[a-b=c]$,

Let,

$$a=a, b=-6, c=4$$

$$=a-(-6)=4$$

$$=a+6=4$$

$$=a=4-6$$

(\because By sending 6 from left hand side to the right hand side, it changes to -6)

$$=a=-2$$

15. Write a pair of integers whose sum gives

- i. **Zero:**
- ii. **A negative integer:**
- iii. **An integer smaller than both integers:**
- iv. **An integer greater than both integers:**
- v. **An integer smaller than only one of the integers.**

Solution:-

i. $= 5 + (-5)$
 $= 5 - 5$
 $= 0$

ii. $= -8 + (-5)$
 $= -8 - 5$
 $= -13$

iii. $= -3 + (-6)$
 $= -3 - 6$
 $= -9$

iv. $= 4 + 6$
 $= 10$

v. $= 7 + (-3)$
 $= 7 - 3$
 $= 4$

16. For each of the following statements, write (T) for true and (F) for false:

- i. **The smallest integer is zero.**

Solution:-

False (F),

Because all the negative integers are smaller than the zero.

- ii. **-10 is greater than -7.**

Solution:-

False (F),

Because in the negative integer as the number increasing, its value is decreasing.

- iii. **Zero is larger than every negative integer.**

Solution:-

True (T),

Because in the number line all the negative numbers come on the left side of zero.

- iv. **The sum of two negative integers is a negative integer.**

Solution:-

True (T),

Because, we know that for same sign we have to add and then assign the greater number sign.

- v. **The sum of a negative integer and a positive integer is always a positive integer.**

Solution:-

False (F),

Because we find the difference between the number and assign the bigger number sign.